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The
SHORTWAVE
Magazine



**EXCLUSIVELY FOR THE
RADIO EXPERIMENTER &
TRANSMITTING AMATEUR**

VOL. IX No. 1 MARCH 1951

H. WHITAKER G3SJ

10 YORKSHIRE STREET, BURNLEY Phone 4924

XTALS. 1000 kc Bliley, Valpey or Somerset, standard $\frac{1}{2}$ in. pin spacing 20/-. 100 kc RCA, Bliley, sub-standards, 17/6. Western Elec. 500 kc $\frac{1}{2}$ in. Ft 243 holders, 7/6.

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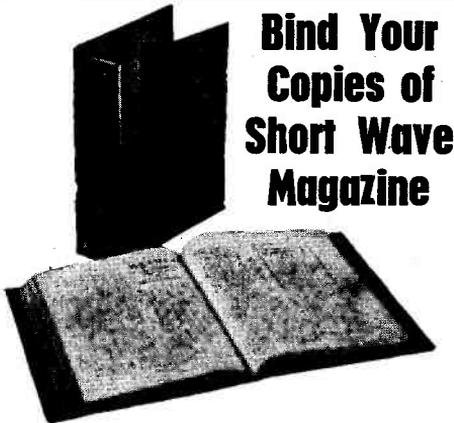
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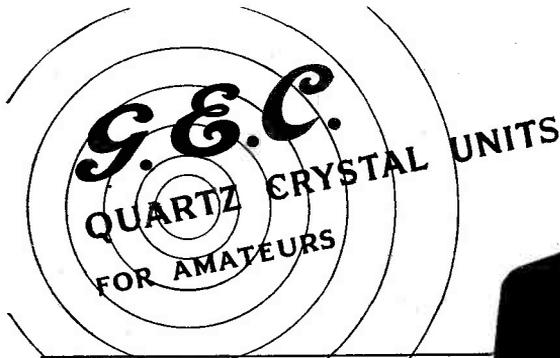
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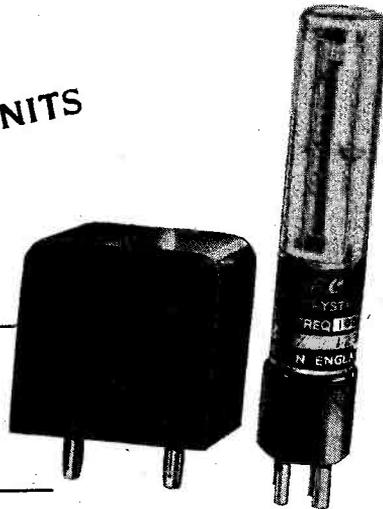
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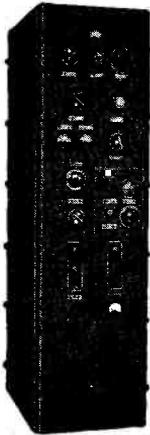
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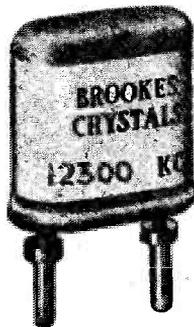
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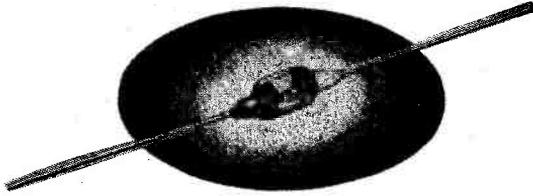
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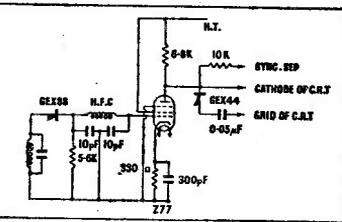
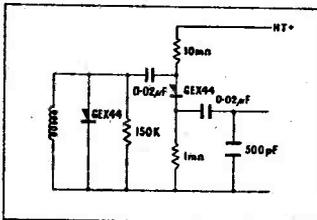
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SHORT WAVE MAGAZINE

FOR THE RADIO AMATEUR & AMATEUR RADIO

Vol. IX MARCH 1951 No. 92

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The
SHORT-WAVE
Magazine

FOR THE RADIO
AMATEUR AND
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E D I T O R I A L

Service

It is an odd comment on human progress that just twelve years ago we were constrained to use this space to draw the attention of readers to the opportunities then being offered them of serving the country by joining the reserve communications organisations of the Royal Navy and the Royal Air Force.

History practically never fails to repeat itself, because human nature has not changed much in the last two thousand years. So here we are, back almost to where we came in, once again to lend our support and give our encouragement to those able and willing to join the Service reserve organisations of the present day.

The very fact that these peace-time, part-time, voluntary reserves have been formed at all is at once a compliment to Amateur Radio as we know it in this country and a challenge to all who call themselves amateurs. This challenge was gladly accepted on the previous occasion, and long before that many amateurs had served with great distinction in the 1914-18 war, in which (lest it be forgotten) their talents and abilities were of the greatest value.

We are told by the leaders of all nations that war is not inevitable, that it can be avoided—but that it is as well to be prepared.

The Royal Navy and the Royal Air Force once again offer amateurs the opportunity to be prepared in the most effective way possible. It is to be regretted that so far the War Office has been unable to form a similar reserve for amateurs, but it is certain that local Royal Signals units of the Territorial Army will welcome potential recruits.

*Austin Forth
G.F.O.*

The Ethics of DX-Hunting

A SUMMARY OF OPINION FOR THE GUIDANCE OF
THOSE INTERESTED

By L. H. THOMAS, M.B.E. (G6QB)

All who read this powerful comment on one of the burning topics of the time in the world of Amateur Radio will agree that it is made very clear that the happy and successful working of rare and difficult DX depends essentially on the individual—at both ends of the QSO. This means that there simply must be a spirit of give-and-take, instead of wholesale condemnation of the tactics or behaviour of other people. Many have contributed, directly or indirectly, to the preparation of this article by expressing an opinion on the ethics of DX working. In particular, we would like to thank DLAFS/3A2AB and VP6CDI (ex-G2CDI) for putting the views of the DX target with such point and vigour.—Editor.

THIS is not a treatise on “How to Work DX” so much as a soliloquy on the methods employed by those who do it. We should have liked to call it “How to Work DX and Keep One’s Friends,” but we have reluctantly decided that such an ideal is almost impossible!

From all sides one hears comment about bad behaviour, bad manners, bad operating, and so on; very often the said opinions come from those who are far from blameless themselves. And this leads us straight into our first point: That many regrettable incidents are quite accidental and the result of ignorance of the most blissful type. It is a pity that some of our good operators should be branded as bad-mannered thrusters, simply because they have made a small slip at some time or another.

But let us begin even further back. We must face the fact that the competitive aspect of Amateur Radio appeals to a very large number of present-day operators. Those for whom it has no attraction can back out, right now, because what follows is all about DX from the competitive point of view. Now this competition-and-contest out-

look, for better or worse, has made it imperative that, at certain times and on certain bands, our DX-hunter should try to contact most of the “rare” stations that he hears. Furthermore, it is a dead certainty that many other equally keen types will be trying to do the same thing and at the same time.

So we have, already, all the makings of a “situation.” And that is the crux of the whole thing. Yes, it’s a simple story—just as simple as that. A certain DX station is “rare”; those who want to work him are not. And now mark this—the rarer that DX station is (in other words, the fewer stations there are using his prefix), the more stations will be chasing him.

Brute Force or Quality?

To clarify this by an example, let us suppose that ZD4AA (Gold Coast) is rash enough to call CQ DX. Quite a number of the gentler types of DX-worker have not raised ZD4 yet, and there are only half-a-dozen or so to choose from, so a good crop of replies will almost certainly come up.

Next, ZD6AA (Nyasaland) does the same. He is undoubtedly a rarer bird than the first, and thus he will almost certainly bring forth even more replies. But when ZD5AA (the first and only station in N’gomboland, who will only be on the air with his portable for one week) dares to show *his* call, cacophony breaks out, the band goes bad; in fact, Hell is Let Loose in no uncertain manner—because *everybody* wants him. As often as not this unfortunate chap will be appalled by the QRM on his own frequency and won’t be able to read a single call, so the whole crowd will defeat their own object and send him off to bed.

Maybe, though, one or two use their brains. Our (hypothetical) perfect operator, G6ABC, decides that (a) There will be a dreadful row on ZD5AA’s frequency, and that he will eventually tune away from it, and that

(b) It may be some little time before he has the urge to do so. So G6ABC sits on a frequency some 10 or 15 kc away and doesn't call until the noise begins to die down. And maybe he even makes contact!

But this is where the trouble starts, for all the other eager-beavers (those, that is, who are not still fruitlessly calling the DX) will hear ZD5AA come back to G6ABC. After one or two muffled imprecations, they will find G6ABC and will then proceed to sit on *him*. The DX man will therefore find it extremely difficult to read G6ABC and will probably give up again. (If he's experienced in the game he will immediately come on and say "I will not work anyone who interrupts this QSO. Wait for my QRZ and call 10 kc lower," or something of the sort. But it's ten-to-one that he doesn't know the ropes to that extent if he's a newcomer).

Now we have all the ingredients of a first-class pile-up, and please note this, for it is important: Whatever procedure the DX man adopts, he cannot prevent a whole pack of stations calling him, and probably causing much mutual QRM, every time he finishes a QSO. He *can* stop people from interrupting; he can stop them from cluttering up his own frequency; but he can't prevent everyone in the world letting loose, all at once, each time he finishes.

Now who gets through, out of all this lot, and how is it done without making enemies? If the man with the strongest signal also has a really fine note and a nice fist, there's nothing to stop him. On the other hand, if the man with the strongest signal behaves like a lid, then someone else will have a look in—and it's surprising how often this happens.

Sometimes it's the one who calls *longest* (by keeping on until all the other QRM has died down) who makes it; sometimes it's the man who makes a very short, snappy call and gets in first with it. Maybe ZD5AA tunes from below his frequency; maybe he starts at that frequency and tunes down—who knows? Someone is bound to win—and then the whole thing starts again.

The Moan

Now in this free-for-all there are bound to be some unfortunates who waste an hour calling the DX every time, always to hear him come back to someone else. They will possibly tell the members of the local Club that "G6ABC pinched their QSO with ZD5AA"—simply because the DX

happened to come back to G6ABC and not to the complainant. And so a reputation starts to crumble.

Whereas G6ABC did everything that was ethical and nice, there was *someone else* (enter our Happy Lid, G6XYZ) who did everything stupid, but didn't get blamed for it, because nobody noticed him and he didn't succeed in making a contact, anyway. He called out of turn; on the wrong frequency; with a T7 note; with a fist like a banana trifle; and quite possibly with more than his licensed power. But he didn't make it; and so it was G6ABC, our perfect operator, who had the best chance of becoming unpopular with the gang, because he *did*.

Get in the Queue!

On these occasions there is nothing for it but to get right in the queue and behave yourself. Try a long call one time, a short one the next; get off the frequency of the others, or stick on the frequency of the last one worked. If you have a good signal—and particularly a good note—you'll get there sooner or later. But if you emulate G6XYZ and try to grab an advantage by calling *before* the DX man has finished listening to his contact or by chipping in the middle of the QSO—you probably won't get there.

And, at this stage, please note that there is no need for anyone to get up and say "But I don't want to queue for DX. I just want to work the odd VK, ZL or ZS and have a nice long ragchew." To which we reply, "Certainly, brother, and what's stopping you? Go right ahead." You belong to the happy fraternity of non-queuers; you'll not lose sleep or suffer from ulcers; and, likewise, you'll never make the 200 mark—but that won't worry you, anyway. Thank goodness there are plenty like you!

Everyone reading this will know what it feels like to be in the queue. But have you ever tried to imagine what it's like to be the man for whom the queue has formed? Then listen to this, and remember that even a DX station likes to work what is "DX" to him, sometimes!

This is VP6CDI, Barbados, speaking: "For a long time I was the only post-war VP6 on 14 mc CW. Think what that means, with my geographical position relative to 80,000 W's and perhaps half that number of VE's, Europeans and South Americans

"Now there seems to be a widely-

held view that the rare DX station is some kind of philanthropic institution, a non-profit QSL-factory run by a benevolent lunatic with a key in one hand and a sheaf of one-and-eightpenny airmail stamps in the other.

"Nothing of the sort. Rare DX usually falls in three categories, none of which is really interested in sending out thousands of QSL cards. *First*, the Tyro; starts as a short wave listener, hears amateurs, gets together a 6L6, an 807 and the Morse he learnt with the Boy Scouts. He is thrilled to bits at a reply, and often has no log, no licence and certainly no QSL cards.

"*Second*, The Exile. He is in some place he's never heard of and can't find on the map. His one idea of getting on the air is to talk back home. He may get some cards later, but he will be annoyed if you bust up his chats with the Old Folks at Home.

"*Third*, the DX Man Abroad. The ex-G, ex-W, or what-have-you, who has fought competition from his homeland and now wants to make his DXCC from somewhere else. Now and then he takes time off from DX-chasing to 'give the boys a break.' If you interfere when he's working a new one (for him) just because you want his card, he gets really mad.

"In addition, we occasionally have the chap who spends his cash and a vacation in some outlandish part just in order to *be* DX for a week or so. He wants to give his countrymen—and his pals especially—a new one. He has a right to work whom he pleases.

"So forget any ideas you have about 'your rights' in the matter. From where I'm sitting you don't appear to have any. If this chap works a pal, and then the pal of a pal, and then is asked to listen for the pal of that pal—it's no concern of yours, however important it may seem to you that you *must* work him then and there. Of course, if he's going for QSO's in a big way, rolling them off the conveyor-belt, that's different. Don't create a bottleneck. But if he *wants* to natter—then go ahead and natter."

VP6CDI makes a lot more telling points in addition to the above, and devotes time to proving that the DX-man has the whip-hand if only he will adopt a code of behaviour and *stick to it*. Examples: Never reply to a station who "busts in" on a directional CQ; never answer a station who calls you when you have called someone else; call specific stations

mostly and don't call CQ unless you're prepared to take the consequences.

'CDI has brought much criticism on himself by refusing to work W's on 14 mc, but he maintains that it was necessary in self-defence. Before his attitude became known, he would get up at 5 a.m. and call "CQ Asia" (a very difficult QSO for him), only to find his receiver blocked by W's, all S99-plus, calling him. As he asks: "Would I be likely to get up at 5 a.m. and call China if I wanted to work a W?"

Truly the DX-man's lot is not a happy one! According to VP6CDI's parting shot, he has five alternatives:

- (a) Work as many of the boys as possible, giving them a new one without hope of QSL—and then be called a stinker for not QSLing.
- (b) Limit the number of QSO's to the number of cards possible—and then be called a stinker for not giving the boys a break.
- (c) Talk only to his pals—and have *them* called stinkers for monopolising the DX.
- (d) Stay off the DX bands—and be called a stinker for "wasting a good QTH."
- (e) Give up the whole thing and chase butterflies.

The Conveyor Belt

We mentioned, a few paragraphs back, the station who goes to a nice DX country for his vacation. One such was DL4FS, who went to Monaco and wielded the call 3A2AB for a week or so. Now he, frankly, intended to do nothing but give a Monaco contact (and card) to as many of the boys as possible. That was his purpose in going to the trouble and expense of setting up 3A2AB. He didn't go all that way to sit back and have nice cosy chats with just a few stations, which he could do equally well from DL4FS at any time he chose.

We think, therefore, that he has a perfect right to feel infuriated at the sluggish procedure adopted by so many of the stations he worked. While he was in Monaco, conditions for the U.S.A. were pretty poor, and so he devoted a lot of time to working Europeans (particularly G's), and what he has to say about their operating does not make pleasant reading.

Listen to 3A2AB on the subject: "I do not wish to single out the G's for criticism, but, even though you are located in an area containing the largest

number of poor operators in the world, you managed to make yourselves conspicuous by complete disregard of the other fellow, and lack of manners, judgment and plain common-sense."

All the usual faults come up for slashing remarks: failure to listen before going on the air, tuning the transmitter with the PA live, swishing the VFO with the PA on, and making long-drawn-out CQ'S and other calls.

"A day never passed during 3A2AB's operation in which, after calling a short CQ or QRZ, some station (usually a G) would give us one of those 50-times-50 calls; while he did so we would contact three or perhaps four more alert operators who recognised that we *did* have a receiver and *could* copy Morse.

"Isn't it reasonable to assume that when a station calls a short, snappy CQ he expects a short call in return?"

Procedure

Next for castigation comes the habit of repeating everything and sending dead slow after receiving a 569 or 579 report. And, next, the worst fault of all: "Why, oh why, when a station sends QLM, QML, Up 10 or Down 5, do you insist on screwing your VFO zero-beat with him and proceeding on one of your long-drawn-out calls? Do you think his QLM, or whatever it was, meant everyone else and not you? He gave it for a very simple reason—so that everyone replying should not be on the same frequency, and particularly his own frequency, where they might blot *him* out from the chap that he did reply to."

Quite a few G stations who wonder why they never raised 3A2AB may now be given the answer: "There were those Europeans who called us where we indicated, and immediate QSO's resulted; but we monitored our own frequency, just to see how many stupid operators there were—and there were plenty of them! For days on end we would hear the same stations calling on our own frequency, despite our tuning signals, and they never gave up until the day we left. It is too bad that their patience could not have been matched by a little operating ability."

Now for the conveyor-belt technique, which, we feel, is justified when a station like 3A2AB is set up with the express purpose of giving as many QSO's as possible. Listen to him once more: "Another thing that drove us to distraction was that almost every station worked insisted on giving us a complete

description of his rig, shack, weather, and then, for some unknown reason, felt compelled to assure us that we were his 'only Monaco station worked here and would appreciate QSL,' and so on. Being the first amateur station in Monaco, we were quite aware that we were his first Monaco contact, and if he thought we would undertake such an expedition without QSL-ing, well"

Long-Winded Phone Contacts

Even on the telephony side it was just as bad. "It was truly amazing the number of people who said 'I've been trying to catch you chaps for the past few hours but some of these guys hold it so long that I was afraid I wouldn't make it'—and then launched off *themselves* into a detailed description of everything, from the VFO to the colour of their socks.

"One even went so far as to say, 'I don't *believe* I have worked Monaco before; QRX while I check through the log here'—and this with dozens of others waiting!

"And another thing that left us limp was 'Your signals are R5 S9 (or R9 on the S-meter, as some put it) here, old chap, very FB indeed; yes, sir, the strongest signals on the band right now; 100 per cent readable, all OK. The name is Robert—R radio, O ocean, B baker' . . . and so on."

And here we must chip in to add that this particular practice has always seemed to us to reach the height of cretinism; we simply *have* to tear up a London Telephone Directory whenever we hear anyone doing it, and even then we tend to foam at the mouth! Nothing could possibly be more futile; or, if it could, it would doubtless be done by the same people.

Finally, 3A2AB adds that when the band was open for W's, he called CQ W and CQ VE and signed "KN"; but this didn't deter all the Europeans from calling each time. Despite this, the W/VE crowd garnered more contacts during this hour each day than the Europeans did during the entire day, due to the complete inability of the latter (including G's) to fall in with the practice of snappy contacts.

Benefit by Experience

We have quoted the sayings of these two DX stations at some length because there must be many would-be DX-men who simply don't realise the point of view at the other end. Summarising

the main lessons that should be learned. let us say this :

- (a) **Listen** to the other man first, and learn his habits. If he wants snappy QSO's, give him one. If he insists on being called off his own frequency, then avoid his frequency like the plague.
- (b) **Do not break** in on a CQ for some other direction or country.
- (c) **Do not break** in on a QSO. If he sends VA and then hasn't finished because the other man insists on coming back again, that's too bad but it isn't your fault. (Incidentally, watch your own VA and don't send it until you have really finished.)
- (d) Get the idea out of your head that it is imperative that you, and you alone, must work this station at this particular time. You are only one of thousands, all of whom pay their licence fees and spend time and money on their hobby.

After making contacts with a few of the difficult cases, newcomers will soon realise that bad manners and thrusting tactics get them nowhere, and they will eventually benefit from experience and join the crowd who *do* eventually get through without leaving a trail of hard feelings and bad language behind them.

Now for a few remarks from various readers who have commented from time to time on our own statements about DX stations and their technique, or lack of it.

G3BUN (London, N.8) was a bit annoyed about 3A2AB and asks: "What does he go on the air at all for, if he's not interested in other people's rigs, and so on? What makes him think people should queue-up to work him? He was only a glorified F station, anyway!" 'BUN will probably soften his opinion a little after reading the foregoing, which makes it clear that 3A2AB was a genuine philanthropic venture aimed at giving all those keen types who wanted a new country the opportunity of working one. But he makes a good point when he adds: "It's just these here-today-and-gone-tomorrow stations that bring out the worst in everyone." Too true!

G5LZ (New Malden) has suffered! He says "I am just not going to continue to work DX when all through the QSO the famous G....., like a cat on hot bricks, trying to attract attention, is calling the fellow I'm working. It is

my firm opinion that the yardstick of countries is in reality a curse, both from the point of view of general manners and methods adopted to chalk up another country.

"It is not my intention to appear worried or hot under the collar, but rather to let you know that there is one Old Timer whose memories are still at times centred on the old days of very different conditions—for instance, the days of 1,000 metres!"

G3DKI (Bristol) hits the mark when he says "Much time is wasted, and an awful lot of QRM caused, by unnecessary verbiage. Why use special CW abbreviations on phone if they are spun out and repeated so as to take up more time than plain language? Endless compliments and good-byes, interspersed with long series of break signs while frantically thinking of something else to say People hanging around the porch saying good-bye for half-an-hour after getting up to go" At the same time, 'DKI deplors rubber-stamp QSO's and finds that if he asks anyone for technical information, very few seem to want to carry a QSO beyond RST, QTH and QSL. (But all this is rather off the DX line.)

G2SA (Burnham) thinks country-counting is getting a bit ridiculous, with the competitors themselves drafting the rules of the game. He quotes the new prefix for Sicily and the strong suspicion that this will become another new one. He asks: "Why not GZ for Foulness Island, off the Essex coast, and new prefixes for Lindisfarne, Lundy Island and the Hebrides?"

G2BJY (West Bromwich) quotes two examples of misleading procedure by DX stations. One of them called a very long "CQ DX," although conditions were good and he was S9, and then went back to a comparative local, who must have been weak, because they had difficulty with the contact. The other DX station asked for trouble by putting out a plain "CQ DX" on a very lively band, giving no indication as to calling procedure. A lot of G's replied, and he worked one (whom he lost) and then talked about black-listing all the others who seized the opportunity and called him! As 'BJY says, if these DX stations want a good QSO, why don't they pick on a nice clean signal calling CQ DX and answer it? (Fortunately, some of them do—we have worked two or three new countries that way. But our joy on these occasions shows how rare it is.)

Many other readers have written, on such subjects as speed of sending, CQ-ing or not CQ-ing, and so on. They all make lots of sense for both sides of the arguments, and their various *pros* and *cons* more or less cancel out! We should sum them up by saying, "Call the other fellow at *his* speed," and "Call CQ at the speed that you'd like to hear coming back." Likewise, "Call CQ DX if you would like a VK, ZL, W6 or what-have-you," but if you want a rare one or a new one, listen and pounce.

From all the arguments and complaints put forward in this little treatise, the chief fact that emerges is this: Don't think *you* are the only one. If you have heard a nice piece of DX and called it, it's no good getting rattled if he comes back to someone else, or if

you hear a lot of others still calling when you have finished. If you indulge in sharp practice, rudeness or generally bad behaviour, you *may* have another prefix to add to your log, but you will be branded in the minds of quite a few of the decent types as yet another hog. Is it worth it? Would you sooner have a score of 120 and be considered a Nice Friendly Type, or a score of 200 and be regarded universally as a DX Hog? Think it over.

And then, after that, remember that this frantic DX-chasing is only one minor manifestation of the whole great game of Amateur Radio. Many others derive infinite pleasure from a friendly ragchew with a station they have worked a dozen times before—even if they miss that ZD5 in the process. Why shouldn't you?

Clamp Modulation

HOW IT WORKS, AND A PRACTICAL CIRCUIT

By A. G. WOOD (G5RZ)

FROM time to time articles appear in the technical journals describing some new form of modulating system possessing this or that advantage over the more conventional types.

Notwithstanding this fact, a system which claims, amongst other things, the following advantages is surely worthy of further investigation:

- (1) Ability to modulate from 5 watts to 1 kW with a handful of receiving valves,
- (2) At least 95% modulation.
- (3) No possibility of over modulation.
- (4) No transformers necessary.

In consequence, the writer, with all due deference to those with more experience in the art of radio-telephony, will proceed to describe such a system—if only on account of the very great interest it has caused whilst undergoing tests over the air.

Theory of the System

Consider the basic circuit of Fig. 1. The microphone output is amplified by

This is another interesting system of screen control modulation, whereby a high modulating capability can be obtained with the minimum of complication on the audio side. As in any screen modulated PA, the secret of success lies in the adjustment of the screen voltage swing in relation to anode voltage and the PA loading.—Editor.

the triode section of the first valve and rectified by the diode. The negative potential thus produced is applied to the grid of a suitable pentode, the anode of which is in parallel with the screen of the PA valve. High tension is derived from the main power supply through a suitable value of dropping resistor.

In the absence of any modulation, the pentode "clammer valve" draws a relatively heavy current and hence causes a substantial voltage drop across the resistor. This, of course, also drops the screen voltage of the PA valve to a figure well below normal operating level, which, in turn, reduces the power input the PA is taking, and also the amount of RF energy being radiated.

Upon modulation, the negative potential applied to the clamper valve grid will cause that valve to draw less current, thus reducing the drop across the resistor and so raising the screen potential of the PA, increasing the input and finally the RF power radiated.

That is the basic principle of operation, but, of course, there is a little more

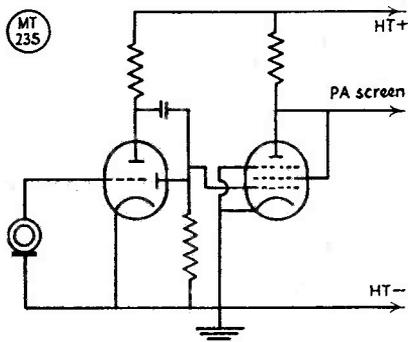


Fig. 1. Basic circuit of the Clamp Modulator system, which is similar to SAM in that control is applied to the screen of the PA valve.

in it than that, because certain definite limits are imposed by the degree of screen voltage variation permissible. Otherwise the system appears flexible enough and will permit of a number of different valve combinations. In the writer's case, this was made to fit the resources of the junk box, and the circuit which is now working most satisfactorily on the Top Band is in accordance with Fig. 2.

Before going on to describe the method of adjustment, it would be as well to mention that the HT supply to the PA should be at least as high as that normally used for Class-C CW operation, and preferably 50% higher. For example, the writer is using a VT501 (TT11) as PA. This valve is rated at 250 volts anode and screen, but, as will be seen, the anode voltage has been raised to 400.

Practical Points.

Now with regard to setting up: The cathode resistor to the clamper valve is put into circuit by opening S1 and, after the modulator filaments have warmed up, the RF stage is switched on and the cathode resistor adjusted until the maximum rated screen voltage is shown on the voltmeter V—in this case, 250 volts. Under this condition, the transmitter can be operated on CW in the normal manner. To go over to phone, it is only necessary to close S1, thereby short-circuiting the cathode resistor, which will immediately drop the screen voltage on the PA to a low figure—90-100 volts being about right. The gain control R5 is really a power output control, and this should be increased

gradually whilst the microphone is being used and a watch kept upon the voltmeter. It will be seen that on speech peaks the screen volts will rise very nearly to the full 250 volts, and will fluctuate violently between about 100 and 250 volts as modulation proceeds. In like manner, the PA anode current meter, and any form of output monitor (field strength meter, for example), will also vary in unison.

Regarding the value of the screen dropping resistor—in practice this should be as high as possible, and in the writer's set-up the full value of 45,000 ohms is in circuit. It is convenient, however, to make this variable in steps of 10,000 ohms, so that the modulator can be applied to other transmitters where the screen current of the PA valve employed may be radically different.

The Carrier Limits

It is important to see that the quiescent condition does not drop the PA input to too low a figure, otherwise the transmitter appears to behave more or less like a speech-controlled carrier system and the quality suffers. Also under these conditions another factor operates. The distant station will find that your transmission is smothered by QRM in between the speech peaks, as the receiver AVC comes in with a drop in your own radiated carrier level. A nice workable ratio seems to be roughly 3-to-1. That is to say, the peak reading on any of the meters employed should be roughly three times that obtained under quiescent conditions.

One very remarkable effect of using this system seems to be the very great ease with which long-distance communication becomes possible, even under bad QRM conditions. For example, using a mean input of 5 watts (minimum $2\frac{1}{2}$ watts, peaks $7\frac{1}{2}$ watts) on the Top Band, good solid contacts have been obtained with all parts of the country, including GW and GM, to say nothing of one-hour QSO's with GC. There has been criticism, of course, but in every instance from relatively local contacts, and these have been confined mainly to one of quality, and it is believed that this has been a function of the microphone used, and possible maladjustment in the speech amplifier section. In any case, with a carbon microphone and the cathode input as shown in Fig. 2, the critics have now reversed their views.

Experiments are proceeding with

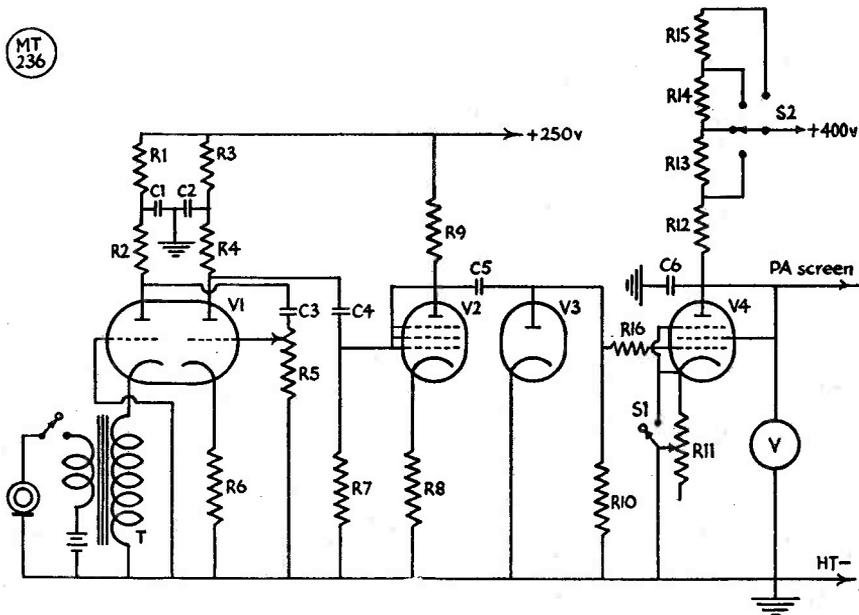


Fig. 2. Circuit of the Clamp Modulator unit with which G5RZ is getting successful results on the Top Band.

different types of microphone, but this hardly affects the main issue.

Operating Points

It is important to see that adequate RF drive is available, so that the PA is in true Class-C, and a useful form of additional adjustment is to have a variable negative bias battery, as by its use the correct balance of carrier level can often be obtained.

It is also important, for the safety of the PA valve, to make sure that the "clammer valve" is always in circuit with its filament alight before the main HT is applied. If not, there is, of course, no drain on the dropping resistor and the screen voltage will be allowed to rise to dangerously high levels.

The choice of position for the modulator control resistor seems largely to depend upon the type of microphone employed. It works well in the grid of the second AF stage, even with a carbon microphone input, but might be better located across the cathode of the first stage to prevent possible over-loading of this valve when using high-level input.

In conclusion, the writer would like to

Table of Values

Practical Clamp Modulator for Top Band Operation

C1, C2	=	0.1 μ F	350 v/w
C3, C4, C5	=	0.01 μ F	
C6	=	0.001 μ F	max. 400 v/w
R1	=	39,000 ohms	$\frac{1}{2}$ watt
R2	=	220,000	$\frac{1}{2}$
R3	=	20,000	$\frac{1}{2}$
R4	=	270,000	$\frac{1}{2}$
R5	=	1 megohm	volume control
R6	=	3,300	$\frac{1}{2}$ watt
R7	=	330,000	$\frac{1}{2}$
R8	=	2,200	$\frac{1}{2}$
R9	=	330,000	$\frac{1}{2}$
R10	=	1 megohm	$\frac{1}{2}$
R11	=	3,000 Pot	w/w 5 watt
R12	=	15,000	5
R13, R14, R15	=	10,000	5
R16	=	220,000	$\frac{1}{2}$
V	=	0-500	voltmeter
M	=	Microphone,	carbon type
S1	=	CW/Phone	control switch
S2	=	4-way	single pole selector
V1	=	6SL7 or 6SN7	
V2	=	6K7	
V3	=	6H6 or EA50	
V4	=	6G6 (or 6F6, 6V6, 6Y6)	

accord all credit for the idea to W6CXM and the article by him in the *American Radio News*; to G4SC for so kindly bringing the subject up; and to numerous fellow-amateurs for their helpful co-operation and constructive criticism in tests of the equipment.

More About Carbon Microphones

OBTAINING QUALITY AND CONSISTENT OUTPUT

By P. M. CARMENT, Assoc. Brit. I.R.E. (G5WW)

THE article by G3ESP (*Short Wave Magazine*, Dec., 1950) on carbon microphones has prompted the author to add his comments in support of this much-maligned device. Shortly after the post-war return of licences, the high-grade transverse current microphone at G5WW developed the annoying habit of ceasing to function until it was knocked. Eventually, the trouble became too frequent to be tolerated, and investigation showed that the electrodes required re-plating and new granules were also needed; consequently, an alternative low-cost high-output instrument was sought. A number of GPO inserts were in stock, together with a selection of hand and "candlestick" mounts of the ex-Air Ministry type, as described by G3ESP.

The various mounts and inserts were tried out, but the usual "carbon quality" (so-called) was the result. The methods suggested by G3ESP were tried with a very great improvement, but the quality was still not up to the required standard.

Carbon Inserts Tested

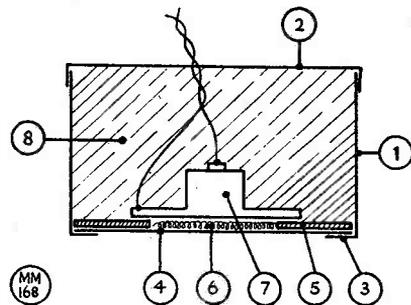
The next stage was to select a really good insert. There are a number of different types available, both with GPO and WD markings. Those, such as the Post Office No. 10, which have a thin piece of oiled silk stretched behind the perforated metal front, should be avoided. The best type tested so far is the GPO No. 13, which has a remarkably good response in the range 100-3,000 c.p.s. when used away from any of the usual mouthpieces. These mouthpieces, though they greatly increase the output from the insert, introduce resonances which are most undesirable from the amateur viewpoint. If a number of inserts are

Carbon microphones are still widely used in amateur phone equipment, and can be made to give good results. Main advantages are cheapness relative to most other types, ready availability, and the high output obtainable, which simplifies the speech amplifier. Our contributor is a well-known advocate of the merits of the carbon microphone, and in this article discusses how quality can be improved and stable output obtained with standard inserts.—Editor.

available, it is well worth while trying them all to find the best specimen. This can conveniently be done with an audio oscillator, loudspeaker, amplifier and output meter—but if such equipment is not available, quite a good method is to listen to the microphone on headphones (or a loudspeaker in an adjoining room) whilst it is picking up from an ordinary BC receiver, preferably on a musical programme.

The Mounting

The next stage was to devise a really resonance-free mounting which would also impart a "professional appearance" and hide the guilty secrets of the interior. The method finally adopted is shown in the sketch. The procedure is as follows: Obtain a circular or square tin box some 3 to 4 inches across, and carefully cut out the bottom, leaving a flange about $\frac{1}{2}$ -inch wide all round. Place the box bottom downwards on the



Cross-section of the construction of a high-quality carbon microphone using a GPO No. 13 insert. 1, tin box; 2, lid; 3, flange left after cutting out bottom of tin; 4, metal grille backed by cloth; 5, felt pad; 6, lightly packed cotton wool; 7, microphone insert; 8, firm wool packing.

bench and fit a grill of metal gauze or perforated zinc over the opening that has just been made. Place a piece of thin cloth or silk over the grille. Next, cut a disc (or square) of carpet felt to fit the box; in the centre of this, cut a circular hole having a slightly smaller diameter than the insert. Put the disc in the box and fill the centre hole with lightly-packed cotton wool. Stand the insert on top and hold it in position by packing the remainder of the box with cotton wool. This also serves to damp any chamber resonance. Before attaching the lid, arrangements must be made to bring out the leads.

Results

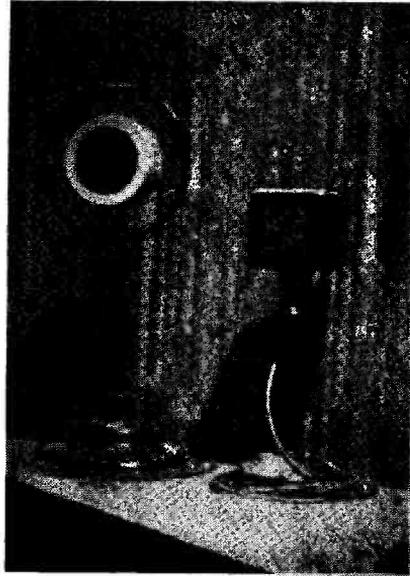
The results obtained with a microphone constructed in this way are amazingly good, and when heard *via* a modern communications receiver, compare very favourably with a high-grade moving-coil instrument.

The type of microphone described here has been in service at G5WW for several years, and the writer has now got over the novelty of asking other operators to guess the type. Amazement was generally expressed when they were told.

Input Circuit

The present trend is to use carbon microphones in the cathode circuit of the first stage of the speech amplifier, but the advantages of transformer coupling to the grid, in the good old-fashioned way, should not be completely overlooked. A shrouded transformer is essential in a mains-operated amplifier. Considerable gain can be obtained from the transformer, which is not possible with the cathode coupling system. But on the debit side, some form of energising is necessary. A two-cell cycle lamp battery is adequate, and if a relay is provided to open the battery circuit automatically during reception periods, it will be found that the battery will last for its shelf life, which may well be over 12 months. Three volts should be enough for adequate output. Higher voltages will increase the output but will also bring up the background hiss and cause high operating currents which, in turn, will cause frequent packing and short life for the insert.

The high output of this type of microphone allows the construction of a QRO modulator with a minimum number of stages, which to the amateur means freedom from hum and RF feedback troubles. The modulator in use at



Two microphones produced by G5WW on the principles discussed in his article. That on the left is in a circular container which at one time held a high wattage resistor. The microphone on the right is built into a rectangular metal box and the stand is adapted from an ex-A.M. "candlestick" telephone.

G5WW has only two stages of speech amplification: single 6J5 into two 6J5's in push-pull, driving two 807's in Class-AB2. It has a measured output of over 100 watts, although in practice this output is never required.



FESTIVAL OF BRITAIN

Further to the note on p.761 of our January issue, we are informed by the Council of Industrial Design (Industrial Division) that callsign G3FB has been issued for the use of the Travelling Exhibition station to operate on the amateur bands. Operators-in-charge so far nominated are G6OM (for Manchester, May 4-26), G6KU (for Leeds, June 23-July 14), and G6CW (for Nottingham, September 15-October 6). Holders of Class B licences in these areas are asked to get in touch with the operators i/c if they wish to be identified with the activities of G3FB during the visit. An organiser was still wanted for Birmingham, August 4-25, though it is hoped that the necessary co-operation will have been forthcoming by now.

Test Gear Economies

COMBINING THE GDO WITH THE VALVE VOLTMETER

By D. P. TAYLOR, M.B.E., A.M.I.E.E.
(G8OD)

ALL those whose interest in Amateur Radio extends beyond pounding brass or talking at a microphone will have felt the need for adequate test equipment. Since all but the very simplest instruments require power supplies and high-grade meters, the provision of test equipment—even if home-made—calls for considerable expenditure of time and money.

Two of the most useful instruments to the amateur experimenter are the valve-voltmeter and grid-dip oscillator. Whilst constructing these items recently, it occurred to the writer that these two instruments have many points in common, particularly, the power-pack and milliammeter. On further reflection it was decided that it was unlikely that they would both be in use simultaneously.

The usual type of valve-voltmeter has a circuit based on that shown at Fig. 1A. The valve V1 is a diode mounted in a probe at the end of a flexible lead; this produces a DC voltage across its load resistance R, equal to the peak

value of the applied AC. The negative end of this load resistance is connected to the valve-voltmeter valve V2 for measurement. (The valve V3 is merely a source of balancing voltage and is sometimes replaced by a resistive potential divider. For convenience in calibration, the metering valve V2 is arranged to operate at a fixed full-scale deflection, and range-changing is carried out by tapping off a known proportion of the voltage across the diode load by means of the potential divider R1.)

Combination Arrangement

A meter of this type can conveniently be combined with a grid-dip oscillator, at very small extra cost. The only modification necessary to the valve-voltmeter is to wire an additional pin on the probe socket to + HT (this is shown dotted in Fig. 1A.)

A grid-dip oscillator can then be made up in compact form, and provided with a flexible lead terminated in a plug of the same type as is used for the valve-voltmeter probe. (This is shown in Fig. 1B.) Of the four wires in the flexible lead, three carry the power supplies, *i.e.*, HT, heater voltage, and common; the fourth is connected to a tapping on the grid resistance of the grid-dip oscillator. This tapping can be made about half-way up the resistance. Under non-oscillating conditions, this point is at earth potential (or very nearly so), and its connection to the metering valve V2 will result in zero deflection. When oscillation occurs, the

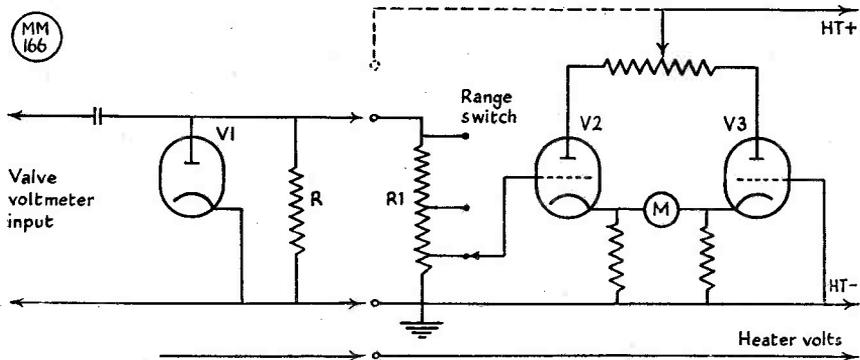


Fig. 1A. A valve voltmeter with external diode probe; this can be inter-changeable with a GDO to use the same meter and power supply—see Fig. 1B.

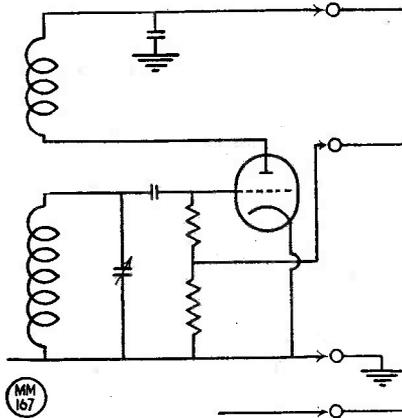


Fig. 1B. A grid dip oscillator arranged to work into a valve voltmeter, in the manner suggested by G8OD.

flow of grid-current causes a voltage drop across the grid resistance, making the tapping point negative with respect to earth. This negative potential is measured by the valve-voltmeter. The reading of the valve-voltmeter is a function of the grid-current flowing,

which is, in turn, a measure of the amplitude of oscillation of the GDO.

The use in this way of a combined valve-voltmeter and grid-dip oscillator has the following advantages:—

- (a) A single power-pack and meter is used for both instruments.
- (b) increased sensitivity is obtained, due to the gain of the valve-voltmeter valve V2.
- (c) Use can be made of the voltage range selector switch of the valve-voltmeter to obtain a suitable deflection on the meter.

A further economy can be effected by the addition of a four-pole change-over switch of the wafer type and an additional five-pin socket on the basic instrument. This socket should be of different fitting from that used for the probe and grid-dip oscillator. The switch should be wired in so that, in one position, the power supply and milliammeter are connected to the valve-voltmeter as before; in the other position these are connected to the additional socket. This socket can then be used to provide power supplies and a meter for other items of test equipment, e.g., modulation meter, field-strength meter, audio oscillator, and so on.

DENCO REORGANISATION

We are informed that Denco (Clacton) Ltd. have transferred to The Heightman Company, 25 Coppins Road, Clacton, Essex, the manufacturing and sales rights relating to the DCR-19 Receiver, the CT4 Coil Turret, the IFT9 Transformer and the CFU Crystal Filter Unit. All correspondence in respect of these items should be directed to the address given. Denco (Clacton) Ltd. will continue to supply all products other than these, as listed in the Denco catalogue.



ON LEARNING MORSE

A large number of those who in these post-war years have been successful in passing the GPO Morse Test for an amateur licence have the Candler System to thank for their code proficiency. Established 40 years ago, the Candler Co. have several Courses designed to bring the learner up to different operating standards. The Junior Code Course is that most favoured by amateurs in this country, and recently matters have been simplified still further by the introduction

of a special course designed to meet the specific requirements of the GPO amateur licence test. There is not the least doubt that the Candler method of home tuition in Morse code does give the most remarkable results, and no beginner need hesitate about adopting it. Full details of these Courses, and the Candler *Book of Facts*, can be obtained from: The Candler System Co., 121 Kingsway, London, W.C.2.



SMALL ADVERTISEMENT NOTE

Many readers who use our Small Advertisement columns regularly employ Box Number addresses; to save space, we do not give the *Magazine* address after each Box No. printed, but those wishing to answer such an advertisement should send it to Box No. —. Short Wave Magazine Ltd., 53 Victoria Street, London, S.W.1, which is our only address for *all* correspondence (the QSL Bureau excepted). We mention this point because some readers appear to have been in doubt as to where to send replies to Box Number announcements.

DX COMMENTARY



By L. H. THOMAS, M.B.E. (G6QB)

THE switching of interest to the LF bands seems to be intensifying—and no wonder, with even Twenty as dead as a doornail early most evenings. Fortunately, there is no lack of activity on the other bands; far from it! The number of stayers-up-late on 7 mc has increased so greatly that the QRM problem persists until well after midnight; and the population of the Top Band between 0300 and 0600 on quite ordinary weekdays has to be heard to be believed.

Yes, these are strange times for the DX-chaser, but full of interest all the same. Even 28 mc obliges with an occasional opening; we heard 23 countries on phone one recent Sunday morning, although the population at the CW end was confined to one UA3.

The Top-Band DX

We do not propose to deal in detail with the Transatlantic Tests, since a full report on them will appear in the April issue, after the last week-end rush has died down on March 11. Sufficient, now, to quote some of the best performances and to remark that things are going remarkably well. Conditions on the band have been found to vary from day to day, to a much greater extent than one would have expected. Thus, those energetic souls who have sacrificed sleep on week-days as well as week-ends

have been rewarded with some wonderful spells of DX.

Last month's notes covered only the January 14 tests. Immediately after that week-end, the conditions seemed to improve, January 18 being a particularly good morning. Five or six stations got across from this side, including GW3ZV (Rhigos), who worked eleven W's during that session. Among them were W4BPD and W9FIM.

Next came the first "special period," with everyone QRX from 2200 to 0200 GMT, in spite of a local contest playing

Calls Heard, Worked & QSL'd

Old Harry with the band. At least five G's got across that night, as W2ESO is known to have worked G2PL, 6BQ, 6GM, 8NF and GW3ZV. Other interesting things happened: W1BB heard HC1JW, several G's heard several W's, and EK1AO heard and worked lots of G's.

On January 22, G3DIY (Penzance) heard HC1JW at midnight. 'DIY and GD3UB called him repeatedly but had no luck. W1BB and IEFN also called him without result.

During the next Scheduled Tests, on January 28, conditions were rather better before 0500 than they were during the tests. About 20 W's were heard in this country that morning. On the listening side, the star performance was put up by G. C. Allen (Thornton Heath), who logged WØTQD on 1995 kc, as well as hearing KV4AA. The WØ is in Nebraska and not too far from the 7th District, so, considering the great length of the overland path, this is pretty terrific DX. KV4AA was also heard by G6QB, but no one else seems to have noticed him; he, too, was on 1995 kc.

Several G's got across for the first time that morning (January 28), including your Commentator, who was surprised and pleased to hear W1BB come back. GW3ZV was not on the air, which probably helped some of the weaker ones to attract attention.

The Tempo Speeds Up

By the time we reached February 11, for the next 0500-0800 session, everyone seemed to have got things nicely sewn up, and there were very few cases of off-frequency or off-clock operation. The result was that more and more people got their contacts.

We have already said that we are not

going to make this a full-scale report, but enthusiasm compels us to state that (a) More W's than ever before were heard, and (b) More G's than ever before got across to them. GW3ZV worked fourteen of them in W1, 2, 3, 4, 8, 9 and VE3, including three phone contacts. W4KFC came up and exchanged numbers (in the ARRL Contest) with several G's, and he was up to S9 on occasions! 'ZV worked him on all five bands in the Contest, and says it's a pity they weren't both working TV, or they could have looked at each other as well.

Other high scorers on February 11 were GW3FSP (Neath), who worked nine W's, and G3PU (Weymouth), who collected eight. Contacts with EK1AO and TA3FAS are becoming so numerous that we hardly regard them as DX any more.

As another comment on all this very exciting Top Band DX, let us refer you to EK1AO's beautiful list of Calls Heard and Worked, on a later page.

Final Flash: An undoubted record was set up by G2NM (Bosham). He worked five W's on February 11, 1951, and he also worked several on the 200-metre band in the original Trans-Atlantic Tests of 1923. Certainly no one else can claim this distinction. As Gerry says, the position is now reversed; in 1923 they had 250 watts input with an O-V-2 receiver, and now it's 10 watts with a modern communications job. Much has changed in 28 years.

An Award Worth Having

We of *Short Wave Magazine* have for a long time shunned the idea of issuing any sort of DX Certificate, for, goodness only knows, there are enough of them already. The to-and-fro traffic in QSL cards, done up in large registered bundles, must keep a few postmen permanently employed.

At last, however, we have thought it right to offer an award that must surely be the most comprehensive (and perhaps the most difficult) yet suggested. We doubt whether anyone can sit right down now and claim one, although there *may* be some hidden talent lurking somewhere; but the thing *is* possible.

The accompanying panel shows the conditions. Several operators are known who would qualify on four out of the five bands, but will someone come forward who can manage all five? If he can, we shall be delighted to issue him with Certificate No. 1 and to inform him that he has not much to learn as an all-round DX-worker.

THE SHORT WAVE MAGAZINE DX AWARD

For the first time, we offer a Certificate for outstanding DX work. This will be known as the SHORT WAVE MAGAZINE DX AWARD and will, by the very difficulty of achieving it, be regarded as one of the highest distinctions that an all-round DX worker can attain.

To qualify for the Award it will be necessary to supply proof of having worked the following:

- 1—Three continents and 15 countries on 1.7 mc.
- 2—Five continents and 40 countries on 3.5 mc.
- 3—All continents and 80 countries on 7 mc.
- 4—All continents and 180 countries on 14 mc.
- 5—All continents and 90 countries on 28 mc.

Since this involves a total of 405 QSL cards, we are not going to demand that they should all be produced. In claiming the Award, a list of all the necessary contacts must be sent in, giving Date, Time, RST and Frequency.

The judges will then make a "percentage check" on verifications, by scrutinising the lists and asking for the production, at their discretion, of certain specific QSL's for each frequency-band. Failure to produce any of those requested will naturally invalidate the claim.

Claims, and any correspondence relating to this Award, should be addressed "DX Award," *Short Wave Magazine* 53 Victoria Street, London, S.W.1.

Keep a place on your wall for the SHORT WAVE MAGAZINE DX AWARD—and if you qualify, please apply in accordance with the conditions.

Forty-Metre Topics

Now we've dealt with the DC Band, let's descend to the LF bands and see what comes forth. Forty has been in brilliant form most of the month, and so have some of the super-lids who use it. We have heard some marvellous displays by certain of the T6-plus-chirp-keyed-with-left-foot types, but, despite it all, the DX work goes on. The said types are probably sublimely unconscious of it all. One of these days we'll try to prepare a thesis on what makes them tick. [over

In the Four-Band Marathon, G3ATU (Roker) soars to the top with a score of 65 countries on 7 mc since the beginning of the year. Where he finds 'em all we don't know, and he doesn't tell us much. He tried dangling a ground-plane aerial from his long-wire, but interaction messed up the low-angle radiation from both. The one who really *has* been going places with a ground-plane is G2AVP (Debden), who has put his post-war total for the band up to 98 and means to top the Century any day now.

AVP says it's amazing to listen to an S9 local on his ordinary doublet and then to switch to the ground-plane and find him S3, with some S7 DX on the same frequency—previously unheard. He has heard VE's at 1400 and W5's at

2100, all inaudible on the doublet. Recent DX on 7 mc included KV4, TG9, VP7, HC, HH, KG4, VP5, AR8, FP8, VP8, UD6, UI8 and a very doubtful YA2A! He asks, by the way, whether FP8BX is genuine. Well, we listened to a very long QSO between him and FM7WF and came to the conclusion that he is. He's T6, chirpy, and jumps anything up to 25 kc at a time. For a QSO with him you need both hands free!

G2BW (Walton-on-Thames) heard MP4, ZC4, VS7, VP5 and FF8; he worked W's, ZS and (again) YA2A. G2HKU (Sheerness) worked VO, ZB1, TA and W, but also heard ZS, VK, ZL and HK.

G5FA (London, N.11) is, of course, an Old Salt on Forty. He weighs in with VP4, VP5, KP4, FM7, MP4, HZ, Y1, TF, ZL and other nice ones. G3FXB (Hove) has found it the best band for DX, and has raised CO, KP4, KV4, VP5, VP6, VP8 and YV.

G5JU (Birmingham) collected FP8BX (*see above*) and also heard plenty more DX. He finds the VP4 and VP5 stations a nuisance, always working each other and ignoring DX! G3ABG (Cannock) has not worked much since last month, but heard CX, FF8, MP4, VS7, FM, VP5, VP8, ZE and a very interesting RST229 phenomenon signing FC1WP, of whom we would like to know more.

G8IP (Hampton) was pleased with VP8AP (South Orkneys), but missed out on VP8AO (South Shetlands), who was heard reasonably well on phone.

That's about the size of the 7 mc DX, and to us it seems pretty big.

Poor Old Twenty!

Although you can raise plenty on 14 mc, it is only a shadow of its former self. Notorious W6's and KH6's who never used to show up with less than an S9 signal, can now be heard creeping through on their hands and knees. Now and then, however, there are flashes of brilliance—but not very often.

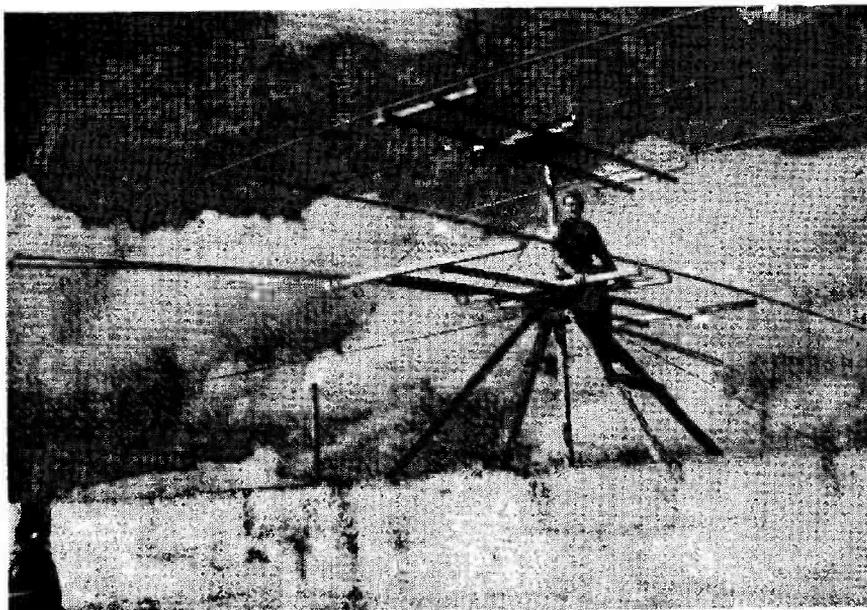
We don't propose to devote much space to individual comments, in view of this, but feel that we ought to mention that ZS2MI is frequently around, and that VT1AC and 1AF are perfectly genuine. VT1AF has been heard lots of times, and worked twice at some length. He has now come on with a nice T9 signal, his former T6 rock-crusher having been VT1AC's transmitter, now being rebuilt.

G2WW (Penzance) had some good phone contacts, including AR8BC,

FOUR BAND MARATHON (STARTING JANUARY 1, 1951)

Station	Total Points	3.5 mc	7 mc	14 mc	28 mc	Countries
G3ATU	119	7	65	44	3	84
G6QB	119	11	35	68	5	84
G5FA	113	9	53	48	3	66
G3ABG	100	18	55	26	1	59
G5JU	93	19	31	40	3	56
G6QX	85	28	30	25	2	46
G2AVP	82	8	63	9	2	70
G5BZ	80	17	15	47	1	60
G8IP	77	6	34	34	3	52
G3GUM	68	14	19	34	1	46
G3FXB	67	12	22	32	1	49
G6TC	64	12	24	26	2	38
G3EDA	47	6	17	23	1	35
G6AT	39	7	20	10	2	27
G2BW	39	14	12	12	1	27
G3COI	35	10	5	19	1	28
G2YS	21	7	8	4	2	13

Note:—You may join in at any time, but your total score (if a new entry) or your additional score (if already in the table) must not refer to QSO's back-dated by more than two months. Scores should be reported progressively, month by month. Failure to report for three consecutive months will be taken to indicate that you have dropped out of the Marathon.



The rotary beam assembly at ZB1AH, Malta, for operation on Ten and Twenty. The 28 mc section is 3-element and that for 14 mc is two elements.

CR7's, FF8DA, MI3ZX, TF5TP, YV5CN and ZS3S. Unfortunately, he has had to go into hospital for an operation, and, as he says, will be tied to the medium-wave band for some weeks. Rival 'chasers will, we are sure, join us in wishing him a quick recovery and a return to the DX that he has missed.

G3ATU heard KC6WD, XE1AC and FB8XX, and worked VT1AC for a new one. He also says that ZS2MI has been putting some phone out. G3GUM (Formby) comments on the curious habit the band has of closing about 1830 and re-opening for LU, CX and so on around 2100-2300. Various CP's, YV's, CM's and the like often show up during the latter period. (During one such period we managed to snag a CR5 for a new one!) One night 'GUM followed an S8 signal up and down the band, and it turned out to be CE3CU testing out his new VFO with a local.

The best for G2BW were JA2XE and KG6GD; conditions, he says, have been very poor, but patience on the receiver pays dividends—and how true! G5MR (Hythe) found FF8AC for a new one. G3FXB thinks the band is improving at last.

G8IP worked W4CFD the long way round; the W4 was only able to receive him with his beam aimed WSW. (On several occasions we have heard W4's with a tremendous "echo," the echo being stronger than the first signal to get here.) Other nice ones were F8EX/AR, CR5AC and ZS8MK.

Maybe Twenty will be more like its old self by now. In the old days it always seemed to perk up in the Spring, irrespective of Solar Cycles and all that.

DX on Ten Metres

Ten is a much-neglected band these days, but its true devotees never fail to rally when someone says it's dead. Hence a longish letter from G2CBA (Rochester), who, on ten-metre phone, worked VQ2, VQ4, VS9, ZE, MP4, VS7 and many W's and ZS's on February 4 before losing his beam in the gale. (We lost our forty-footer the same morning!)

GM2DBX (Methilhill) also found some openings and raised TI, HC, MI3, ZS, VP3, KV4 and VS7—all on phone. G8IP struck what he calls a "perfect example of a small, rapidly-dispersing cloud of ionisation" on February 10. For about an hour certain W3's and W8's were putting S9 signals across, with

just a few weak signals from other areas. During the peak he was working them at one a minute.

Notes and News

We have a large mail which does not refer to any particular wave-band or any particular brand of DX, and will try to cope with it all under this rather general heading. G3AQZ (Mawdesley) left Hong Kong in January, *en route* for the U.K. At Singapore he met VS1DK and discovered that he was to be a fellow-passenger; at Colombo they both contacted VS7GW and had the Freedom of the Shack. In Karachi they descended on AP2N, who gave them details of MP4BAF, so at Bahrein they contacted *him*. There the plane changed crews, and the new radio officer was G3ALC; at Rome they changed again and the radio officer after that was G3CYC! G3AQZ, by the way, is ex-VS6BW, the latter call now being off the air for good.

G3AAM (Birmingham) tells us that ZS6DO is handling QSL's for CW contacts with ZS2MI. His QTH is Box

4887, Johannesburg. If a reply-coupon is sent, ZS2MI's card will come direct.

G5JU thinks it a pity that our Four-Band Marathon was not extended to Five Bands, in view of the conditions on the low frequencies. We had a thought on those lines ourselves, but for some reason decided that Four was enough. Maybe next year . . . 'JU managed a 3.5 mc WAC last year, and received a report from a VS1—579 at that!

G6AT (Hampton Hill) has had a virulent case of BCI which has kept him off the air a little. He passes on the strongest recommendation that, in *difficult* cases, the help of the GPO should be sought—some chaps seem to be frightened of the idea. 'AT's high spots were his first 28 mc phone QSO with a W, a contact with CO6PP on 7 mc, and the arrival of a QSL from EK1!

G6QX (Hornchurch) asks who the SL's are; they are Swedish stations of a semi-military nature. He also wonders whether the 9S4's will be recognised as a country? We don't think so.

G2YS (Chester) considers it a pity that some DX stations imagine we can all stay up all night and every night—particularly on the Top Band. He quotes HZ1KE and TA3FAS as "threatening" to come on at certain times and then failing to materialise, with hundreds of G's getting extremely cold and sleepy. We agree that DX stations ought to co-operate to some extent and not leave *all* the effort to us.

G5FA had a card direct from LZ1KS for a 7 mc contact. The LZ wants a crystal in the CW part of 14 mc, so anyone else wanting his card knows how to get it. . . . G5PS (Kings Langley) says that the remark last month about penny-postage-for-printed-matter was an Error which Crep' In; it has now gone up to 1½d. except for Colonies and Dominions.

From Overseas

VE3BWY, who was, of course, G6WY and our predecessor in this space, writes to confirm that there was a YA5XX in 1937 and 1938. "To everyone's surprise," as Ham says, "he turned out genuine." 'BWY has been off the air but is now back looking for G's again.

VQ4BY is a newcomer and asks us to say that his QTH is D. D. Grieve, Box 5681, Nairobi . . . EK1AO (Tangier) passes on the information that his Top Band transmitter uses a 6V6 (VFO),

ZONES WORKED LISTING POST WAR

Station	Z	C	Station	Z	C
Phone and CW			Phone and CW		
G6ZO	WAZ	227	G8PW	38	129
G6RH	WAZ	224	G3ABG	37	129
G6QB	WAZ	214	G2FYT	36	133
G5YV	WAZ	205	G2YS	36	130
G3ATU	WAZ	203	G6QX	36	125
G2FSR	WAZ	196	G6TC	35	108
G4CP	WAZ	195	G3GUM	35	103
G3DO	WAZ	191	G3FGT	34	129
G8IG	WAZ	181	GM3GVZ	34	107
G2VD	WAZ	171	G6AT	34	100
G3BI	WAZ	162	G2DHF	34	99
G3TK	WAZ	157	G2BBI	30	100
G3AAM	WAZ	154	Phone only		
G2IO	WAZ	152	G2AJ	38	157
G3YF	WAZ	152	G3DO	37	154
G8IP	WAZ	139	G6WX	37	128
G3AZ	WAZ	133	G8QX	36	139
G5BJ	WAZ	126	G3COJ	36	134
G5VU	WAZ	124	G2WW	36	134
G2AJ	40	196	G2VJ	34	116
G2WW	40	183	GM2DBX	32	95
G3FNJ	40	150	G2BBI	30	97
G6BB	40	136			
G3BNE	40	132			
G5MR	40	126			
G3DCU	39	159			
G5FA	39	151			
G3BDQ	39	140			
G3COJ	38	157			
G2BJY	38	152			
GM3EST	38	131			

output. The aerial is a dipole, "well spaced and very clear," and the receiver a BC-348L with a noise limiter.

In the next month or so you will be reading notes under the above heading from G2AVP, who is about to step on the boat for 2½ years in the Middle East. He doesn't know where he is going, but says it may be ST, YL, VS9, ZB1, MD1, VS8, ZC1, ZC4 or MD5. He fervently hopes it won't be the latter, as he couldn't bear to become an SWL again. He's taking a rig with him—all bands, 1.7 to 28 mc—so look out for him with some call or other, and wish him luck!

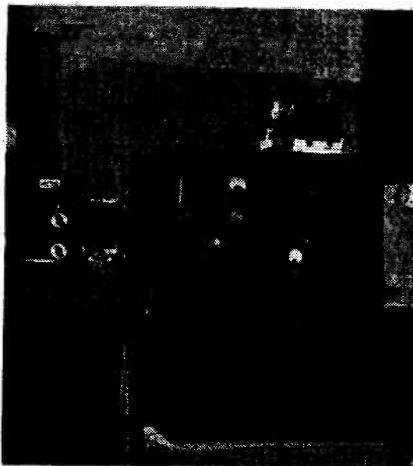
Ian West is an SWL in Aden, hoping for a VS9 call. He heard several G's on phone in a recent contest and says he will be glad to send reports to anyone interested. He has heard a station signing "YL3LI" and would like to know more. Pirate, we should say.

Miscellany

G3GOX (Colyton) is a newly-licensed YL with a great liking for QRP work. She says 7 mc is great fun with an input between 1 and 3 watts, but needs a lot of "low cunning and QRM-dodging"; and she adds, "Talking about operators who don't listen before calling CQ—some of them don't seem to listen afterwards either, do they? They can be heard calling CQ again, whilst others are calling them up and down the band. . . . Still, it takes all types to make a world." And how we agree—with the proviso that it might be a better world *without* certain "types."

G3EIZ (Liverpool) sends some interesting items gleaned from the Radio Amateurs' Programme broadcast by OTC2 (Leopoldville), mostly concerning individual DX stations. Samples: FK8AJ is on 7 mc phone, KB6AM is on 14022 CW, CR8AJ is on 28080 and 28950, CR10AA on 14124, 14164, 14316. 'EIZ says this broadcast is made every Wednesday at 2015 on 31 metres. It is in French, and on the first Wednesday of the month incorporates a report from REF on activity in the French Colonies.

G3COI (Wolverhampton) is kind enough to say that he derives enjoyment from reading this Commentary, but thinks it should be re-named (for him) "Those You Have Missed." GM3EST (Motherwell) heard YS1MS calling CQ on 20-metre phone, and went back to him, thinking that YS was a new prefix for Yugoslavia or Roumania! So, he had the pleasantest shock he has had for a long time. Another nice one was



The station of Y13BZL, ex-G3BZL, with VFO 807-6L6-807 transmitter, HRO receiver, and a 14 mc dipole.

VT1AC—previously mentioned.

G3BQJ (Darlington) puts that town in the news with an activity report covering nine local amateurs. 'BQH himself leads the DX field up there with 97 confirmed, followed by G2CKN with 85 confirmed. Among the other active ones are G6YC (with a card from VR1C!), G3GEJ (just working his first DX), G3BIS, G8IA and G3CDM.

Department of Low Moans

Yes, we have several complaints again—a healthy sign, were it not for the fact that they are mostly the same old grievances. For instance, G5BZ (Croydon) is out for the scalp of someone (a G) who worked phone on 3520 kc at 0730 GMT, when all the keen types were working or chasing ZL's. GM3EST suggests that it is good manners to wait for a VA sign from the DX station before calling him. Alas! the owner of the good manners turns out to be the mug, and finds someone else has got in first. As 'EST says, it would be nice if some of the chaps with very high scores would let some of the less fortunate have a chance—but this would mean waiting until the DX man signed VA, which is where we came in.

G3BT (Derby) is an Old Timer who has come back and has been slightly mystified by habits and behaviour, not 807 (Buffer) and 805 final with 250 watts

to mention "QTH" instead of "QRA"! He wonders why all good signals nowadays have to be "S9 plus umpteen dB's"? Presumably, just because S-meters are calibrated optimistically. 'BT reminds us that S7 or thereabouts was once considered a cracking good signal, whereas nowadays it is almost unnoticed! And he doubts whether all this competitive spirit is necessarily good for the health of the hobby at all; he finds a certain slavish adherence to certain types of circuit, but lots of ingenuity in squeezing them into odd-shaped boxes. Finally, he remarks that he has now got a super-modulated rig going on the Top Band, but doesn't save anything in the way of valves or circuitry, and finds it definitely dangerous as regards distortion and TVI, compared with the old "natter

set" with straight circuits.

D. W. Wooderson (Bexleyheath) and others have asked why we didn't put captions to the photographs that headed this feature throughout the last volume. The answer is that they were all "cut-outs" from photographs that had previously appeared in print, either in the *Magazine* or our *Short Wave Listener*. With the commencement of a new volume, you will notice the change—from this issue onwards.

Next month's deadline is **March 14**; for the May issue it will have to be as early as April 11, so please keep that date in mind. Address everything, as usual, to DX Commentary, *Short Wave Magazine*, 53 Victoria Street, London, S.W.1 Until next time, then, 73, Good Hunting—and wait until he signs VA!

TOP BAND

Calls Heard and Worked

EK1AO, J. M. CORDOVA, 34 GOYA STREET,
TANGIER.

January 6:

Worked: G2FMN, 3DIY, 3ERN,
3FEW, 3GGN, 3YF,
GM3EHI, G3GGN
(Phone).

Heard: G3PU, 6GM.

January 7:

Worked: G2HKU, 2JF, 2YY, 3ERN,
3GNR, 3PU, 6AB, 6GM,
8JR, VE1EA, W1BB,
1EFN, 8WXV.

Heard: W8FLV.

January 14:

Worked: G2AJU, 2DBW, 2NJ,
3AIL, 3BDQ, 3BXN,
3CCZ/A, 3CNY, 3DXI,
3GGN, 3GIO, 3GRF,
4AU, 4MU, 5JL, 5KM,
5MY, 8NF, GC3FSN,
GW3FWY, 5BI,
HZ1KE, OK1AWA,
VE1EA, 3AAZ, W1BB,
1EFN, 1PLO, 2EQS,
2ESO, 3PMG, 3LII,
8FLH, G2PU (Phone).

Heard: W3FNF, 8FIR.

January 20:

Worked: G2PT, 3EDW, 3EGJ,
3TM, 5LC, 6UT,
GW3ZV, OK1AWA.

January 21:

Heard: G2LC, 3BIT, 3BT, 5HB,
8JM, 8NF, GW3FSP,
W1BB, 2UKS, HC1JW.

January 27:

Worked: G3AKU, 3ERN, 3FLQ,
3GNR, 3YA, 5XB,
GW3CDH, 3FSP.

January 28:

Worked: G2AOL, 3BDQ, 3DIY,
3SU, 3TM, 6JJ, 8NF,
G16YW, VE1EA, 3AAZ,
W1BB, 1BEU, 1DVS,
1EFN, 1KDX, 1LYV,
1PLO, 1RQR, 1SAN,
1ZE, 2BFA, 2BLR,
2ESO, 2UKS, 3LOE,
9PNE.

Heard: W3PMG, 9CVQ.

*The Short Wave Magazine is an Independent Publication
for the Advancement of Amateur Radio*

Portrait Gallery

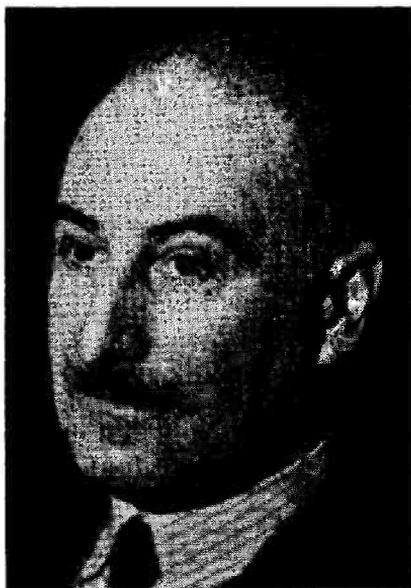
G6MN

ERIC MARTIN, of Worksop, Notts., was born in that town and has been busy keeping it on the air since 1927. Long before that, however, the embryo G6MN was playing with crystal detectors, and he is one of the relative few who can claim that they heard the BBC stations take the air one by one. He started his amateur-band listening on 440 metres.

From 1927 until 1939 the station was active on all bands, with a brief spell of operation from London in 1935. G6MN does not claim to be a DX man, but holds the WAC and WBE certificates, with more than 100 countries worked.

Present activities include operation on the 28, 144, and 420 mc bands; his post-war interest in VHF work has already resulted in the acquisition of a VHFCC Certificate. With a transmitter running at 140 watts (a modified SCR 522 with an 829 buffer driving a 4-65A), G6MN uses an HRO with a 6J6 converter for Two and a converted ASB8 for Seventycems. Aerials include a 12-element stacked array for 144 mc and a four-element Yagi for 420 mc.

By profession, Eric Martin is a specialist printer and a director of the Worksop firm which has been printing (among other things!) QSL cards since as early as 1924.



G6MN's other main interest—coupled with Amateur Radio—is travel. He has paid personal calls on amateurs in France, Belgium, Luxembourg, Holland, Denmark and Sweden.

CARDS IN THE BOX

Owners of the calls shown here are asked to send a large S.A.E., with name and call sign, to BCM/QSL, London, W.C.1. for the delivery of cards held for them at our QSL Bureau. If publication of the address in the "New QTH" feature is desired, and subsequently in the *Radio Amateur Call Book*, this should be mentioned at the same time. G2DL, 2FNQ, 2LZ, 3AJG, 3DAZ, 3DCD, 3DDN, 3DMT, 3EPN, 3ERS, 3FYR, 3GDF, 3GFC, 3GHH, 3GKP, 3GNH, 3HCR, 3HFQ, 3HGD, 3HIL, 5HJ, 60Y, GW3EMZ, 3GY, 3HCH.

XTAL XCHANGE

Following are this month's offers—insertions for this space, which is free, should be set out in the form shown below, on a separate slip headed "Xtal Xchange—Free Insertion," and all negotiations conducted direct.

G2FGL, Little Pleasance, Western Road, Ashburton, S. Devon.

Has QCC 3506.5 kc crystal, certificated; also 7034 kc, $\frac{3}{4}$ -in. pin spacing, and 7150, 7275, 7300 kc $\frac{1}{2}$ -in. mounting. Wants any frequency 8084-8091 kc, or 100/1000 kc bar.

G3CFR, 28 Solent Road, Southbourne, Bournemouth.

Has 100 kc bar, 3-pin mounting. Wants octal-base 1000 kc bar.

G3HEA, 116 Bedford Court Mansions, London, W.C.1.

Has 7115 kc crystal, $\frac{3}{4}$ -in. mounting. Wants any frequency 3505-3600 kc, $\frac{1}{2}$ -in. or $\frac{3}{4}$ -in. spacing.

G6TG, Burniston, Scarborough, Yorks.

Has QCC P5 8081 kc crystal. Wants similar or any good make crystal 8011-8022 kc, $\frac{3}{4}$ -in. mounting.

SWL, 116 Stamford Road, Kettering, Northants.

Has Somerset 1000 kc bar, $\frac{3}{4}$ -in. mounting. Wants 100/1000 kc unit for Class-D wavemeter.

One Lung Tx

VERSATILE OSCILLATOR —DRIVER UNIT

THIS simple oscillator offers a choice of Colpitts VFO or crystal control at the flick of a switch; it can be used either as a complete low-power transmitter or as a driver for power stages; and although primarily designed for CW working, it can also be used for occasional local phone contacts.

Results on test proved quite satisfactory. Over 200 stations in 12 European countries were worked with the original model during a 43-days' test period (which included spells of very poor conditions due to sunspots). On the 3.5 and 7 mc bands, with an input of only 2.5-3 watts, the reports received from these stations included 6 of S9, 16 of S8, 39 of S7, 56 of S6, and 60 of S5. (The few remaining ones were S3-4.)

Tone reports ranged from T9x downwards. The majority were T9 or T8, but it must be stated that unless special precautions are taken the note is apt to be chirpy under certain conditions. But this fault (commonly met with in keyed oscillators) can be eliminated with care.

It should be frankly admitted that some pretty sour reports on tone were received on a few occasions during the initial stages of the test period! With this type of circuit, a good note depends largely on careful construction and correct adjustment. Apparently minor faults such as a poor contact in the grid circuit, carelessly-adjusted anode tuning, or incorrect choice of grid resistor, can play havoc with the tone; so these points should be borne in mind if you start getting reports of T7—or worse!

Modulating an oscillator is generally deprecated as bad practice; but it can be done with quite a fair measure of success, and this unit has proved useful for occasional phone tests. The nearest local station, three miles away, reports that the phone signals from this transmitter on the 80-metre band are S9 plus on the loudspeaker, with two and a half watts input here and a fairly good aerial. (Though *not* recommended, it is even possible to achieve a crude form of modulation without any real modulator at all! If the secondary of a

A lot of useful things can be done with a single valve as an RF generator. This article describes a CO-VFO unit which can be operated as a multi-band QRP transmitter or as a driver for a full power rig. Nor need you make a Chinese copy of the design.—Editor.

microphone transformer, used with a sensitive carbon microphone and small battery in series across its primary, is connected in series with the "earthy" end of the grid-leak, phone signals of quite good quality and fair strength can be transmitted. Surprisingly good reports have been received over 100 miles and more.)

A glance at the diagram will show that a parallel-tuned Colpitts circuit is used when the transmitter is working as a VFO, but by flicking a switch and, if necessary, re-tuning the anode circuit of the 6AG7 oscillator valve, crystal control is instantly available. Tone, stability and output average about the same on crystal or VFO, provided the latter is correctly adjusted for optimum results. So there is little to choose between the two systems.

Trying a Tritet

When working on crystal, the anode circuit will normally be tuned to resonate at the fundamental frequency of the crystal. If operation on a harmonic frequency is desired, it would be necessary to modify the circuit into a tritet arrangement; the addition of a suitable tuned circuit in series with the crystal should do the trick—another rôle for this versatile arrangement.

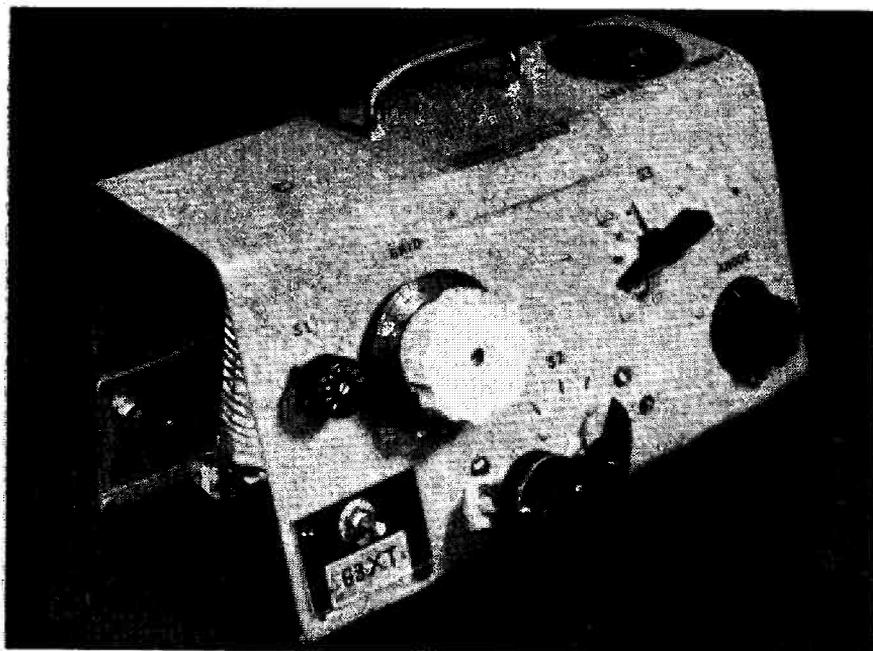
For VFO working, the anode side may well be tuned to a harmonic of the fundamental frequency, *i.e.*, with the grid circuit running on the 3.5 mc band, the anode circuit doubles to 7 mc, and so on. This is likely to improve general stability.

The VFO has been used successfully at G3XT on Top Band, 3.5 and 7 mc, but it does not seem to be much good on 14 mc, so for this band a tritet would probably be the only sound choice—using, of course, a 7 mc crystal.

Different Layouts

The theoretical circuit of this transmitter could be interpreted in a number of different practical layouts, to suit the taste of the individual constructor.

As the photograph shows, the version



General appearance of the single-valve oscillator as constructed by G3XT. It can be keyed direct for QRP working.

used at G3XT is neat, compact, easily portable, comparatively dustproof and inexpensive to make, as the combined chassis-cabinet can be fashioned in one piece from a sheet of aluminium—rather a novel constructional idea which might be more widely adopted for other transmitters or receivers.

For those who prefer a ready-made product, there is at least one instrument case of suitable size and shape on the market, although it has a vertical (instead of slightly back-slanted) front panel.

If, on the other hand, it is preferred to build the transmitter on the conventional type of horizontal chassis, there is nothing to prevent it, as the circuit is very readily adaptable to different layouts; in fact, the first rough experimental layout at G3XT was built up on just such a chassis, and worked quite as well as the version shown in the photograph.

The Chassis-Cabinet

To make the chassis-cabinet, simply form two bends in a flat sheet of

aluminium or duralumin; one is a right-angled bend, the other about 20° short of a right angle, so as to make a slight backward slant to the front panel. This makes it easier to read the dial and switch-position markings.

After bending, a large rectangular aperture is cut in the top and back of the chassis-cabinet, to give access to the valves and to provide ample ventilation. (Complete absence of drift due to temperature changes proves the effectiveness of the air circulation.) The aperture is fitted with a cover of perforated zinc. In the G3XT version, the cover is fixed to the chassis. But this admittedly makes the valves very inaccessible, and no doubt the majority of constructors will prefer to make the cover easily removable.

Cutting the aperture is not a very difficult job. The long sides can be got out quickly and easily with a good hacksaw, while the short sides need a fretsaw fitted with a metal-cutting blade. If the waste metal is not cut completely out, but is bent down at right-angles to form a flange for bolting to the front panel,

it can form the platform for the valve-holders. (It will be easiest to cut the holes for these before bending down the platform.) But, if preferred, a small separate piece of aluminium can be used for this horizontal platform.

The two valves are mounted in line, the 6AG7 near the front panel and the VR150 behind it, nearer to the back panel. The general layout will be fairly clear from the photograph, and can, if desired, be modified to suit individual taste.

Panel Controls

The items on the front panel, left to right, are (*top row*): grid circuit wavechange switch; grid bandspread tuner for VFO; anode wavechange switch; and, if desired, a panel light. (*Bottom row*): variable grid resistor (*see note later*); plug-in crystal; grid circuit control switch for crystal/VFO change-over; keying jack; and anode circuit tuner.

A millimeter, connected in the anode circuit to enable the latter to be tuned to resonance (indicated by sharp needle-dip as in a PA stage) is mounted on the horizontal top of the cabinet. In the centre, a chromium-plated carrying handle surmounts the whole thing.

At the back of the chassis-cabinet, in the centre near the bottom, is a four-

way plug connector for the supply leads from the separate power-pack. To the left of this (looking at the back panel) are co-axial sockets for the link-coupling cables leading to the aerial tuning unit (not shown), which is also separate from the transmitter.

Wavechange Switching

The coils are mounted vertically, the grid coil (for VFO) to the left of the valve platform, and the anode coils to the right. The grid wavechange switch

Table of Values

Colpitts/Crystal Unit Using 6AG7 Pentode

- C1 = 50 μF , tuning
- C2 = 500 μF , high stability
- C3 = 0.001 μF , high stability
- C4 = 100 μF , mica
- C5 = 0.001 μF , mica
- C6 = 0.001 μF , mica
- C7, C8, C9 = 0.001 μF , mica, 1,000 volts working
- C10 = 100 μF , tuning
- R1 = 100,000 ohms, 1 watt
- R2 = 50,000 ohms, 5 watt
- RFC1, RFC2 = 2.5 mHy
- L1 = 1.7 mc, switched for 3.5 and 7 mc
- L2 = 1.7 mc, switched for 3.5 mc
- L3 = 7 mc, switched for 14 mc
- S1 = Single-pole, 3-way ceramic
- S2 = Double-pole, change-over (or can be 3-way if phone used)
- S3 = Single-pole, 4-6-way ceramic
- J = Keying jack
- V1 = 6AG7
- V2 = VR150/30

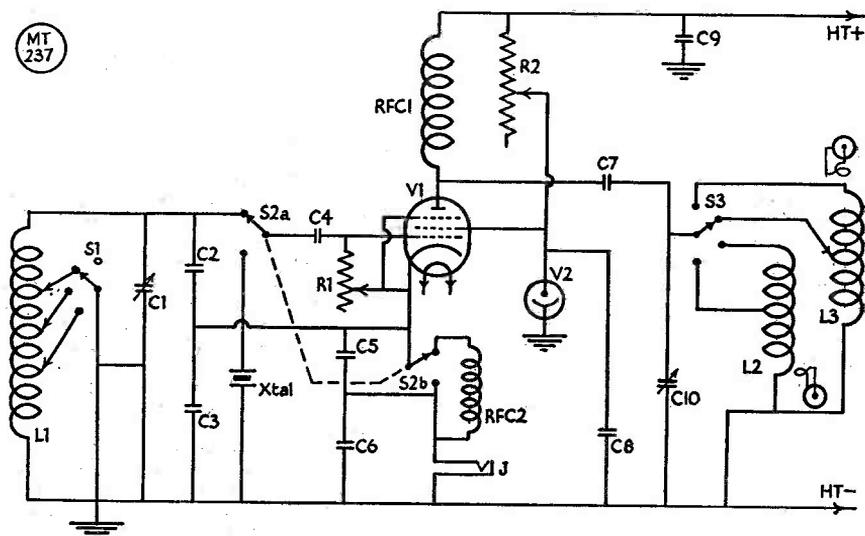


Fig. 1. The VFO-CO unit described by G3XT. It can be operated as a low-power transmitter as it stands and has performed well as such.

should be a ceramic one with efficient contacts. The anode wavechange switch is a large ceramic type, obtained from a TU5B unit, and has hefty contacts giving low-resistance connection to the coils.

Up to the time of writing, the transmitter at G3XT has been used only on 160, 80 and 40 metres, so there are three spare contacts on the 6-way switch in the anode circuit. When a tritet conversion is made, a fourth contact will be brought into use for 20 metres. There is no need to use separate coils for each band. The 1.7 mc coil can be tapped at an appropriate point for 3.5 mc, and the 7 mc coil tapped for 14 mc.

Wiring should be as rigid as possible, in the RF parts of the circuit especially, and all joints should be made with an electric soldering-iron and the best radio-quality resin-cored solder. All metal surfaces, such as soldering tags, should be scraped thoroughly clean and bright before soldering; firm mechanical joints should be made, and the iron used hot enough to make the solder flow instantly like water.

Correct Grid Resistor

Some surprise may be occasioned by the use, in these enlightened days, of the old-fashioned device of a *variable* grid resistor! This was adopted for the preliminary experiments simply to make sure of the best grid-leak value, instead of following the usual course and relying on an arbitrary 100,000 ohms, usually fitted as standard in such a circuit as this. Use of the variable grid-leak quickly demonstrated that the value for optimum results was very critical in this circuit, and the RF output could be nearly doubled by adjusting the variable resistor to "best" value (which was certainly *not* 100,000 ohms!) On the other hand, the purest-toned note was not necessarily obtained with the grid resistor adjusted for maximum output. So it was decided to leave in the variable resistor permanently, so that it could be set for maximum output under varying conditions.

Stabilising Screen Voltage

Although only one valve is used for actual RF purposes—a 6AG7 pentode—it was found worth while to add a voltage stabiliser, type VR 150/30, to keep the screen voltage constant. A better note resulted, and any tendency to chirp was reduced. Key clicks were noticed when keying the cathode circuit in the ordinary way, but when a keying

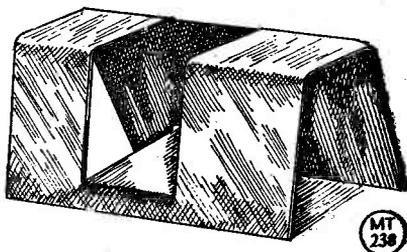


Fig. 2. The chassis bend suggested by G3XT to produce the finished effect shown in the photograph.

relay was inserted, reports said that the clicks had disappeared.

The value of the screen resistor should be chosen carefully, or, better still, use a variable resistor and adjust it to limit the voltage on the stabiliser and obtain best results from the oscillator.

The anode circuit can be either series or parallel fed. With series feed, the output seems a little better, but the coils and condenser are "live" to HT, so the rotor must be carefully insulated from the metal chassis, and there is obviously some risk of shock if the coils or condenser are touched when the transmitter is on.

Parallel feed is therefore the better method on the whole, as the tuned circuit is virtually at earth potential for DC and the rotor bush can be taken directly to the metal panel.

Normal coil data (as published many times in the *Magazine*) are applicable to the anode coils, so there is no need to give details. But the grid coil is a very different matter, and the number of turns will be found extremely critical. The circuit in its present form incorporates no variable bandset capacity. (One was used in the first experimental version, and certainly made it easier to set the band quickly, but as it made it equally easy to slip right out of the band if the condenser was accidentally moved the slightest bit, it was discarded.) Bandsetting in the final version depends entirely on correct location of the coil tapplings to the wavechange switch, and half-a-turn more or less makes all the difference in this circuit.

The tapping should therefore be adjusted by trial and error in such a way that the LF edge of each band comes at, say, 10° on the dial—i.e., nearly at the all-in position of the rotor vanes. With rigid wiring and no

alterations to the circuit, the calibration has been found to be remarkably constant over a long period, so once the band has been set correctly in this way, there should be no trouble at all.

(A "series-parallel" method of HT feed, described by J. H. Hum in the May 1947 issue of *Short Wave Magazine*, could also be tried with advantage in this circuit).

Bandspreading

The value of the bandspread condenser is largely a matter of individual choice. In the G3XT version, a 45 μF microcondenser was used, which spread the CW portion of the band very nicely over the dial, and no slow-motion drive was necessary. If, however, the whole band is to be covered in one sweep, then a larger capacity will be necessary, the bandspreading will not be so flat, and, in consequence, a slow-motion drive is essential.

Perhaps the best plan is to use the smaller capacity—say 50 μF —and cover the band in two or even three sweeps, by using two or three tappings on the coil instead of only one. A different switch position will therefore be used for the phone portion of the band from that used for the CW area, and excellent spread will be obtained, making adjustment quick and easy without a slow-motion dial.

Finishing Touches

The chassis-cabinet was enamelled pale grey, the markings lettered in white with a sign-writer's brush (a very fine grade, with fairly stiff bristles, to enable small lettering to be done easily), and the switch position for anode wave-change colour-coded in the manner of the well-known resistor and capacity colour-code. Thus, a red mark was used for 20 metres, a yellow mark for 40, grey for 80, and a brown-and-blue for 160 metres. A neat star pattern was outlined for these colour-code markings, by tracing round the pointer of the switch knob in its various positions with a sharp-pointed scribe, afterwards neatly painting in the rays of the half-star thus formed, with the appropriate colours for the different wavebands.

Aerial Tuning Unit

In the aerial tuning unit used in conjunction with this transmitter, there is a separate coil and condenser for each waveband. This facilitates rapid band-changing, as each circuit can be left tuned correctly for the CW portion of a

particular band; only slight final adjustments, at most, are needed when changing bands or altering frequency within fairly wide limits. A row of sockets, mounted on an insulating strip, are connected to the different tuned circuits, and a plug from the aerial RF meter is inserted into the appropriate socket for the band in use.

For occasional working on telephony, a single two-stage modulator was used, with anode control, with a suitable transformer to couple the modulator to the plate circuit of the 6AG7. This type of coupling was found much more satisfactory, when modulating an oscillator, than the more usual AF choke method.

An ordinary GPO-type carbon microphone was used, and the reports received gave it that the speech quality was quite good with two different insets, types No. 10 and 13 respectively, which were used in the course of the phone tests.

AMERICAN EMERGENCY SERVICE

The February issue of *QST* announces frequency allocations in the 1.7, 3.5, 28, 50, 145 and 220 mc bands, made by the Federal Communications Commission, "for use by amateurs in civil defense communications in the event of war." Regulations under which amateurs will actually operate in the civil defence system have yet to be worked out—but as it will be the only way they will be able to remain on the air in the event of a shut-down, good support is assured

THE NEW "LADNER & STONER"

Ever since the early 1930's, Ladner & Stoner's *Short Wave Wireless Communication* has been the standard text-book for designers, engineers and amateurs in any way concerned with radio theory. The revised and enlarged Fifth Edition includes quite a large section on VHF reception, and the other 17 chapter headings cover between them practically the whole field of commercial radio engineering. At the end of each chapter there is a very useful list of selected references designed to widen the reader's coverage of the subject—for text-books have been written under many of these chapter headings. This Fifth Edition runs to over 700 pages, is very well produced and illustrated and includes a good index. The price is 50s. and *Short Wave Wireless Communication* is Catalogue No. 110/6 in the Chapman & Hall list, through any bookseller.

VHF BANDS

By E. J. WILLIAMS, B.Sc. (G2XC)

EACH month there appears in these columns a list of stations active on Two Metres. Occasionally, correspondents enquire how some of these call-signs have got into the list, as observation on the band had suggested that the stations in question had been inactive, from a VHF point of view, for many months. Let us hasten to assure those who may be doubtful that no call appears in this list without evidence of activity. This month the check on the calls listed has been closer than ever. In nearly every case the call has been *heard* on the band by someone other than the owner of the call, and in less than half-a-dozen instances has an operator's own report of activity not been confirmed by somebody else having heard or worked him.

During the November Two-Metre Contest 175 G stations were on the air. The Activity List this month shows 135 stations which actually operated at some time during the 4 or 5 weeks preceding the compilation of the current List. In addition, there were four stations at unknown locations and therefore not listed, and it is fairly certain that a few others have been omitted, since nobody has reported them active.

This all brings out the point that, in spite of the impression of inactivity that one tends to get after a spell of listening on the band, the number of active stations is at least 85% of the number who were on during the Contest. Admittedly, a station can get into the List simply by coming on the band *once* during the month, and there will be

The Scale of Activity—

Some Organised Events—

Seventycem News and Progress—

The Fiveband Club Dinner—

Achievement Tables and Calls Heard

those who will contend that this hardly brings them into the category of activity—but, in spite of all that, we feel that most followers of this piece will be surprised at the level of activity actually proven. Further evidence that the figure is not exaggerated is provided by observations at G2XC, where during the Contest 86 of the 175 stations were logged. During the present period some 62 stations have been heard; using the Contest proportions, this indicates about 125 stations on the air—a figure not far off that given by the current Activity List.

All this adds up to much the same as we said last month. During the Contest activity was concentrated and everyone got the impression of a lively band (at least, in the South), whereas the same number of stations on, but *spread over a month*, frequently leaves the band sounding empty. The correspondence shows that those whose appearances on the air are somewhat infrequent have very genuine reasons, and one of them is not lack of interest. (The fact that they write to "VHF Bands" is proof of that.)

Hence, once again one comes to the conclusion that the answer to the

FIVEBAND CLUB VHF DINNER

SATURDAY, APRIL 14
(6.30 for 7.0 p.m.)

Monico Grillroom
Shaftesbury Avenue
London, W.1.

In the Chair:

AUSTIN FORSYTH, O.B.E. (G6FO)

Tickets at 11s. 6d. and all details from J. Haydon, G3BLP, 52 Littleheath Road, Selsdon, Surrey. Applications as soon as possible, please, and not later than April 7.

activity problem is more stations on two metres, and not just more activity by those already on. From various parts of the country comes news that others are getting ready for the band. G2KC and G3EUQ are about to make their two-metre *debut* in the Southampton-Winchester area, G3HAZ hopes to be working on the band in Birmingham almost immediately, G3HEA in West London is already on, G4JJ is ready in Barnsley, and there are hopes that G2HOP, of Stamford, may be with us soon. This is good news, but we can do with a lot more yet.

Activity Periods

As announced last month, the week-end March 10 and 11 has been selected as an Activity Week-End, particularly during the periods 1830 to midnight on the Saturday and 1000 to 1600 on the Sunday. A further period of activity will be the week-end April 7 and 8, the hours being the same. This will coincide with a VHF contest on the Continent, and it is thought it might be a good idea to make this particular week-end's activities a contest for G stations as well. No numbers other than the usual RST need be exchanged, but location, town and county should be

given to assist in the calculation of points.

Points will be scored on the basis shown in the accompanying table, and—

Up to 50 miles, 1 point
 50 to 100 miles, 3 points
 100 to 150 miles, 8 points
 150 to 250 miles, 20 points
 250 to 400 miles, 40 points
 Over 400 miles, 50 points

—there will also be an additional bonus score of 12 points for each county (or foreign country) worked, other than one's own. To make this clear, G, GI, GM, GW do *not* count as foreign countries, no matter in which of them you live. Now, we are well aware that this method of scoring will not satisfy everyone and it is to a large measure experimental. Please do not hesitate to criticise it *after* it has been given a trial but your conductor would be grateful if criticisms are not sent *before* the event.

And if you do not like the scheme do not let that prevent you sending in an entry. If the response to this interim contest is good, it may be possible to try out some other scoring systems before our full-dress Annual Contest occurs next November.

Entries should reach us by April 14 at latest, so that the result can be published in the May issue of *Short*

TWO-METRE ACTIVITY REPORT

G3WW, Wimbllington, Cambs.

WORKED: G2AIQ, 2ANT, 2AVR, 2FQP, 2UQ, 2WJ, 2XV, 2YC, 3ABA, 3ABH, 3AKU, 3BCY, 3BK, 3BUJ, 3BUN, 3CGQ, 3DVA, 3EHY, 3EYV, 3FFC, 3GGJ, 4HT, 4MW, 5NF, 6LL, 6NB, 6WU, 6XM, 6YP.

HEARD: G2CPL, 3BLP, 3DUP, 3GHI, 6VX.

(January 1 to February 11, 1951)

G3GBO, Denham, Bucks.

WORKED: G2AHP, 2ANT, 2AVR, 2BMI, 2BN, 2DL, 2DTO, 2FME, 2HDZ, 2MQ, 2XV, 2YC, 3BCY, 3BLP, 3FD, 3GHI, 4MR, 5DS, 5LQ, 5NF, 5QB, 6KB, 6NB, 6WU, 6XM, 6YP, 8KZ.

G3CCP, Shrivenham, Wilts.

WORKED: G2AOK/A, 2BUJ, 2HIF, 4AP, 6KB, 6NB, 6XM, 6ML.

HEARD: G3GHI.

(January 22 to February 12, 2000-2200 GMT only).

G2EHY, Banwell, Somerset.

WORKED: G2DCI, 2DTO, 2WJ, 2YC, 3AHX, 3BA, 3BCY, 3DUP, 3FMI, 3GHI, 3HBW, 3WW, 3YH, 4HT, 5CP, 6AG, 6LK, 6NB, 6UH,

6WU, 8ML, 8SB, GW2ADZ, 3HCH.

HEARD: G2XC, 3HGZ

(January 8 to February 12)

G3HBW, Wembley, Middlesex.

WORKED: G2CPL, 2DD, 2XC, 2XV, 3BK, 3DUP, 3FAN, 6KB, 6OH.

HEARD: G2AIQ, 2AVR, 2DSW, 2IQ, 3ABA, 3ABH, 3BA, 3EHY, 3WW, 4MW, GW2ADZ.

(January 15 to January 29)

G3GHS, New Malden, Surrey.

WORKED: G2AHP, 2BN, 2DTO, 2HDZ, 2YC, 3BCY, 3EBI, 3ENY, 3GHI, 4MR, 4RO, 5DS, 5LN, 5MA, 6CB, 6NB, 8IP.

HEARD: G3WW, 6LL, 6VX, 8SY.

(January 4 to February 12).

G2HGR, Westhoughton, Lancs.

WORKED: G2BTO, 2DCI, 2FCV, 2HJC, 2OI, 3AOC, 3ATZ, 3BKS, 3BOC, 3CSC, 3DA, 3FMI, 3GMX, 4OS, 5CP, 6LC, 8SB, 8UF, GW3DNN, 5MQ.

HEARD: G2BPJ, 3AHX, 6DP.

(December 1950 to February 10, 1951).

G2XC, Portsmouth, Hants.

WORKED: G2AHP, 2ANT, 2DTO, 2DZT, 2FNQ, 2HDZ, 2MC, 2WJ, 2YC, 3BCY, 3BEX, 3BHS, 3BLP, 3BNC, 3CGE, 3FAN, 3FD, 3FXG, 3GAV, 3GHI, 3GSE, 3HBW, 4MW, 4RO, 5DS, 5LK, 5LN, 5NF, 5TP, 6AG, 6KB, 6LK, 6LR, 6NB, 6UH, 6VX, 6WU, 8IL.

HEARD: G2DSW, 2JU, 3ABH, 3ARL, 3CGQ, 3DJX, 3ECA, 3GOP, 3WW, 4HT, 4NB, 5DT, 6AG, 6XM, 8KZ.

(January 20 to February 16).

70 cm Activity Report

G3ELT, Salford, Lancs., NGR 33/785933.

WORKED: G2JT, 2OI, 6DP, 8SB, GW5MQ.

HEARD: G3DA.

GW5MQ, Mold, Flints.

WORKED: G2DCI, 2JT, 2OI, 3DA, 3ELT, 6DP, 8SB.

G4CG, Wimbledon, Surrey.

WORKED: G2CIW, 3BOB, 5CR, 5PY, 5TP, 8KZ, 8SM.

HEARD: G2FKZ, 2HDY, 5DT.

Wave Magazine. Logs need only give a list of stations worked, with time, estimated distance and points claimed. And, as remarked above, general comments on the scoring system, operating hours, and so on, will be very welcome.

Most VHF operators will probably agree that while experience has shown the difficulty of formulating a set of rules to meet all contingencies, at least it is desirable that all who enter for a contest do so under rules which can be interpreted in the same way by all contestants—it is for the organisers to produce rules which give everyone an equal chance. And in VHF contests, that is just the difficulty!

Those Missed Contacts

Last month's suggestions regarding the causes of apparent one-way working and consequent missed calls brings some observations from G3EHY, whose consistent VHF activity for so long now provides a sound foundation for his arguments. He feels that fading is the main cause of the trouble. Quoting from his letter: "I find that after sending out the usual long call on any sked, if conditions are really bad or patchy, when I switch on the receiver, in nine cases out of ten there is nothing to be heard, but as I am naturally looking for that particular station, I continue searching on his frequency for several minutes, and sometimes after quite a long wait—maybe a whole minute—the other station's signals just begin to filter through and perhaps then build up to even S7-8, and then follows the usual periodic fading." As G3EHY goes on to say, had this been a CQ call the intensive search on that particular frequency would not have been made and no contact would have resulted. This, of course, explains much of the consistency of long-distance schedule working.

Slight difference of frequencies used in the two directions may result in troughs of signal strength in one direction coinciding with peaks in the other. Those who receive TV in the outer

ACTIVITY WEEK-END

MARCH 10-11

All VHF operators are asked to put in as much time on the air as possible during the periods 1800-2359 Saturday, March 10, and 1000-1600 Sunday, March 11. It will be practically when you are reading this!

VHF CONTEST

APRIL 7-8

See text for details. Please give this your support and send in a log with your opinions on the scoring system.

fringe areas will be only too well aware of the annoying way in which sound and vision signal strengths fail to keep in step on evenings when conditions are unstable. On most commercial receivers a common contrast control affects both sound and vision input, and, as the sound fades down, one advances the control in order to hear what is going on and so completely spoils the picture with a soot-and-whitewash effect. Ten minutes or so later, down goes the vision signal and the sound comes up, overloading the receiver and breaking through on to the picture as one advances the control to maintain the video input. Presumably, conditions generally on the two frequencies, sound and vision, are the same, but at any particular moment they can differ widely. On two metres the frequency difference involved is not so great, but nevertheless may be sufficient on a weak signal to cause a missed contact when reasonably rapid searching of the band is necessary.

G3EHY further illustrates this with the point that often his schedules with GW2ADZ have shown much discrepancy in signal strengths in the initial reports, but, taken over the half-hour of the contact, the average in each direction works out much the same. A shorter contact might not show this and so lead to an appearance of one-way conditions.

Around the Country

G3WW (Wimblington) sends news of activity in his area. G2UQ has persuaded an SCR522 to drive a p/p 24G stage, and he is looking for contacts. G2XV, that old war horse, has been moving his shack to another part of the house; this will result in shorter feeders. G2FQP has a new beam ready to put up. G2HCG (Northampton) is rebuilding. G3WW himself can often be found on 3620 kc, or between 3700 and 3800; and schedules for 144 mc will be gladly arranged with anyone working him on the 80-metre band.

G3VM (Norwich) has nothing of interest to report, although he has been on the band almost every evening.

TWO-METRE ACTIVITY BY ZONES AND COUNTIES

(Based on reports for current issue only)

Zone A (144.0 to 144.2 mc)

Ayr: GM2BUD, GM3DDE, GM3DIQ, GM3FVX.
Dumfries: GM3QL
Lanark: GM3BDA, GM3EHI, GM5VG, GM6WL, GM6ZV

Zone C (144.2 to 144.4 mc)

Lancashire: G2BTO, G2DCI, G2HCJ, G2HGR, G2OI, G3A00, G3BKS, G3CSC, G3DA, G3ELT, G6LC, G8UF
Yorkshire: G2IQ, G4JJ

Zone D (145.8 to 146 mc)

Nil

Zone E (144.4 to 144.65 mc)

Cheshire: G3ATZ, G3BOC, G3FMI, G3GMX, G4OS, G5CP, G8SB
Leicestershire: G3FFC
Warwickshire: G3ABA, G4NB, G5SK, G6CI, G6YU

Zone F (145.65 to 145.8 mc)

Flintshire: GW5MQ
Montgomeryshire: GW2ADZ
Monmouth: G4GR
Shropshire: G3AHX

Zone G (144.65 to 144.85 mc)

Bedfordshire: G3CGQ
Buckinghamshire: G2MQ, G3GBO, G4MR, G6NB
Cambridgeshire: G2A1G, G2UQ, G2XV, G3BK, G3GGJ, G3WW, G4MW, G8SY
Hertfordshire: G3DJX, G3FD, G4RO, G6LL

Huntingdonshire: G2FQP, G3AKU
Norfolk: G3VM
Northamptonshire: G3ABA, G3DUP
Suffolk: G2CPL

Zone H (145.25 to 145.5 mc)

Berkshire: G2HIF, G6OH
Dorset: G3ABH
Gloucestershire: G2AOK/A, G3YH, G8ML
Hampshire: G2DSW, G2DZT, G2XC, G3ARL, G3BHS, G3BNC, G3CGE, G3FAN, G3GAV, G3GOP, G6XM
Wiltshire: G3CCP, G4AP, G8IL

Zone I (145.5 to 145.65 mc)

Somerset: G3EHY

Zone J (144.85 to 145.25 mc)

Essex: G2CIW, G2WJ, G3ECA, G3CQL
Kent: G3AEX, G6AG, G6VX
London: G2DTO, G3BCY, G3BUN, G3EIW, G3EYV, G5DT, G5LN, G5QB, G6LR, G6WU, G6YP, G8LN
Middlesex: G2AHP, G2BMI, G2DD, G2FMF, G2HDZ, G3EEI, G3GSE, G3HBW, G3SM, G4HT, G5LQ, G6JP, G6UH, G8IP, G8KZ
Surrey: G2ANT, G2BN, G2FNO, G3BLP, G3DVQ, G3ENY, G3GHI, G5DS, G5LK, G5MA, G5NF, G6CB, G6LK
Sussex: G2AVR, G2JU, G2MC, G2NM, G3BEX, G3DIVA

Note: The frequency areas given above are in accordance with the Two-Metre Zone Plan, as accepted by the majority of VHF operators. A few stations are not conforming.

G3EHY has been heard regularly around 2200, the distance being about 200 miles. Nothing has been heard from the North.

G2CIW (Romford) has been rebuilding his exciter, but some troubles have been encountered; since then his 829 has succumbed. G3HBW (Wembley) is joining the RAF shortly, where we are sure his VHF knowledge will serve him in good stead; cards for those he has worked on the VHF bands will be sent as soon as they arrive from the printers. G2AHP (Perivale) has been finding G2AVR (Bexhill) and G3ABH (Poole) his most consistent DX. Since last October 1, G2AHP has had 257 QSO's on Two. At least three new stations are likely to be active on Two in the near future as a result of VHF propaganda at the local club. G4MR (Slough) is looking for a clear frequency in his correct zone, and will then probably get the necessary crystal. G3GBO (Denham) has worked a little semi-DX, such as G2AVR and G2XV. He is surprised

at the reference last month to complaints that some old-timers do not work newcomers, and says he has had many pleasant contacts with holders of two-letter calls. On the other hand, he tells of a well-known G who announces that he works only DX, new stations and a few select friends. Apparently this operator keeps his word! This reminds us of another VHF man in a more northerly location who has been heard to say that he need not work anyone unless he wants to. Of course, he is quite right, but if this sort of thing spreads, activity will get even less!

G8LN (Plumstead) finds the rainy weather a menace to VHF work. His beam is becoming corroded and feeders covered with soot and dust; a schedule is run most evenings with G3EIW at 1930. Experience at G8LN has shown the desirability of measuring the losses on 70-ohm feeder cable before connecting it to a beam. G3DVQ (Purley) has completed the constructional work on his G2IQ converter and is now looking

for a signal to tune it up. G3EYV (London, S.W.) found conditions fairly quiet. He is somewhat nettled at not being able to hear G2AVR when everyone else in London is working him! G3GHS (New Malden) would like more activity in the early evening and not all at 2300; he is on 144.86 mc. G3HEA (West London) is using a much modified 522 and a folded dipole on the chimney of a block of flats; for receiver he has the front end of a 522 feeding into an Eddystone 680. A CC converter is being built, and a "City Slicker" aerial; G3HEA is on 145.008 mc. G2ANT is on the move from Godalming to Plymouth, where he will start up again in due course.

G3EHY (Banwell) has, just for once, found conditions poor. This applied particularly to early February. Unfortunately, his schedule with GW2ADZ had to be interrupted, due to illness at the Welsh end, and so an opportunity of checking this normally reliable path under extremely low barometric conditions was missed. There were, however, some good evenings in January and mid-February.

There are a number of reports from the North this month. G2HGR (West-houghton) wants to work stations to his north, but so far has not heard anything from that direction. He wonders if there is any interest in VHF working in Blackpool? G2HGR is active most evenings 1900 to 2000, and 2200 to 2245. GW5MQ (Mold) would be glad of schedules with the GM stations. He often calls "CQ North," but gets no further than Blackpool (G2HGR please note!) To the South, the outlook from GW5MQ is not so good, due to screening by Moel Famman, about 10 miles from him. G4JJ (Barnsley) will be using an 829B in the final, but due to his location expects difficulties in working to the South.

In the Midlands, G3HAZ (Birmingham) hopes to be on Two very soon with a converted 522. G6CI (Kenilworth) puts out a call on the band every evening.

GM3DIQ (Saltcoats) has heard some weak CW from the South, and that has urged him to improve the receiving equipment; he is running schedules at 2100 every Wednesday and Friday, and on Sundays at 1400. The 16-element beam at GM3DIQ shows up 35-points better than the previous array.

F9DI (Moreuil-Somme) has a 12-element broadside array 50 feet high,

and a G2IQ converter. He often hears G stations at good strength, but his calls with 90 watts to an 829B are usually in vain. Amongst those heard well at F9DI are G2AVR, G2CIW, G5MP/P, G5RO and G6NB. He calls CQ on CW in our direction daily at 1100 and 1930, on 144.81 mc, his location being 10 miles south-east of Amiens.

DL4XS (Rhein/Main) comments that two-metre activity in Germany is decidedly looking up. About 10 stations are active in the Frankfurt-Wiesbaden area, and he has hopes that there will be about 30 by May. Super-regens are becoming things of the past, and an article by DL3FM in *DL-QTC* has had good effect. Locations and beams are getting much consideration. The old Radio Hill station will be operating again from April 1; the power unit has been overhauled and additions made, and a new hut is being erected for living quarters. Some pictures are promised in due course. DL3KE is working on a new final for the Tx, and DL4XS himself is busy on new converters. Input on 144 mc will be 150

TWO METRES	
COUNTIES WORKED SINCE	
SEPTEMBER 1, 1950.	
Starting Figure, 14	
Worked	Station
33	G5MA
32	G3EHY
31	G3WW, G4HT
30	G3ABA
28	G5DS
24	G2AIQ, G2AJ, G3VM, G5RP
23	G2QI, G8IL
22	G2CPL, G3FAN
21	G2XC, G3AKU, G3BOB, G3COJ
20	G3AEP, G3FD, G3GBO
18	G2CIW, G3EYV, G5PY, G6CW
17	G2ANT, G3GSE, G3HBW
15	G8IP

Note: This Table will run for one year to August 31, 1951.

TWO METRES	
ALL-TIME COUNTIES WORKED LIST	
Starting Figure, 14	
From Fixed QTH only.	
Worked	Station
49	G2OI (158)
46	G3BLP (363)
45	G3EHY (213)
43	G2AJ (304), G3COJ (133), G5WP, G6NB
41	G2NH (283), G3ABA (178), G5MA
39	G6XM (208)
38	G2IQ, G3APY, G3WW, G4HT (318), G5BY
36	G2XC, G3CGQ, G3CXD
35	G4LU, G6LK
34	G3VM (143), G4AU (201), G4DC, G5BM, G8SB
33	G2XS (147), G3DMU (115), G5JU
32	G2CPL (200), G3BK, G8WV
31	G2CIW (231), G5RP, G8IP (214)
30	G3BOB, G4CI (181), G8IL, G8SM (172)
29	G5DS (145), G5NF
28	G6VC
27	G3DAH, G6UH (223), G8QY
26	G2ADR, G2FNW, G3BW, G3BHS, G3FIJ, G8QC (126)
25	G3FAN (123), G6WT
24	G2AIQ, G3FXG, G3AKU, G8KL
23	G2NM, G3AVO/A, G3GSE, G4NB, G5PY, G6CI
22	G3GBO (174), G4RK, G5SK
21	G2FMF
20	G2ANT, G3AEP, G3EYV (118), G8KZ
19	G6CB
18	G3CAZ, G8VR, GM3OL
17	G3ANB, G3HBW, G4MR, GM3BDA
16	G2AOL, G4LX, G5LI (121), G5LQ, G5MR, GW5SA
15	G2AHP (135), G2AVR, G4RX,
14	G2HDZ

NOTE: Figures in brackets after call are number of different stations worked. Starting figure, 100.

watts 'phone and 500 watts CW—so he should be going places.

Seventycems

G3ELT (Salford) continues his nightly schedule with G2OI (Eccles), and on most occasions now this is extended to a three-way contact with GW5MQ (Mold): The 16-element 70 cm beam at G3ELT is within 14 feet of a complex of telephone wires which run East-West, and, with the beam at its present height, the top of the 70 cm array is just above the lowest of the telephone wires. This may be the cause of signals from GW5MQ arriving 10 degrees off true bearing. Quererly enough, on transmission the beam at G3ELT has to be aimed in the correct direction for best results. Still more intriguing is the fact that when the beam is on true bearing, removing the feeder from the receiver makes no difference to the received signal, which remains at S7—but this only happens on signals from GW5MQ! The receiver at G3ELT uses a 446A RF stage in a co-axial line. With this disconnected the signal is reduced to zero.

GW5MQ sends a list of stations he has worked. He gets them all at S8-9 + and says, "Surely there must be some weak signals somewhere!" His transmitter runs an 832 tripling, with an output of 3 watts; the receiver is an RF stage from an ASB8, which gives a gain of at least 10 dB, into a 6J6 mixer-6J6 oscillator unit from an APS13. Separate aeriels are used for sending and receiving, both being 3-element Yagis. Another peculiar aerial effect occurs between GW5MQ and G6DP. The latter is 100 feet below the crest of a hill and away from GW5MQ; when he points his beam at GW5MQ, signals are only S2, but turning the beam to aim at Oldham raises signals to S9.

DL4XS (Rhein/Main) considers that during the tropospheric bending season 435 mc contests between England and his Radio Hill will be possible more often than on 144 mc. He asks that sufficient of us have faith to use 435 mc independently of 144 mc whenever pressure is high, and suggests that a much smaller searching band should be agreed on. While stressing that the full band must be preserved for amateur TV and similar activities, he feels that one megacycle of it is ample for DX work. If more is used, then tuning will take so long that calls will be missed. Regarding the weather, DL4XS is of the opinion that when things look good for

two-metre DX, but it just is not there, then that is an ideal time to go on Seventycems, as the probability is that the height of the abnormal lapse rate is too low for two metres. It would, however, be sufficiently high for 70 cm work. So DL4XS says, if two metres is good then look for him there, but if the weather seems to say two metres should be good, but it is not, then look for him on 435 mc!

We would be pleased to have opinions on this idea of a "restricted" band for 70 cm DX work. Most stations are tripling from their 144 mc band crystals—this means a tuning range of 6 mc, which is a lot to cover. It is believed the French stations are only tuning over a megacycle or so around their own frequencies. It therefore appears that anyone wanting to work DX will have to line up on these frequencies.

A discussion on 420 mc work will take place at the meeting of the South London VHF Group on March 18 at G4CG, 57 Kingwood Road, Wimbledon, at 3 p.m.

Sayings of the Month

"Shortly north of the Oxford-Woodstock road, near the signpost marked 'Thrupp 1½ miles,' there is a caravan with what looked like (at 35 to 40 m.p.h.) an Eddystone 2-metre beam on a mast. Who could it be?" (G3WW)

.... "I'll swap anyone a pair of HK-24's for a typing course" (DL4XS)
.... "Many others are unidentified because on phone they do not repeat their call signs with analogies" (F9D1)

.... "As a comparative newcomer to two metres, I would like to mention that I have found it to be a most friendly and pleasant band to work on. The fact that a VHF operator has to construct his own equipment has much to do with it, I think" (G3DVQ)

.... "Some of us do go to bed" (G3GHS)
.... "Regarding some of the moaners, tell them to get on the air and increase the activity that they say is poor" (G3HEA)
.... "Listen for the voice crying in the wilderness" (G4JJ)

.... "As soon as the weather improves I hope to put up a higher rotatable aerial system, and then it will be 'Tally-ho, London'" (GW5MQ)
.... "I think some of the provincial men who live in the same town as their job forget that in London many people have a journey of an hour or more to get home, and it is a physical impossibility to get on the air early in the evening" (G3BLP)

.... "God speed the warm weather" (G6CI).

Valete

We know all readers will be sorry to learn of the death of Arthur Marriott, G8UZ, of Sutton-in-Ashfield, Notts., a very keen and enthusiastic VHF operator. His achievements have often been mentioned in these columns, and at various times he had held British and world VHF records. He was an early member of our Fiveband Club.

In Conclusion

Do not forget the Activity Week-End, and book your place at the VHF Dinner in good time. Support for both events has been promised by many correspondents. And do not forget to send in your report for next month by March 14 to E. J. Williams, G2XC, *Short Wave Magazine*, 53 Victoria Street, London, S.W.1. And so, till April 6

SUBSCRIBER NOTE

There are two ways in which readers can make sure of getting *Short Wave Magazine* every month. One is by telling their newsagent, who can order either on us or through any wholesaler, and the other way is for the reader to place a direct subscription order with us. This costs 20s. (overseas 22s.) for a year of twelve issues, assuring despatch by post on the day of publication. Orders, with remittance, to The Circulation Manager, *Short Wave Magazine*, Ltd., 53 Victoria Street, London, S.W.1.



CAN ANYONE HELP?

SWL G. K. Allen and his wife, of 18 Selsdon Road, New Haw, near Weybridge, Surrey (*Byfleet* 2942) are enthusiastic listeners who would very much appreciate the opportunity to visit an amateur station when actually on the air. We feel sure that this request will not go unheeded in that neighbourhood.



STILL AVAILABLE

We can still supply our *DX Operating Manual* (2s. 8d.); full-colour wall-mounting *DX Zone Map* (6s.); *Principles of Short Wave Reception* (1s. 8d.); and *Country List by Prefixes* (6d.). All prices are post free and orders with remittance should be addressed to The Circulation Manager, *Short Wave Magazine*, Ltd., 53 Victoria Street, London, S.W.1.

Another Way of Soldering

CONSTRUCTION OF A SIMPLE LT HEATER

By A. P. KERFORD-BYRNES (G6AB)

THE majority of those who experiment in radio in any way at all sometime or other have to do some soldering, and one of the most useful tools in an experimenter's workshop is his electric soldering iron. This is a very useful appliance, and one cannot but wonder how we could carry on our constructional operations without it. The more recent invention, the Solder Gun, has the advantage of quick heating, but two of its disadvantages are its weight and price. There is, however, another quick method of soldering which compares favourably with the solder gun for speed, and if one has an old mains transformer in the junk box the equipment can be made up quite cheaply.

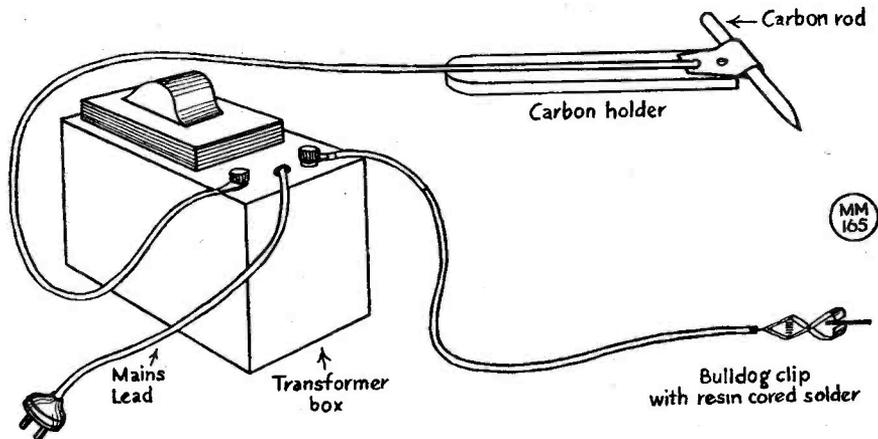
Items Needed

The writer happened to possess a transformer from one of the older types of American AC receivers. This transformer had a primary winding for 230

volts and the heater winding supplied 2.5 volts at approximately 8 amps. This was mounted on a piece of ebonite which formed the lid of a small metal box. Two large terminals (the Belling-Lee type are admirably suited for the job), two spade terminals and a bulldog clip from the local sixpenny stores, a worn-out No. 800 cycle lamp battery, about one yard of heavy flex and a small piece of wood were all the materials used. As the transformer was a semi-submerged chassis mounting type, a square hole had to be cut to accommodate it. The two terminals were mounted towards the other end of the lid and a $\frac{3}{4}$ -in. hole was drilled about midway between them to allow for the entry of the mains lead. The heavy gauge 2.5-volt secondary winding was connected across the two terminals and the primary winding to the mains lead, which can be any suitable length—but rubber-covered flex is suggested for this, as it will stand up to workshop wear and tear better than the silk-covered variety and is also safer.

The yard of heavy flex was cut into two pieces and a spade terminal fixed on one end of each.

The discharged cycle lamp battery was opened up and the carbon rod removed from the centre of one of the cells. This was filed down to a blunt chisel point at one end and a V-shaped notch cut half-way along the chisel edge.



Sketch showing general arrangement of the LT soldering method suggested by G6AB in his article

The carbon rod was fastened to a piece of wood, which is used as a handle, by means of a small piece of tin bent round the carbon rod and bolted through the wooden handle (see sketch). One free end of one of the heavy flexes was soldered to the tin and the first few inches of flex taped to the wooden handle. The free end of the other piece of heavy flex terminates in the bulldog clip.

Using the Device

The technique of soldering with this equipment is to cut a 3-in. piece of resin-corded solder and grip about $\frac{1}{4}$ -in. of it with the bulldog clip. First of all,

make the proposed joint mechanically sound as in ordinary soldering practice (and because two hands are needed to perform the soldering operation), connect up the mains to the transformer, switch on, apply the V-shaped nick in the carbon rod across the wire and hold it there approximately $\frac{1}{4}$ -in. from the joint to be made; then touch the joint with the resin-cored solder at the end of the other lead, holding it on for a few seconds, and it will be found that the heat generated along the $\frac{1}{4}$ -in. of wire will first of all melt the resin, after which the solder will follow it and make a perfectly-soldered joint in far less time than it takes to tell.

Ruggedised Valves

WHAT IT MEANS IN TERMS OF PERFORMANCE

By R. E. B. HICKMAN
(R.C.A. Photophone, Ltd.)

RADIO valves of the receiving type are being used in increasing numbers for applications which may be broadly classified as "industrial." Such applications occur in many varieties of control gear, in computing machinery, and in mobile communications systems, particularly those used in aviation and marine equipment. When a valve fails in a domestic radio receiver it is merely inconvenient, but a failure in an application such as those noted above may result in complete stoppage of some vital process, in severe financial loss to the operator, or even in danger to life.

To meet the demands of these industrial applications, a series of valves was evolved incorporating many special features designed to ensure a long and pre-determined operating life, uniformity of characteristics amongst specimens of a given type, and stability of characteristics for individual valves. Such valves are known as "ruggedised" types. A number of them are now appearing on the surplus market, and experimenters may find it well worth while to consider their use. The following details of some of the characteristics of ruggedised

valves will be of interest to potential users.

The Considerations

Early development plans showed that ruggedness must be built into valves. Attempts to select reliable specimens from ordinary stock showed that in the long run the selected valves were not better than samples picked at random. Long life of the ruggedised variety is assured by stringent choice and 100% inspection of all raw materials, by critical processing and assembling, and by conservative ratings which provide moderate current per unit area from the cathode and moderate power dissipation per unit area from the plate and grid.

For example, pure tungsten wire is used for heaters in preference to alloys of lower strength. Nickel tubing is used round the heater wires at the junction to the stem wires to prevent breakage or burning. All production specimens are given a 50-hour continuous run under full rated operating conditions to eliminate early failures. When operated within their published ratings, the average life of ruggedised valves should be well in excess of 10,000 hours. This represents about 14 months of continuous 24-hour service and, indeed, one manufacturer guarantees such valves against free replacement if they fail within 10,000 hours of life or within two years after initial use, whichever occurs first.

Performance

Uniformity and stability of characteristics of ruggedised types are achieved by great care in selection of materials,

inspection of parts, and mounting and testing complete assemblies. In addition, numerous tests are applied to the finished valves and the performance requirements are much more critical than for standard types. The improvement derived from these stringent mechanical and electrical specifications and quality control results in a rejection during final tests of only one-fifth of the equivalent rejections of standard valves.

Ruggedised types will withstand very severe impact shocks for short periods and will operate under conditions of continuous violent vibration for many hours. The bases (of the non all-glass types) are generally made of materials with low moisture absorption and very high leakage resistance under conditions of high humidity. In the case of twin triodes, the manufacturing methods used lead to exceptionally good balance between the two halves.

Some Equivalents

Ruggedised valves may be identified in many cases by the fact that they include a final "W" in the type number. For example, 5U4GW, 6L6W, 6SQ7W, 807W, and so on. Other ruggedised types have numbers such as 5654, 5691, 5692, 5814, etc. In general, these valves have electrical characteristics very similar to some standard type, but usually require higher heater current and have lower maximum ratings. 6L6W, for instance, is very similar to 6L6; 807W to 807, and so on. 5654 is a ruggedised version of the miniature 6AK5, 5691 is similar to the 6SL7-GT, 5692 to 6SN7-GT, and 5814 to 12AU7. Any of these valves may be used in the same general way as its equivalent, and will, if operated within its ratings, give the user all the advantages of built-in reliability, uniformity and long life.

PIRACY REPORTS

The form in which we propose to handle future piracy reports was given on p.816 of the February issue. Any G operator who has reason to believe his callsign is being misused should, having made sure it is an authentic case of piracy, report the facts to the Post Office, quoting his licence reference. If it is desired to publicise the matter, details can also be forwarded to us for notice in this space.

G3CMH (Yeovil Amateur Radio Club) is being pirated on 7 and 14 mc phone by a station believed to be in Cumberland.

G3GWG (Maidstone) is having his call used on 7 and 14 mc CW by a pirate who gives his name as "Will" and QTH as Sheffield. This appears to be a case of misuse of an unissued call, as the 40-odd QSL's so far received by the present owner of G3GWG relate to the period before he was allotted the callsign.

G8VR (London, S.E.2) is on VHF and 1.7 mc only, with CW. The "G8VR" who is using phone on 3.5, 7 and 14 mc is a pirate—which is all the more annoying for the real G8VR, who QSL'S all genuine QSO's 100%.



CLICK-STOP FREQUENCY SELECTION

The "Mermaid" R/T equipment designed for small craft such as trawlers and yachts incorporates, on the trans-

mitter, an auto-selector tuning mechanism which enables eight spot frequencies in the range 1.6-3.8 mc to be accurately tuned. These frequencies are set up beforehand to ensure use of the correct channel for any particular service—No 1 is always the distress frequency. The transmitter circuits are all tuned on this single knob, which is so designed that it can be manipulated by touch in the dark. The "Mermaid" small craft radio equipment is manufactured by Philips Electrical, Ltd., Century House, Shaftesbury Avenue, London, W.C.2.



AMERICAN LOVE SONG

It had to happen—it could only happen in America—and of all the things that can happen on the amateur bands, it is just the sort of thing that catches the attention of the public press. W5NXH, of Laredo, Texas (Myrtle) and W9GQQ, of Granger, Indiana (Samuel)—yes, you've guessed it—have been conducting a "short wave radio courtship." Instead of meeting under the clock, he's been dating her up on 80 metres. And on February 15 their marriage in New York was made a TV feature. Let us hope they will be happy.

Become a Direct Subscriber

HERE & THERE

Index, Vol. VIII

EVERY copy of this issue of *Short Wave Magazine* includes, as a loose insert, a complete index to the last volume. Our customary brief survey of the contents of Vol. VIII discloses that some 70 outside contributors had work published under about 90 main headings, covering between them a very wide variety of subjects in the Amateur Radio field. Our payments to these contributors total over £1,100 for the year, since *Short Wave Magazine* still pays at much the highest rates in the Amateur Radio literary market. As in previous years, many of our outside contributors saw themselves in print for the first time in the *Magazine*, and some at least have gone on to make their presence felt in other fields.

Incidentally, should any reader find that his copy does not contain the index, it can be forwarded on application to our office, with an S.A.E.

The Call Book

We are informed by the American publishers of the *Radio Amateur Call Book* that effective with the next (Spring) edition, a price increase becomes necessary which will make it 20s. post free in the U.K. and sterling area generally; sole agents for the *Call Book* in this area are Gage & Pollard, 49 Victoria Street, London, S.W.1, who can also accept orders in sterling from any country in dollar difficulties.

Corrections — February

Some minor corrections are called for in the February *Short Wave Magazine*. In G6VX's article, on p.791, it should be "3 feet of 80-ohm coaxial cable," and not as stated. At the bottom of p.815, G3HAZ is made to say that 0.1 of a division corresponds to 7.75 kc—it should be 1.74 kc; and the second lower-beat figure in the Table of Check Point Data should have been given as 3532.1 kc. G4LC comes up with some slight errors in his article (pp.812-814) on a remote operating system: In the top section of the diagram on p.813, the lead from the right-hand side of the polarised relay should be joined to the

top lead to the motor field; in the lower diagram, the two bottom contacts of the relay connection to "Screen HT on Rx" should be shown closed; and on p.814, in the paragraph starting "Keying . . ." the arrangement described there has since been modified by using control Line 2 and earth for keying, so that when the relays are holding, the motor control circuit is broken but the keying relay is free. And G8GD remarks that the photograph on p.805 was taken at IS1BV, and not IS1EH. We can only say that we continue to try to avoid even the slightest error.

Note These Calls

There are a greater number of blind amateurs active under G calls than might commonly be supposed. Two such recently licensed are Cecil Tysoe, G3HBX, of Warwick, and Harold Childs, G3IOW, of Ventnor, Isle of Wight; there is a nice geographical touch about the latter's callsign. About a score of blind G's are believed to be on the air.

Did You Know

That in the period 1923-1939, there were a great many more radio periodicals on public sale than there are now? Of those extant during this period, one remembers *Radio Review*, *Amateur Wireless*, *The Wireless Magazine*, *Popular Wireless*, *Practical Wireless*, *Wireless World*, *The Wireless Engineer*, *Modern Wireless*, *Wireless Constructor*, *Wireless Weekly*, *Television and Short-Wave World*, the BBC's semi-technical *World Radio* and our own *Short Wave Magazine*. Out of all these, only four still publish under their original titles — PRACTICAL WIRELESS, WIRELESS WORLD, THE WIRELESS ENGINEER and SHORT WAVE MAGAZINE—and retain their individual characteristics.

S.640 Modifications

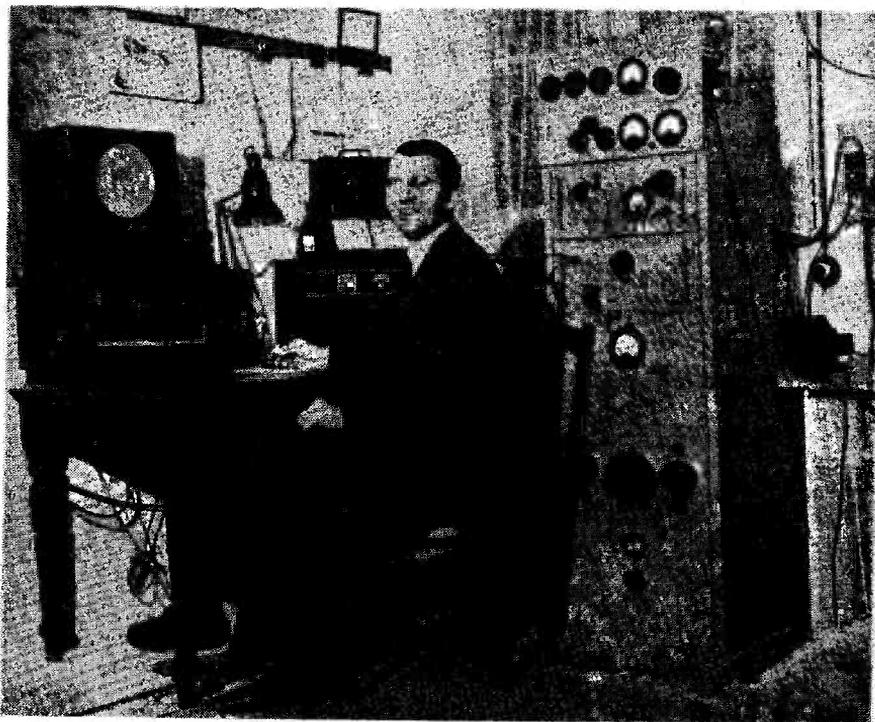
Further to G6FB's interesting article in our issue for December last, G2FAQ writes to say that he has obtained a worth-while improvement by using a 6AC7 in the RF stage. We have another article in preparation for more modifications to this already much-modified Eddystone receiver!

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 quarterly issue 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.

- | | | | |
|---------------|--|--------------------------|--|
| GM2BCM | W. C. Greenock, 67 Ireland Street, Carnoustie, Angus. | G3HFZ | J. H. G. Yardley, 1 Norfolk Road, New Barnet, Herts. (Tel.: <i>Barnet</i> 4630). |
| G2BUW | R. Butler, 122 Oval Road South, Dagenham, Essex. | GM3HGA | J. McCall, 58 Middlefield Crescent, Aberdeen. |
| G2CMF | H. J. Packe, Johmar, Victoria Avenue, Langdon Hills, Laindon, Essex. | G3HGC | W. Atkinson, 43 Sidney Road, Grimsby Lincs. |
| G3BZF | H. Goldthorp, 58 North Lonsdale Street, Stretford, Lancs. | GM3HGH | G. M. Worrall, Thistle Cottage, Cambuskenneth, Stirling. |
| G3EET | 553272 Sgt. Mitchell, Sgts' Mess, R.A.F. Station, Yatesbury, nr. Calne, Wilts. | G3HGO | D. R. Green, Cannon Court, Newport Pagnell, Bucks. |
| GW3FRK | V. C. Morgan, Brynilar, Trinity Road, Aberystwyth, Cards. | G13HGV | J. Murray, 14 Derby Street, Belfast. |
| GM3FXJ | W. L. Cairncross, 56 Blalowan Park, Cupar, Fife. | G3HGW | D. M. Bradshaw, 24 Rookery Avenue, Grimsby, Lincs. |
| G3GED | B. Bracewell, 9 Peel Avenue, Layton, nr. Blackpool, Lancs. (Tel.: <i>Blackpool North</i> 25942). | G3HGX | F. L. Rogers, Oxford House Hotel, 31 Dorset Square, London, N.W.1. |
| G3GLB | J. E. Lacey, 7 Jubilee Road, St. Budeaux, Plymouth. | GM3HLJC | J. T. Coulman, 11 Kirk Street, Leith, Edinburgh, 6. |
| GW3GQN | W. T. Walters, Hillside, Ynystawe, Swansea, Glam. | G3HMG | A. G. MacGregor, 82 Elmfield Road, Castle Bromwich, Birmingham. (Tel.: <i>Castle Bromwich</i> 2371). |
| GW3GQT | Sgt. H. Earnshaw, No. 2 Sgts' Mess, No. 32 M.U., R.A.F. Station, St. Athans, Barry, Glam. | G3HUD | Margaret R. Holden, (<i>ex-G13HUD</i>), 35 Botham Street, Grimsthorpe, Sheffield, 4., Yorkshire. |
| G3GRU | M. H. Jones, Twitton, Aston Tirrold, Didcot, Berks. | G3IMW | S. J. M. Whitfield, Whiteethorns, South Hill Avenue, Harrow-on-the-Hill, Middlesex. (Tel.: <i>BYKon</i> 2331). |
| G3GXX | T. F. C. Harvey, Cambrai, Rowsley Road, Meads, Eastbourne, Sussex. | G4XF | E. W. B. Briscoe, 5 Marshall Road, Rainham Mark, Gillingham, Kent. |
| G3GZJ | F. J. Crisp, 157 Folkestone Gardens, Tundleys Road, Deptford, London, S.E.8. | G6GU | E. Gaukrodger, 107 Wellsway, Keynsham, nr. Bristol, Somerset. |
| G3HBM | S. D. Ward, 7 Regent Street, Burnham-on-Sea, Somerset. | G8GL | T. O. I. Pick, Normansloe, Harewood Lane, Romanby, Northallerton, Yorkshire. |
| G3HBX | C. Tysoe, 6 Paradise Street, Warwick. | G8SC | C. Collins. (<i>QSL to GW8SC</i>). |
| G13HCP | R. D. Buckley, 39 Woodgreen, Belfast Road, Bangor, Co. Down. | GW8SC | C. Collins, Cross View, Caldicot, Chepstow, Mon. |
| GW3HDF | K. Groves, Belmont House, Middle Common, Buckley, Flintshire. | | |
| G3HDQ | W. Baker, 14 Vaudrey Drive, Cheadle Hulme, Cheshire. (Tel.: <i>Cheadle Hulme</i> 874). | | |
| G3HDV | R. G. Key, Youlgrave, Oakdene Road, Marple, Cheshire. | | |
| G3HDY | J. H. D. Young, 160 Balden Road, Quinton, Birmingham. | | |
| G3HDZ | R. C. Parkinson, 36 Waterbeach Road, Dagenham, Essex. | | |
| G3HEC | W. Dorell, 270 Spotland Road, Rochdale, Lancs. | | |
| G3HEG | G. Edwards, 23 Marlborough Road, Falmouth, Cornwall. | | |
| GM3HEK | J. B. M. Smith, 57 North Street, Alexandria, Dumbartonshire. | | |
| G3HEL | J. P. Traynor, 42 Derwent Road, Flixton, Manchester, Lancs. | | |
| G3HEN | A. C. White, 57 Ralph Road, Shirley, Birmingham. | | |
| G3HEO | D. P. Hobbs, 5 Eleanor Avenue, St. Albans, Herts. | | |
| G3HEP | D. E. Wadlow, Willowby, Bay View Drive, Teignmouth, Devon. | | |
| G3HES | K. G. Pugh, 115 Ryhall Road, Stamford, Lincs. | | |
| G3HEW | M. W. M. Jones, B.Sc., 15 Albemarle Road, East Barnet, Herts. | | |
| G3HEX | J. S. Brown, 78 Elder Road, Cobridge, Stoke-on-Trent, Staffs. | | |
| G3HEZ | A. E. Cullington, 1 Spring Road, Ipswich, Suffolk. | | |
| G3HFD | S. Biggon, 44 Nether Avenue, Grenoside, nr. Sheffield. | | |
| GC3HFE | W. Breton, Palmerston, St. Johns, Guernsey. (Tel.: 2439). | | |
| G3HFJ | R. G. Wyatt, 62 Hibbert Road Harrow Weald, Middlesex. (Tel.: <i>HAR</i> 6856). | | |
| G3HFR | G. R. Howe, 4 Croft View, Maiden Law, Lanchester, Durham. | | |
| | | CHANGE OF ADDRESS | |
| | | E13Z | P. Conway, St. Andrews, Moate Road, Athlone. |
| | | G2AKI | A. J. Sargent, 7 Barn Houses, Shoebury Road, Great Wakering, Essex. |
| | | G2RF | H. D. Bramwell, 5 Honister Road, Mirehouse, Whitehaven, Cumberland. |
| | | G3AXL | H. A. Ballard, 79 Milton Road, West Croydon, Surrey. |
| | | GM3AXX | A. Fraser, 35 Gadloch Street, Park House, Glasgow. |
| | | GM3BXW | C. M. Mendelsohn, 63 Ravenscliffe Drive, Orchard Park, Giffnock, Renfrewshire. |
| | | GM3BYK | F. Baillie, 20 Albert Avenue, Crosshill, Glasgow, S.2. |
| | | G3ECH | R. J. Price (<i>ex-GW3ECH/SU1VL</i>), Howard Hall, Stone, Staffs. |
| | | G3ECR | L. Harrington, 60 Lewis Avenue, Blackley, Manchester, 9. |
| | | G13GOB | W. A. Kane, 25 Victoria Avenue, Newtownards, Co. Down. |
| | | G3GWL | C. Whittingham, 39 Old Warwick Road, Olton, Birmingham, 27. |
| | | G4HZ | E. C. W. Beale (<i>ex-GM4HZ</i>), 16 Broadgate, Preston, Lancs. |
| | | G6NV | A. Hargreaves, 180 Fort Austin Ave., Crownhill, Plymouth. |
| | | G6ZR | C. R. Pounting, 27 Kings Avenue, Bishopston, Bristol, 7. (Tel.: 46502). |
| | | G8QU | A. J. Mourton, 18 Baalbec Road, Highbury, London, N.5. |
| | | CHANGE OF NAME | |
| | | G3FKH | D. Roberts (<i>formerly D. Sciller</i>), 42 Cressing Road, Witham, Essex. |

The other man's station • ZB1AH



TWO receivers are in constant use at ZB1AH, an HRO which is kept mainly for the lower frequencies, and an AR-88 for 10 metres; a BC-221 frequency meter provides a constant check for both transmission and reception. In front of the HRO is ZB1AH's filing system which, as stations who have worked him know, permits their name, QTH, time and date of last contact, and so on, to be quickly found.

The transmitter is entirely home made, the lower portion containing the two heavy power packs for PA and Modulator and the indispensable Variac; without the latter it is impossible for stations in Malta to work, since the mains voltage drops from 200 volts to 150 volts regularly every evening!

The drive unit was constructed from a TU6B tuning assembly and contains VFO on 3.5 mc, 6SK7—6F6—6F6—6V6 doubler to 7 mc. Only two bands are worked at this station (14 and 28 mc),

mainly because of aerial difficulty. The transmitter runs 6AG7 doubler to 14 mc, 807 doubler to 28 mc, the final being a pair of 807's in parallel. It is hoped to put this rig off the air in due course, since a super-modulated transmitter has been constructed; running at an input of 50 watts, it gives better results than the 100-watt plate-and-screen modulated job shown.

The beam used at ZB1AH is a dual affair and is solidly constructed to withstand the very high winds, or gregale, met with in Malta; three-element 10-metre and two-element 20-metre arrays give very good service, and the whole structure is rotated from a hand winch located in the shack.

Construction and operating are combined, and so far ZB1AH—owned by F. Hague and located at Ramel Buildings, Isouard Street, Sliema, Malta, G.C.—has achieved WAS and DXCC, among other awards.

The Month with the Clubs

FROM REPORTS RECEIVED

Reports from 34 Clubs are published this month, all apparently well settled down to a promising season of activity.

In addition we acknowledge receipt of the following Club Circulars and News Letters: *Quid Novi?* (North West Kent), *CQ CF* (Cardiff), *South Manchester Radio Club Monthly Magazine*, *North Kent Circular*, *Chester and District News Letter*, *Dorking and District Bulletin*, *West Kent Newsletter* and *Brighton and District The Brighton Link*.

Closing date for next month's reports is first post on **March 14**. Address them to Club Secretary, *Short Wave Magazine*, 53 Victoria Street, London, S.W.1.—and please don't forget that we are always interested in Club photographs suitable for publication in this space.

And so to this month's Club News

Chesterfield and District Scientific Society (Radio Section)—

This newly-formed group meets in the Chesterfield Technical College (East Block), and all radio amateurs in the district who would like to attend are asked to get into touch with the Secretary—name and address in panel.

East Surrey Radio Club—

—Recent meetings included the AGM and a talk on Television Receiver Construction. This year the G5LK Trophy will be awarded to the member showing the best piece of home-made equipment. Newcomers have been welcomed, and further prospective members are invited to attend any meeting, at The Barn Room, 8 Lesbourne Road, Reigate, on March 22 and every four weeks thereafter.

Grimsby Amateur Radio and Television Society—

—Membership continues to increase, but the absence of some of the older members is noticeable. The club station G3CNX is now on phone, working 80 and 40 metres on Wednesday evenings. Morse classes continue and appear to be bearing fruit. Meetings are held at the back of 50 Welholme Road, Grimsby.

Isle of Man Amateur Radio Society—

—It has been decided to run a General Meeting every month—7.30 p.m. on the first Wednesday, at the Headquarters. No further notification of individual meetings will be sent to members. The last two have been very well attended and carried through with the minimum of formality. The Club Tx, GD3FLH, operates from the Headquarters and is now on both CW and Phone.

Lincoln Short Wave Club—

The TV Receiver progresses favourably on alternate Wednesdays, between the normal meetings. A recent debate on "My Ideal Transmitter" attracted a lot of interest, and, in the future, there are to be talks on Radio Construction (Soldering), Theory (with the aid of a 'scope) and, on March 21, G3GAF will describe a complete station for the LF bands. See also the displayed announcement concerning the coming Hamfest.

North Kent Radio Society—

A very successful year was reported at the recent AGM, the most pleasing feature being the increase in licensed members. The officers and committee have been re-elected and a full programme for the coming year is being mapped out.

Ravensbourne Amateur Radio Club—

—Membership is now 20, and the Club Tx, G3HEV, will be on the air shortly. G3ADL is giving some interesting lectures at the meetings, which are held every Wednesday and Thursday, 7—10 p.m. at Childeric Road School, S.E.14 (Canteen available!)

Reading Radio Society—

—Recent subjects up for lecture and discussion have been Operation on the Top Band, a Complex VFO Transmitter, a Simple CC Transmitter, Aerial Coupling Methods and the Elimination of TVI. The AGM will be held at Abbey Gateway on March 31 at 7 p.m.

Taunton and West Somerset Radio Society—

—At the February meeting, held at the Castle Hotel, Taunton, Mr. Maddocks gave a

lecture on Electronics and Medical Research. Note the change in title of this Club, and also the new Secretary's QTH (in panel).

Thames Valley Amateur Radio Transmitters' Society—

This Club recently held a very successful Ladies' Night at which some 90 people were present. The AGM in January, was also well attended, when the President and all other officers were re-elected. The business meeting was followed by a talk on 70 Cms, given by G8SM; this was so well received that it will be repeated in April. A full programme has been drawn up for the coming year, and meetings are held on the first Wednesday of each month at the Carnarvon Castle Hotel, Hampton Court, at 8 p.m.

Worcester and District Amateur Radio and Television Club—

—New officers and committee were elected at the recent AGM—see panel for new Secretary's name and address. The Club has now obtained fresh premises and will be meeting every Thursday at 7.30 p.m., at The Rainbow Club, Rainbow Hill, Worcester. It is hoped that before long the Club Tx, G3GJL, will be on the air on Club nights. Old and new members are welcomed to the freshened Clubroom, with its greatly improved facilities.

Worthing and District Amateur Radio Club—

—Readers are asked to note that the former Secretary, Mr. R. B. Forge, G3FRG, has resigned. The name and address of the new Secretary are in the panel; please note them, to save unnecessary re-direction of mail.

Stourbridge and District Amateur Radio Society—

—Two recent meetings saw a demonstration of a home-built Tape Recorder by G4MI, and a talk on High Quality Amplifiers and Automatic Control, by Mr. W. H. Rigg. Good attendances continue, despite unfavourable weather conditions.

Wanstead and Woodford Radio Society—

—Recent events have included a lecture on Tape Recording, two Practical Evenings, and talks on "How to Buy Junk Wisely" and "Transmitter and Frequency Checking." The next few Practical Evenings are to be devoted to building a modulator for the Club's Top Band transmitter.

Derby and District Amateur Radio Society—

—Work is going ahead in the Clubroom with the idea of enabling the Club station,



The stand of the Shefford Radio Club at a recent exhibition held locally.

G3ERD, to be on view to the public during the Festival celebrations this year. The transmitter is being rebuilt and rack-mounted. The Club's library is also being collected together, forming a very useful reference for members. The Clubroom at the School of Arts and Crafts, Green Lane, Derby, is open every Wednesday from 7.30 p.m. Visitors and prospective members will be made welcome at any session.

Edgware and District Radio Society.—Meetings are now held at 22 Goodwyn Avenue, Mill Hill, on Wednesdays at 8 p.m. The AGM has been held, and the same committee re-elected for another year. Forthcoming events include a night-time D.F. Contest on 1.7 mc, to which non-members will be welcomed, if they contact the Secretary for further details. It is hoped that a new aerial will be erected by the time these notes appear, and that G3ASR will be back on the air.

British Two-Call Club.—This "Club" does not meet in the physical sense, but runs a newsletter, *QTC* and issues a membership certificate. It is open to all British amateurs who have held two or more calls, one of them being overseas. Membership totals 80 and includes MD5DA, ZC1CL, VE3BWY, VS7BJ, VS6BW, MP4BAO, ZE3JO, ZL1MF, SV1RX, ZD4AF and many other well-known call-signs. Application forms for membership are available from G2DHV.

Barnet and District Radio Club.—During February the Club visited Brookmans Park—a trip

very much enjoyed despite the weather. Half an hour's Morse class has been arranged for each meeting, and an evening's Slow Morse Net is also planned. Visitors welcomed, every Wednesday at 7.45 p.m.

Birmingham & District Short Wave Society.—During January the Club visited the Birmingham Police HQ, to inspect the Radio Control Room and Maintenance Department. G5BJ, the Officer i/c, gave a very interesting talk on F—M, and demonstrated two transmitters and a receiver. Some "action" was then seen, and the private telephone exchange also visited. Birmingham is the only Police Force using duplex F—M. On March 12 the meeting will take the form of a Radio Quiz with a difference—small fines

imposed for incorrect answers or failure to answer!

Brentwood and District Amateur Radio Society.—The AGM and the Annual Dinner have been held, and plans are now concerned with field day activity and for a station at the coming Handicrafts Exhibition in April. On March 16 there will be a lecture and demonstration by the Decca Record Co., with long-playing records. Other local Clubs have been invited. It is hoped that new and better accommodation will be available shortly.

Brighton and District Radio Club.—Future events include a series of lectures with the Mullard Film Strips and a talk by Mr. Bennington, the well known authority on the Ionosphere and

LINCOLNSHIRE HAMFEST

SUNDAY, APRIL 29, 1951

at

THE GREAT NORTHERN HOTEL
HIGH STREET, LINCOLN

Assemble 2 p.m.

Tickets may be obtained from Mr. L. Gostelow, G2FOW, at 21 Cannon Street, Lincoln. 5s. 6d. each, including High Tea. Last day for Booking, March 31, 1951.

its mysteries, on VHF propagation conditions. Visits to the Power Station and the Telephone Exchange are also planned. The Club station, G3EVE, will be looking for 80-metre CW contacts during the "Ragchew Evenings."

Chester and District Amateur Radio Society.—At the AGM all the officers were re-elected, and a full programme of lectures, film strips, films and demonstrations has been planned. Membership now stands at 36, with 9 licensed members. The Club derived much publicity from a recent recording made for the "Voice of America" Amateur Radio Programme, in which the Chairman and several members spoke; this was broadcast at 7.15 p.m. on February 18, on a number of VOA frequencies, and in spite of some flutter fading and a certain amount of room resonance, was well received in this country on 9700 kc. The recording was made on gear owned by a member of the club, and was the first such broadcast originating in this country to be included in the VOA's weekly Radio Amateur Programme. This very successful effort will no doubt inspire other Clubs to attempt something on similar lines. Chester's secretary will be glad to give the necessary details. Club meetings are on Tuesdays, 7.30 p.m., Tarran Hut, YMCA Grounds, Chester.

Clifton Amateur Radio Society.—Recent events included lectures on Propagation, Modulation and Pulse Technique, and TVI from Amateur Transmitters (this last by an official of the GPO). Forthcoming—a 3.5 mc transmitting contest, an SWL contest and talks on 70 cm. Equipment, and Transmission Monitoring and Measuring. Meetings, every Friday, 7.30 p.m. at 225 New Cross Road, S.E.14.

Kingston and District Amateur Radio Society.—During February there were lectures and demonstrations, including one on Metropolitan Police V.H.F. Communications. A Junk Sale was also held. The Club will be operating a station at the local Rotary Club's Hobbies Exhibition in April. Meetings are at 7.45 p.m. on March 14 and 28, Penrhyn House, 5 Penrhyn Road, Kingston. Visitors welcomed, and light refreshments available.

Southend and District Radio Society.—Proceedings at the AGM were recorded on tape by a member, who afterwards played part of them back and explained the working of his recorder. A meeting was devoted to Radio Model Control. Several lectures of interest have been arranged for the future, and the Annual Ham-fest is fixed for April. A programme of D—F Contests has

also been arranged. Next meetings—March 16 and 30.

Medway Amateur Receiving and Transmitting Society.—New officers were elected at the AGM held in January. Note change of secretary; QTH in panel. Medway meets at 8.0 p.m. every Monday, alternately at the Club room at 207 Luton Road, Chatham, and at the Transmitting Hq. at 17 Five Bells Lane, Rochester. The society's TX, G2FJA, is also on the air from 8.0 p.m. every Thursday, at the latter QTH. Visitors are welcomed at all meetings, and the Club hopes to see those who may be posted to local units for their 15 days' training.

West Kent Radio Society.—Their annual dinner and party is being held on March 28 at 7.30 p.m. the venue being The Greyhound Hotel, Langton, Nr. Tunbridge Wells. Ladies are invited and all interested are asked to apply to the Hon. Treasurer, W.K.R.S., 17 Reynolds Lane, Tunbridge Wells, for tickets (price 6s. 6d. single). Good local bus services are available and members' cars will also be out to meet as many visitors as possible.

Portsmouth and District Radio Society.—Recent lectures have covered the subjects of Marine Gyro-Compasses and Low-Power

NAMES AND ADDRESSES OF CLUB SECRETARIES REPORTING IN THIS ISSUE.

BARNET: C. J. Spencer, G3GRA, 31 Byng Road, Barnet.
BIRMINGHAM: W. V. Shepherd, 174 Gristhorpe Road, Selly Oak, Birmingham 29.
BRADFORD: V. W. Soven, G2BYC, Rushwood, Grange Park Drive, Cotingley, Bingley, Yorks.
BRENTWOOD: J. F. Moseley, G2CIW, 45 Geoffrey Avenue, Harold Park, Romford.
BRIGHTON: R. T. Parsons, 14 Carlyle Avenue, Brighton 7.
CAMBRIDGE: F. A. T. Davies, G2ALL, Meadow Side, Comberton, Cambridge.
CHESTER: W. Lloyd, 124 Tarkin Road, Chester.
CHESTERFIELD: K. Robinson, G3BHO, 51 Hill Top Road, Old Whittington, Chesterfield.
CLIFTON: W. A. Martin, G3FVG, 21 Brixton Hill, London, S.W.2.
COVENTRY: K. Lines, G3FOH, 142 Shorncliffe Road, Coventry.
DARLINGTON: D. Graham, 21 Hamsterley Street, Darlington, Co. Durham.
DERBY: E. Shimmin, Leafmoor Mount, Derby Lane, Derby.
EAST SURREY: L. Knight, G5LK, Radiohme, Madeira Walk, Reigate.
EDGWARE: R. H. Newland, G3VW, 3 Albany Court, Montrose Avenue, Edgware.
GRIMSBY: W. Atkinson, G3HGC, 43 Sidney Road, Grimsby.
ISLE OF MAN: H. Grist, GD3FBS, Broadway House, Douglas, I.O.M.
KINGSTON: R. Babbs, G3GVU, 28 Grove Lane, Kingston, Surrey.
LINCOLN: G. C. Newby, G3EBH, 10 Addison Drive, St. Giles, Lincoln.
MEDWAY: C. R. Hawkins, 9 Sanctuary Road, Gillingham, Kent.
NORTH KENT: L. E. J. Clinch, 8 Windsor Road, Bexleyheath, Kent.
PORTSMOUTH: R. Short, G3AFF, 76 Roman Grove, Portchester, Hants.
RAVENSBORNE: Mr. Wiltshaw, 4 Station Road, Bromley, Kent.
READING: L. Hensford, G2BHS, 30 Boston Avenue, Reading.
SOUTHEND: J. H. Barrance, M.B.E., G3BUJ, 49 Swanage Road, Southend.
STOURBRIDGE: W. A. Higgins, G8GF, 28 Kingsley Road, Kingswinford, Brierley Hill, Staffs.
TAUNTON AND WEST SOMERSET: K. Farrell, 27 Victory Road, Taunton.
THAMES VALLEY: K. A. H. Rogers, G3AIU, 21 Links Road, Epsom, Surrey.
WANDSWORTH: M. M. Wallace, 13 Auckland Hill, London, S.E.27.
WANSTEAD: M. Roots, Wanstead House, The Green, London, E.11.
WEST KENT: A. C. Pollard, 28 Greentrees Avenue, Tonbridge.
W.F.S.R.A. ("Bedfast Club"): J. Woodward, 6 Council Houses, Rode Heath, Stoke on Trent.
WORCESTER: H. M. Rudge, 21 Tempe Road, Worcester.
WORTHING: F. H. Bettelley, 42 Anweir Avenue, Lancing, Sussex.
83 RESERVE CENTRE, RAFVR: D. R. A. Pontet, 83 Reserve Centre Amateur Radio Club (RAFVR), Old Church Lane, Stanmore, Middlesex.



Some of the gathering at the First Class Operators' Club dinner in London on November 25 last, when 66 members were present. Unfortunately, the numbers and the shape of the room prevented a full-view photograph being taken.

Equipment. A receiver for portable use is being built by the Receiver Group, and a companion transmitter will shortly be started. A welcome innovation has been the provision of refreshments at half-time during meetings.

Club News in Brief

Forthcoming Meetings

Wandsworth and District Radio Club.—March 14, 7.30 p.m. at Waldron Road School, Garratt Lane, S.W.18.

Bradford Amateur Radio Society.—March 13—Preliminary Field Day discussion; April 3, G3ADQ on Simple Transmitters.

Darlington & District Amateur Radio Society.—Now meeting at 129 Woodlands Road, Darlington.

Coventry Amateur Radio Society.—March 12, Radio Controlled Models; March 16, Annual Dinner; March 26, No Meeting; April 9, Mathematics lecture.

Worthing and District Amateur Radio Club.—March 12, 7.30 p.m. at the Adult Education Centre.

W.F.S.R.A. ("Bedfast Club"). Last month's appeal for help in "Cash or Kind" has brought forth some valuable support. Parcels of gear have been promised, specific items of gear for particular cases have been guaranteed, and in

another instance a good receiving aerial has been erected for a bed-ridden SWL who was making do with a piece of wire in the loft. More offers and enquiries will, however, be welcomed by the Hon. Sec. (see panel).

83 Reserve Centre Amateur Radio Club (R.A.F.V.R.).—This Club, for the exclusive use of Volunteer Reservists, has been on the air since last November and is soon being transferred to a new shack. The primary aim is to help "key-bashers" to obtain their licences, but the Club is open for anyone interested in electronics, from coils to cyclotrons. It meets every Monday at 7 p.m. and will eventually be open at all hours, seven days a week.

CAMBRIDGE

GRANFIELD TROPHY CONTEST

This Contest will be held on March 31 (2300-0200) and April 1 (1400-1700). The twelve best contacts on any band and any system count for points, scored according to the figures given on pp. 842 and 843 of *Short Wave Magazine* for January 1950. Further details from G2ALL.

AN RAFVR AMATEUR RADIO SOCIETY

Any VR's interested in the formation of a Society are asked to contact the Hon. Sec. of the 83 Reserve Centre Club (see panel). The aim is to provide facilities that will encourage and assist VR's interested in private experimental work relating to communication and electronics. This would be realised by establishing clubs at Reserve Centres and Reserve Flying Schools throughout the country, and would receive the support of the RAFARS (Cranwell).

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VCR-97 Tube	£1 15 0
3BP1 3 inch Elect. Tube	£1 2 6

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R1155N. Comm. Recv.	£14 14 0
R1224A 5v. Batt. Rec.	£5 19 6
Type 6A Receiver	£2 2 0
P.40 V.H.F. Super Rec.	£3 19 6
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DLR.I. Headphones with bands	7 6
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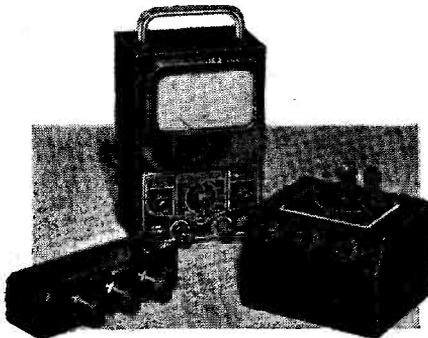
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BC.348M, mains p/p, hardly used, £14. W/S 19, complete station, less p/p, American, as new, £14. German Rx, 8 w/b turret, 100kc-7 mc, spare valves, mains elim., acc., £8. Radio Altimeter RT2. ARN1, complete installation, 12v, new, £6. Partridge, Greengarth Hall, Holmrook, Cumberland.

Short Wave Magazine, March 1951

SMALL ADVERTISEMENTS
TRADE—continued

BC348-C RCA S/W Receiver. Condition as new, with new pair of phones, seen working evenings or week-ends, £12/10/0. Mr. A. V. Smith, Gate House, Warnham Court, Horsham, Sussex.

R.C.A. Speech Amplifier and Ribbon Mic (new) for R.C.A. transmitter ET-4336 £20. G3GTV, 5 Central Avenue, Pinner, Middlesex.

EDDYSTONE 750 double superhet, new, 5 months' guarantee still to run. Offers to: 10 Moor Park Road, Northwood, Middlesex.

SUITCASE set W.S.A. Mk. 1, complete with spares, £7/10/0— or exchange MRC1. G. Bell, Saleby, Alford, Lincs.

WANTED. At a reasonable price or by swap, one each of 6AS7, 6AL7 valves in new condition. BRS.13,236, 170 Keendonwood Road, Downham, Kent.

BARGAIN. Denco DCR19 communication receiver, new and unused, £39/10/0. Hall, 38 Cambridge Gardens, St. Neots, Huntingdon.

V2 Transmitter, complete AC p/p, coils, crystals, manual, £6. New Woden UMI, 27/6. As new, Labgear 150-watt coils for 80 and 40, 10/- each; also (for callers) new Westinghouse 45ft. sectional mast, £4. Two 35ft. wooden poles, £1. G3AAV, 166 Otley Road, Leeds 6. (Tel.: 51277).

EDDYSTONE S840, matched speaker, phones £20. Delivered. 6 volt vibrapack, 12/6. Wanted BC221, BC348, AR88. Details and price to Box 895. **SALE:** 150w Phone/CW rack built transmitter, 8a12 months' old. Fully metered, built in relays, etc., complete to last detail and in new condition. Cost over £100 new. Accept £60 or offer. Box No. 896.

2-208 Revrs., complete power pack and speaker. 60-30 mc, 6 valves, £8 pair. Working order. No cases. Carriage extra. J. Holland, Bk. 64, High Street, Cleethorpes.

SALE—American petrol driven generator, 2000 Watts at 28 volts DC rating. Best over £10 to: Worthing Radio Club, Atickwa, Salvington Gardens, Worthing.

HAMMARLUND HQ129X, perfect, matched cabinet speaker, manual, £60. Franklin exciter speech amplifier, black crackle, 7 valves, 3.5 and 7 mc output drive, 807 PA and modulators, £8. Details, photographs. Offers? Price, Howard Hall, Stone, Staffs.

G3GAN selling radio equipment and components. Quote your requirements, and offer. G3GAN may have it. 86 Sandringham Road, Penn, Wolverhampton.

AR88D, and matched speaker, grand order, £48. Owner going abroad. Moore, Earlsway, Birkenhead Road, Hoylake, Cheshire, (Tel. 3221).

FOR Sale: R107 communications receiver in perfect order, with S-meter, in strong crate, £9. Write: McCallum, Meadhurst, Uppingham, Rutland.

AR88D spares wanted, manual, S-meter, valves and alignment tools, phone Cambuslang 54 or write, 15 Hawthorn Walk, Cambuslang, Glasgow.

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for securing an Amateur
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The Course includes all essential training to enable the average student to be successful. The fee is reasonable too.

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TYPE 36 MONITOR. Ideal Unit for conversion into CRO. Contains 230v. A.C. Power Pack, VCR 139 Tube with mu-metal screen and 9 useful valves. A better finished job than the test set 74. **FOR CALLERS ONLY, J.B.'s. Price £5/10/0.**

THE FAMOUS 45 mc/s IF STRIP complete with valves. J.B.'s. Price £3/0/0.

BELLING STYLE TWIN FUSE HOLDER for tubular fuses, 2/9. Fuses, 9d.

CHROME PICK-UP HEAD, 10/-.

MOVING COIL HAND MIKE No. 7, 5/-. Transformer to match, 3/6.

ADMIRALTY S.M. DIAL with white scale and finger tip control ratio 100-1. 5/6.

15amp SKELETON PANEL FOOT SWITCH made by well-known manufacturer, D.P.S.T., 4/6.

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TYPE 22 SIGNAL GENERATOR complete with 6v. Vibro pack, 22/6.

THERMAL DELAY FILAMENT SWITCH, 6.3v., 6/-.

METAL RECTIFIERS. 12v., 1 amp., 10/6.

METAL RACKS. Standard 19in., 5ft. New Condition, 30/-.

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PLEASE SEND S.A.E. FOR COMPLETE LIST OF VALVES, COMPONENTS AND EQUIPMENT.

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VALVES EX-GOVT. NEW AND BOXED. VR91 (EF50), 6/-; VR65 (SP61), 3/6; VR92 (EA50), 3/-; NR88 (RL18), 3/-.

R.F. TEST SETS. In grey metal case $\frac{1}{2}$ in. x $\frac{3}{4}$ in. x 3 in. With VR92, 50 Micro-Amp. 2 pin. round flush Meter, resistors, condensers, switches, etc. In transit case with leads. 35/-.

STROBE UNITS. Brand new, less valves. The cheapest way of buying pounds worth of hi-grade components, 15/-.

INDICATOR UNIT TYPE 157. With $\frac{1}{2}$ in. VCR97 C.R. Tube in mu-metal shield, holder and rubber mask. 16 of VR65 (SP61), 4 of VR92 (EA50), 1 of VR54 (EB34), 12 wire wound and 3 carbon pots, Muirhead S/M dial, Brill and Focus controls, 2 S/M drives, and a host of resistors, condensers and switches. Two-deck chassis, upper deck in separate screened compartment, all enclosed in metal case, 9 in. x 1 1/2 in. x 1 1/2 in. BRAND NEW IN SEALED TRANSIT CASE. 95/- plus 7/6 carriage.

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Meets every requirement for radio assembly, maintenance, telecommunications, etc. High Temperature, Quick Heating, Low Consumption, Light Weight

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VALVES. 807, 6/-; 6X5, 4/6; 6J5G, 3/3; EA50, 2/-.

DURAL TUBE. 1 1/2 in x 20, 6d. ft.; 3/4 in. x 16, 7d.; 1/2 in. x 16, 6d.; 1/2 in. x 20, 4d.; 1/2 in. x 18, 3d.; please state alternatives carr. extra.

TWIN FEEDER. 300 ohm, heavy duty, 5d. yd. 75 ohm, best quality, 6d. yd., carr. extra.

EDDYSTONE COMPONENTS. At 331/3 off list prices, shop soiled, Cat. Nos.: 1091, 1092, 534, 1129, 1131, 1094, 1093, 1130, 585, 538, 614, 137, 533, 612, 611, 1011, 1022, 535, 699.

CHOKES. Midget 5H, 2/-, swinging 3.6/4.2H, 150mA, 5/-; PO standard jack plugs, 4d., large type 4-way plugs and sockets, 6d. pair.

CERAMIC SWITCHES for 150 watts, 3-bank, 2-way, 5/- or 3 for 12/6.

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SMALL ADVERTISEMENTS

READERS—continued

S.640, £18/10/0. B.2 transmitter with coils, £5. both perfect. Two 723A/B valves, £1 each. G3BW1, 28 Clovelly Avenue, Ashton, Preston.

ASB8, new, unused, £7/10/0. BC342, LS3 speaker, almost new, £20. BC614E, mint, £12. 813 new, boxed, 27/6. BC1004C, Super Pro, 540 kc-20 mc, 110v power pack, £28. Prefer buyer collect. Parker, 9 Cheltenham Road, Broadway, Worcestershire.

WANTED. S27 or S36 receiver with or without panadapter. Price and condition to G3K1, South Lodge, Eastgate, Lewes, Sussex.

AR77E, 540 kc-31 mc, S-meter, xtal, calibrated bandspread on amateur bands. Perfect condition, £17/10/0. Carr. paid. Honeyball, 66 Surrey Road, Bournemouth.

AMATEUR has for disposal ET4336K R.C.A. transmitter, complete R.C.A. speech amplifier and VFO (Wilcox Gay), £75. Also National HRO Senior Rx, National Power Pack and coils, £30. Box 883.

EDDYSTONE 680 brand new, cost £90, offers around £65. Wanted: mint condition SX28A. 28 Ivanhoe Road, St. Budeaux, Plymouth.

WANTED BC221 with xtal and manual, for cash. Also good communication receiver. G3GQW, 328 Upper Fant Road, Maidstone, Kent.

FOR Sale. S.T.C. Ball microphone, £4. Q-Max converter with five and ten metre coils, £10. Nepean, G5YN, Greystones, Telfont, Salisbury, Wilts.

WANTED: HRO and BC-221 in mint condition. Full particulars and prices to Box No. 884.

COMPLETE ET4336 transmitter, excellent condition, fitted Wilcon-Gay M-O. All valves, plus one each 805, 813, 866A, RF-ammeter, aerial tuning inductance. Lot £55 carriage paid. Box 885.

T.1131 VHF Tx. (6ft. rack/cabinet job) professionally reconditioned and modified for 144 mc, complete with all new valves, £50 or near offer. C.43 Canadian HF Tx, with all valves (two 813 in PA) absolutely as new, (suitable PU complete now obtainable ex-surplus), £40 or near offer. Sky Buddy, 6-valve Rx, (450 kc to 46 mc), re-aligned and in first-class order, £12. Buyer to collect in each instance. G2DS, 39 Knoll Road, Bexley, Kent.

SALE. Pair 35T boxed, 20/-. Pair DET12, 30/- S834 12/6. 808 with base, 12/6. New, unused. Radio G3HCV, Bourton-on-the-Hill, Moreton-in-Marsh, Glos.

DYNAMOS. 30v 100 amp. £2. 12v 48 amp. as new, £1/10/0. 24v motor or dynamo, 100 amp. continuous, £1/10/0. Rotary power packs: Type 33, 24v to 1250v. 200 mA, £1/10/0. Type 87, 24v to 250v 60 mA, 6.3v 2.5a., 10/- Dynamotor, 24v to 250v 75 mA, 15/- Hallierafter power pack, 12v input. Vibrator 250v 75 mA and R.T. 350v 165 mA, £2. 2 PT15's, 15/- Box 887.

FOR Sale BC-342 Rx, 1500 to 18000 kc, power pack and speaker. Good condition. Offers over £14 to: Baxter, 81 Town Avenue, Leeds Road, Huddersfield.

SMALL ADVERTISEMENTS

READERS'—*continued*

W1/S9 complete, two No. 2 power units, R109T BC221M, BC1066B, Signal generator I-196B, artificial aerial A58. All as new—cheap—parts, books, etc. giving up radio. Write (all answered), evenings and week-ends. Murphy, 31 Western Avenue, Herne Bay.

FOR Sale 1155B, built-in 6V6 output stage, converted for 160, power pack and 8in. speaker, £9/10/0. Box 886.

FOR Sale: Bendix TA12D, 4, VFO bands 1-7 mc, parallel 807's final, modulator, power unit, also R.1155. Must sell! £17/10/0 or offers? Sallows, 37 The Drive, Walthamstow, E.17.

MCR1 with all coils, power pack, and head-phones, perfect £8/10/0. Motor generator 24v in, 250v 6.3v out, 15/-. C1 Barreter, DF1, 1A7, 1N5, 1H5, 1C5, all unused, 5/- each. Output meter, 5/- 0.5 ammeter, 5/-. M/R output transformer, 4/-. Output trans, for two PX4's, 7/6. Goldring pickup, 15/-. Mains transformer 350-0-350 100 mA, 6.3v 4A, 5v 3A, 2 chokes, 3 electrolytics, 30/-. Box of useful oddments 10/-. Wood, 118 Moscow Drive, Liverpool 13.

HALLICRAFTER Sky Champion, S20R, 550 kc-43 mc, AVC, BFO, £15 or near offer. Admiralty B13, 3 valve TRF, 15 kc-20 mc, £2. Apply for details to: D. Maher, 77 Bury Street, Norwich.

HQ129X, RME70, SX28, S27, CR100/3, Sky Challenger, APN.16 Unit, DB20 Unit. All for 230 AC. Offers to: Sutcliffe, 103 City Road, Bradford.

WANTED. Hallicrafter S20R, BC221. Box No. 889.

HALLICRAFTER Sky Champion, excellent condition, £11. TCS-10 Rx/Tx, with power packs, £22/10/0. BC221, £7/15/0. Blanchard, 28 Coburg Road, Dorchester.

HRO Senior, bandspread coils, 1.7 to 30 mc, stabilised power pack, speaker, £24. G2FCI, Little Pleasance, Western Road, Ashburton, Devon.

RCA speaker, Farrex shortwave converter, all coils, both £3, or exchange for BC221 and cash adjustment—17 Park View, Morden, Surrey.

CR100, perfect condition, fitted S-meter, real bargain at £16. SCR-522 Tx/Rx, complete with all valves. What offers? Good M/C microphone wanted, floor or table stand—GW5B1, 171 City Road, Cardiff.

HALLICRAFTERS S27, 2-10 metres, £22. National One/Ten receiver, P/P 230v, all coils, valves, £15. Wanted SX28A or offers? Box No. 891.

EDDYSTONE 640. 120-watt transmitter complete, including two power packs. Quality components only. Spares, inc. Avo junior. Inspection invited. £35 the lot or near offer. No splitting. Box No. 890.

RCA AR88D 540 kc-32 mc, new, £37/10/0. AR88LF, as new, £30. Eddystone 358X, 40 kc-31 mc. Metered power pack, £14. R1355, £2. Also RF units. Viewmaster De-Luxe Tv, new, £37/10/0. Victoria AC bridge and multi-range meter, as new, cost £32—£8/10. Home-built TV superhet, complete, £12/10/0. 5 TU 6, 7, 8, £2/5/0. Taylor, 11 Berrans Avenue, Kinson, Bournemouth.

Short Wave Magazine, Volume IX

NEW BOXED VALVES. 6K8M, 10/-; EM34, EF39, DH63, KTW61, KTW63, TDD2A, VP2B, VP4, VP4A, 6C6, 6D6, 8/6; ATP4, 6K7M, 5U4G, 7/6; 1L4, 3Q4, 3A4, 6AC7M, 6/6; 6CSGT, 9D2, 5/-; 9003, 4/6; 954, 955, 6J5GT, 3/6. Many other Brand New Valves available at Bargain Prices—UCH21, AZ31, DDT, TP2620, 715B; TH41, EF22, UAF42, etc., S.A.E. for List or Quotation.

MINIATURE MOULDED MICA CONDENSERS. 100 pf., 4/6 doz. or 42/- per gross. Complete List of Components, Etc., now ready.

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Short Wave Receivers and Kits of quality

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The following special offers include delivery, C.W.O. Insulated Anti-Vibration mounts set of 4; 35lb. 4/-, 12lb. 3/3, (first one is good mount for the steel tank whip aerials); R1116 battery all wave receivers £11 tested (special leaflet 3d.); Huge catalogue in preparation, are you on mailing list? Send 6d.; See S.W. Listener for other offers; 2 speed Slow Motion dials, 4in. spindle, knobs, engraved plate, 6/-; midget American Relays (brand new) approx. 1in. cube, 24 volts coil; D.P.D.T. carry 3-5 amps change-over, only 9/6; Micro switches 3/-; Ceramic switches 5 amp, plated contacts, 1 pole 11 way 5/-; Enclosed press to talk mike switches to hang up 2/-; Twin co-ax sockets on panel 1/3; S.130 voltage stabilisers 10/- pair; V.C.R.97 Screens 4/6.

RADIO G200 ANNOUNCES

RETURN POST SERVICE

VALVES: 6J5gt, 4/6; 6AC5, 6/6; 6C4, 7/-; 6H6, 2/-; 6K7GT, 6/-; 6L5g, 6/6; 6N7, 6/6; 6N7GT or G, 5/6; 6O7G, 6/6; 6SC7, 12SG7, 6SH7, 12SH7, 6/6; 12SK7, 6/9; 6X5, CV66(RL37), 6/6; VR91, EF50, 5/6; EF39, 6/9; 78, 8/6; 80, 7/6; 5Z4, 8/9; 6K8, 6K8G, 9/6; VR150/30, VR105/30, 8/6; 9003, 2X2, 3/- Large stock of Branded and Rare types of valves at manufacturers' Retail prices. You can order C.O.D. if you prefer. Trade and overseas enquiries invited.

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T1154 Power Pack, AC mains 200/250v input, 1200v HT at 200 m/a, LT at 7 amps, per pair, £12. HT pack only type 46, £8.

Walky Talky type 38 set, all dry, 7-9 mcs, 45/- . ATP4 spare transmitting valve, 5/6. T1154 new boxed output panels, 10/6. Morse Keys Boxed, 1/6.

AC mains crystal controlled transmitters, 1.7-14 mcs, £12.

Crystal selector 4 crystal sockets, 7 mcs inductance and trimmers on small sub chassis, 5/- each.

Harvey AC mains pack, Green crackle, pilot jewel, 350v double smoothed HT at 100 m/a, 6.3v, 6.3v, 5v, 2.5v, £3/10/0.

Battery Chargers, Tape recorders, ASB8 receivers, etc.

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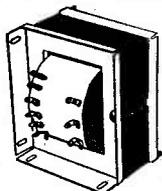
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1. 250-0-250v. 80m.a.; 4v. 5a; 6.3v. 4a; 4v. 2a; 5v. 2a.

2. Same as 1 but 350-0-350v.



3. 24v. 2a. tapped to give steps of 3v. up to 24v. All secondaries 200-220-240v. 15/- each all types. Postage 1/- 3 or more post free

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"GLOBE-KING"

Short Wave Kits and Components. Production fully booked up until new series commence Autumn, 1951. Watch this Magazine for later announcements :

JOHNSONS (Radio),
MACCLESFIELD.

SMALL ADVERTISEMENTS

READERS'—continued

EXCHANGE : Inverter 220 DC to 230/1/50 AC, 3.5 amps., maker's Newton Bros., Derby. Worth £50. Far as new BC221 or S27. Also have Inverter 110 DC to 230/150. Jobson, Tofts Farm, Seaton Carew.

HRO For Sale. Coils from 1-30 mc. Re-valved or re-tracked. re-aligned, xtal filter, £20 or offer. Box 892.

813 with holder, 35/-. 230v-10v 6 amp transformer, 10/-. 6ft. rack (standard) door at back, £1. Rack panel plus meter—G3FD, 20 Knoll Drive, Southgate, N.14.

HRO coil unit MW and LW only, suitable for rewinding, 35/-. CWO C43 transmitters (4) complete with power units, £75 each, buyer collects. G2NU, 82 Church St. Staines, Middlesex. (Tel. Staines 3999).

FOR Sale. Mullard Cap. Resis. Bridge, 250 AC as new in fitted case, £6/10/0. Full set coils for Eddystone 358 Rx, new, £5. Speech amp. for BC610, good order, £6/10/0. Wilcox-Gay VFO 2-10 mc, new, handbook, with power pack, £5. Wanted Panoramic Adaptor for 455 kc IF. Write only S.A.E. Gabriel, 10 Abbotsford Place, Glasgow, C.5, Scotland.

HALLICRAFTERS SX23, S-meter, crystal, BFO, HNL, 540 kc-34 mc, bandspread 10, 20, 40, 80 metres, excellent condition, £25; with S23 10-in. speaker, £27/10/0. Taylor generator 65B, as new, £9/10. Triplett multi-range meter, 5000 opv, mint condition, £10 carriage extra. Flat 4, 64 Palace Road, East Molesey, Surrey. (Molesey 3267).

HAM going overseas, selling up. Eddystone 750, £40. BC221 with mains power pack, £10. Both in first-class condition. Four brand new 813's, 25/- each. Eddystone bug key, used but in good condition, £1. New TU6B, 5/- . Box No. 894.

HRO Type MX, 160-10 metres, general coverage noise limiter and S-meter. Good condition, £30 or near. Dempsey, 10 Sylvan Avenue, Mill Hill, N.W.7.

EDDYSTONE 358, perfect cond., 8 valves, 150 Ekc-31mc, no power pack, £10. G3ELC, 201 Tamworth Road, Newcastle-on-Tyne, 4.

SALE. G3FJS emigrating. Any reasonable offer accepted part or whole. ET3446, Clapp VFO, 1131 Mod. with 2 power packs and fil. trans., 813's push pull PA, Tx, Xtals, 6ft. rack, oscilloscope, ex-Govt. valves and equipment. Send for list. All going cheap. Very low price if you can arrange carriage. Elder, 74 Stockton Road, Middlesborough, Yorkshire.

HALLICRAFTER Super Skyrider, SX17. 13 Hvalve, continuous 5-550 metres, crystal, S-meter, noise limiter, BFO, 230 AC mains, excellent appearance, working well. Including delivery, £30 or offer? 2 Wolverhampton Road, Codsall, Staffs.

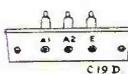
COMPLETE 2 metre station—converter GG CRF-6J6 Mix/Osc, Transmitter (fully metered), 5-element Yagi. All complete except 832. Power required 6.3v, 250/350v. £10/10/0 lot. Also AR88. Nice condition, S-meter, manual, £40. Offer? Box No. 893.

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SOCKET STRIPS. Paxolin mounted.

- Two socket engraved L.S. 6d. each. Bin. C16B.
- Two socket engraved A.E. 6d. each. Bin. C18A.
- Two socket engraved P.U. 6d. each. Bin. C19B.
- Two socket engraved Dipole. 6d. each. Bin. C19B.
- Two socket plain. 5d. each. Bin. C18B.
- Three socket engraved DIP and E. 9d. each. Bin. C16D.
- Three socket engraved A1, A2 and E. 9d. each. Bin. C19D.
- Four socket engraved A.E. Puckup, 9d. each. Bin. C19E.
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- Five socket plain. 9d. each. Bin. C16C.



TRANSFORMER SNIP

A universal replacement by a very famous maker. Standard mains input secondaries: 350-0-350 at 80 mA 6.3 tapped at 4v. 4 amp. and 4v. at 3 amps. Special price for one month only 13/6, plus 1/- post. Note this is a half shrouded drop through type.



CRYSTALS

100 Kc/s American made to very high precision, bakelite cased, 10/- each. Good range of other crystals on octal, B7G, 2 pin and other bases. Send your requirements.

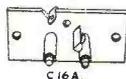
TWO PIN PLUG

Split pin type, this fits socket types C16A' C16B, etc. 6d. each, Bin. C20B.



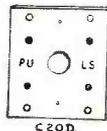
10 CORE CABLE

10 flexible copper conductors well insulated suitable for mains work. Covered overall with hard rubber, 1/6 per yard.

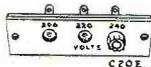


SPECIAL SOCKET PANELS

Two socket plain, with optional switching for internal and external speaker, 9d. each, Bin. C16A.

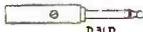


Four socket panel, marked P.U., L.S., with screw shorting switch for muting internal speaker etc., 1/3 each. Bin C20D. Mains voltage selector panel, three-socket marked 200, 220 and 240, screw adjuster type 1/3 each. Bin C20E.



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Jack Socket for D31A. 10d. each. Bin D31B.
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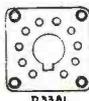
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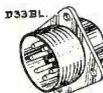
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