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BULLETIN

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN



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- THE HISTORICAL DEVELOPMENT OF AMATEUR RADIO
- "UTILITY" VALVE VOLTMETER

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PUBLIC RELATIONS

OUR revered contemporary *Punch*, recently remarked that although no one could yet say when the war would end, nevertheless each day that passed, brought us further from its beginning! With this profound thought in mind, perhaps we may spare a moment to consider how we shall stand when the great day has dawned and the British radio amateurs form a patient queue outside the grim portals of St. Martin's-le-Grand.

No one can yet say what will be the answer to our hopes for permission to resume activity; we believe that the amateur has earned a right to consideration by reason of his services to the community in its hour of need. We believe the Service Departments realise the debt they owe to that enthusiasm and technical ability which was to hand, ready for use at a critical time. We have to remember, however, that in a democracy, other people; Parliament, the Press and not least, the general Public, must be convinced of our usefulness to the nation if our full hopes and aims are to be realised. Broadcasting needs no champion: it is already a firmly established integral part of our civilisation. Television, F.M. Broadcasting, Civil Aviation, Police and other services will all be clamouring for more space. How will the amateur fare in the fray? And what are we, which means you, doing about it now?

We were often surprised by public ignorance of our work, even when we were active. Public memory is notoriously short. What of the position to-day, after five years of silence?—which brings us to our subject; "Public Relations." This phrase is not just another way of saying "Advertising"; it is something much more subtle and fundamental. It is the art of fostering interest and goodwill, with emphasis on a willingness to serve.

Most big industrial firms, and the majority of Government Departments, have their Public Relations Department, whose job it is, not only to keep the public informed, but also to ensure that each individual in the concern is himself imbued with the spirit of service. That then is the point. Every member of this Society should consider himself a self appointed Public Relations representative for Amateur Radio. In this connection, perhaps we may suggest a few ways in which the ordinary member can enlist the goodwill of the general public, which really means his neighbours, local organisations and local newspaper.

Make friends with the local Press. Invite a representative to all local meetings of major importance and send in a well-written account of all ordinary meetings for publication.

Try to foster interest by contributing a short article or letter to the local Press with Amateur Radio as its main theme. If you are in the Home Guard or one of the pre-service Training Units, let the powers-that-be know that you possess a sound knowledge of radio and offer your help if it is required.

Even at the cost of a little personal inconvenience, a great deal of goodwill can be gained by willingness to service local broadcast receivers in these days when the genuine professional service man is hopelessly overloaded with work, and unskilled rogues fleece the unfortunate public. Such well-timed help now, may stand you in good stead when that rotary-beam raises its stately head in the back garden after the war. The neighbours will remember the man who helped them out in the difficult days and perhaps not have quite such strong views on the general appearance of the newcomer as might otherwise have been the case! Joking apart though, such help to one's neighbours all helps to raise the stock of Amateur Radio generally. If you are in one of the Services, make every endeavour to establish a reputation as a "gen. man." Let those around you see that your Amateur Radio training means that you can be relied upon to undertake a responsible job.

That part of the story of Amateur Radio at war which may be told, will lose nothing by judicious repetition. Those members who are in touch with such organisations as Rotary, T.O.C., Y.M.C.A. and the like, can help by talking about it whenever the opportunity presents itself. Originality counts for much. Let us hear about any bright idea that has been tested and found to be successful; publicity in THE BULLETIN may enable others to obtain invaluable publicity elsewhere.

It is of interest to record three recent examples of publicity which have come to our notice. The first, a full-length article published in *Empire News* under date of February 20, 1944, records in some detail the splendid work done in an Italian Prisoner-of-War Camp by Sgt. "Snowy" Campbell, VK3MR, who it will be remembered was officially adopted by the R.S.G.B. as "next of kin" after his capture in North Africa.

This article tells of his series of detailed lectures on electricity and radio which, commencing with a class of 500 men, had to be split again and again and the lectures repeated. Each of those prisoners will one day, soon we hope, again be a private citizen. Each will have a warm spot in his heart for amateur radio thanks to one man—VK3MR.

The second example is quite different. It takes the form of a letter to a local newspaper from Mr. E. H.

(Continued on page 176)

THE HISTORICAL DEVELOPMENT OF AMATEUR RADIO*

S. K. LEWER, B.Sc. (G6LJ).

THE future of amateur radio is going to depend largely on what we have done in the past. It is therefore important that we should be clear in our own minds as to what we have achieved and as to how the present standing of amateur radio has been reached. We must be sure that our recollections are true, because time distorts our memories and often leads us into wishful thinking. We cannot afford to forget our mistakes any more than we would want to forget our triumphs.

The Birth of the Society

It is impossible to follow the history of amateur radio in this country without also following the history of this *Society*. A small body of enthusiastic pioneer amateurs existed in the years immediately preceding the last war, but without anything in common except their individual technical interests. There were no radio journals and no clubs. The initiative and foresight of Mr. R. H. Klein (subsequently 2HT) led him, in the summer of 1913, to call a meeting. This was held at his home in Hampstead, in north-west London, and as a result, the *London Wireless Club* was formed. Two months later, the name was changed to the *Wireless Society of London*. Presumably the prestige of the members merited the rather more elegant title. The *Society's* interests broadened out over the whole country, and in 1922 the name was again changed to the *Radio Society of Great Britain* and since then the *Society* has become increasingly powerful as the representative of the British amateurs' interests.

The *Transmitter and Relay Section*, formed in 1923, largely consisted of the influx from the *British Wireless Relay League* which lived for a year and was then absorbed by the *R.S.G.B.* In February, 1924, the *Radio Transmitters' Society* which had been formed separately in London four months earlier, united with the *T. & R. Section*. At this stage, the whole *Society* was in a state of flux. So was the whole of British amateur radio. In 1924, DX records were being made and broken every month and almost every week. The technology of commercial practice was being badly shaken up by these developments, and the number of transmitting amateurs grew very rapidly. All of this resulted in a change in the character of the membership of the *Society*. Some have described it as a split, but I think that what it amounted to was that, with the improvements which had taken place in the whole of the radio art, the membership tended to segregate into two groups—the professional and the amateur. Eventually the professionals migrated mostly to the *Institution of Electrical Engineers*, to whom we have been indebted for the use of their very fine building during the 30 years of our history. The amateurs remained within the *R.S.G.B.* There are, of course, some people who are members of both bodies, having both professional and amateur interests.

In passing, I should like to take this opportunity of recalling the friendly gesture recently made by the *I.E.E.* when they invited members of this *Society* to attend future meetings of the *Wireless Section* of the *Institution*.

The Written Word and the Part it has Played

In the early days, radio literature was naturally a rare commodity. It was no difficult task to read every

single word that was written about radio. This was true until about 1923. There have been countless developments since then and hundreds of millions of words have been written about radio in thousands of articles. Think of all the books and magazines and manuals on amateur radio that have been published. This *Society's* contribution amounts to nearly 200,000 copies of *The Amateur Radio Handbook* and *Radio Handbook Supplement* and to half-million or more copies of the *Bulletin*. Now take them all away and go back to the time when there was only one journal for amateurs in existence in the country. That was our old friend, the *Wireless World*, which began its career in 1913 and was the official organ of this *Society* until the *Bulletin* was started in 1925.

Early Equipment

By that time—the early 1920's—the coherer, like the magnetic detector, had become a thing of the past, but spark transmitters were still quite popular. Aerials were usually of the horizontal twin-wire type, with a few cage-aerials here and there. The single wire was a rarity. Crystal sets were comparatively numerous. Valves were of the triode bright-emitter type, with filaments consuming about 0.7 amps. at 4 or 6 volts. The accumulator was therefore an important item in the station equipment. Tuning inductances were large, cumbersome affairs, on account of the long wavelengths in use. Variable condensers of 0.001 μ F. or even 0.0015 μ F. were quite common.

Before broadcasting became properly established in 1923, loudspeakers were regarded as something of a luxury, and almost without exception they took the form of a straight conical horn operating with a flat iron diaphragm of the telephone-receiver type. Valve amplifiers for high- or low-frequency often comprised three or four or even five stages of un-neutralised triodes. Self-oscillation in high-frequency amplifiers was prevented by dimming the filaments or by applying positive bias to the grids. The same tendency to instability was also encountered in low-frequency amplifiers — and they were sometimes known, perhaps for this very reason, as “note-magnifiers.”

Prior to 1922 there was not much to listen to by present-day standards. The usual receiver tuned from about three hundred up to several thousand metres. Tuning over large sections of this spectrum would often fail to produce a signal for quite long periods. Spark transmitters on and around 600 metres were used for ship and shore stations, and it was not at all difficult to identify some of them by the tone of the spark . . . and the fist, of course! With luck, a few snatch phrases in speech might be heard from Croydon aerodrome on 900 metres working with aircraft operating the London-Paris service.

The *Wireless World* published a list in 1919 of the most interesting stations to be heard at that time. There were 16 in the list. More than half of them were spark and the remainder C.W. The most distant station from Great Britain was NAA at Arlington, on the East Coast of America. The wavelengths were all between 2,400 and 15,000 metres.

The Ban on Experimental Work

After the end of the last war in 1918, there was a long delay before the Government was ready to lift the ban on radio. Before the ban was lifted it was

* A paper read to the Society on September 25th, 1943, at the Institution of Electrical Engineers.

illegal to "buy, construct or use apparatus for wireless telegraphy or telephony." This seems rather harsh to us now, but as there was no broadcasting at that time it was evidently the official view that no private individual had a right to do any listening.

The *Wireless World* had been appearing regularly every month all through the war and was prepared, like the *Wireless Society of London* of those days, to exert as much pressure as possible on the authorities to secure the lifting of the ban. After the Armistice, the battle of the amateurs began, and there was a great drive to persuade the Post Office to relax. The pre-war pioneers wanted their licences back and, of course, the war had produced a vast flock of new technicians, enthusiastic and impatient, just the same as we can see happening to-day.

Practically every month there was an editorial note in the *Wireless World* on "The Amateur Position." There seemed to be a general feeling that there was some red-tape business about it, but it was apparently recognised that part of the delay at least was due to the difficulties the legislating authorities were having on account of the "arrival" of the valve. Before the war, valves were unobtainable. The few that did exist were hardly more than laboratory curiosities. But the war had shown what could be done with small valves, and no doubt, the Post Office was alarmed at the thought of hundreds and perhaps thousands of valve receivers being illicitly converted into transmitters.

In July, 1919, the *Wireless World* said: "That a return to crystal reception and spark transmission will in due time be permitted we have little or no doubt. Already the P.M.G. has signified his readiness to issue licences for the reception of time-signals by clockmakers in connection with their business." Incidentally, in the same issue, the *Wireless World* quoted a letter from John Clayton in America (who subsequently joined the staff of *QST*) where he reported that transmission by American amateurs over distances of 2,000 miles was by no means rare.

The same issue of the *Wireless World* reported that somebody was fined £25 "for having in his possession, without the written permission of the P.M.G., an apparatus for the reception of messages by wireless telegraphy." (The italics are mine.) It seems, however, that the Post Office was not going to sleep on the job, for a statement from the Secretary of the Post Office in the preceding March—four months after the Armistice—notified manufacturers that it had been decided to remove the restrictions imposed on the sale of buzzers.

Reception Experiments Permitted under Licence

In November, 1919, the *Wireless World* said: "Somewhat to our surprise and greatly to our regret, the British amateur still remains suspended in space, nearly a year after the signing of the Armistice." However, a last-minute Supplement was published with that issue which said: "In view of certain paragraphs which have recently appeared in the daily press indicating that a change has occurred in the amateur position, we give hereunder a complete description of the facilities at present available for amateur wireless work, brought up to date—October 21, 1919:—

(1) All amateur licences have been cancelled and new ones are not yet being issued.

(2) Special informal permission to use receiving apparatus is being granted and the following is the official statement regarding this. (This statement was practically the same as the experimental receiving licence which was still being issued at the outbreak of the present war. S.K.L.)

(3) No licence or permission to transmit by wireless telegraphy is at present obtainable by amateurs, as the

conditions under which this will be allowed are not yet settled.

We shall keep readers fully informed of further developments."

The Ban on Amateur Transmissions Lifted

When licences were issued again after the war, amateur transmission was first permitted on two fixed wavelengths—1,000 and 180 metres, but as a result of recommendations made to the Post Office by the *Wireless Society of London*, these two fixed wavelengths were replaced by a fixed wavelength of 440 metres and a short-wave band from 150 to 200 metres. The *Society* also succeeded in obtaining the removal of the restriction of amateur communication to five named stations, which had hitherto been generally applied.

The first post-war licenced amateur transmissions took place in 1920 or 1921, and then things began to move rather quickly. At that time, the predominant amateur interest was in the transmission of speech and music. The idea of listening to a concert transmitted by radio was a tremendous novelty. It was a new experience to all of us to hear the sound of music coming out of a pair of 'phones. It seemed rather uncanny to me, the first time I heard it, but it is a little difficult to believe nowadays that such a commonplace experience could at one time have seemed so strange.

PCGG and 2 Emma Toc—Writtle

By 1921, we had the famous Dutch concerts transmitted from PCGG at The Hague to listen to on Sunday afternoons. The wavelength was 1,050 metres, and the signal was therefore rather weak. Nevertheless, these concerts whetted everybody's appetite, and in the same year this *Society* applied to the Post Office for special permission for organised transmissions of broadcast programmes. After some initial difficulties, permission was granted for short transmissions once a week. The solution to the practical problem of getting something on to the air was provided by the *Marconi* people at their experimental station 2MT at Writtle, near Chelmsford. The wavelength was 700 metres at first, but this was soon reduced to 400 metres. The programme lasted for about half an hour—and it was on Tuesday evenings. It was not very strong in London, but a real improvement over the Dutch concerts.

That was the time when everybody who was listening seemed to be using an ordinary triode-valve detector with reaction, and with so many newcomers building these sets and not knowing how to tune them properly, there were countless wavering heterodynes around Writtle's carrier all through the programme caused by so many people "tickling up the reaction" to try to get a bit more out of their sets and to try to get rid of the heterodynes from other oscillating receivers and usually making their own sets oscillate in doing so! This trouble became so acute that the Post Office introduced more legislation to the effect that licences would only be granted for the use of receivers in which the reaction circuit was effectively separated from the aerial circuit so as to prevent radiation if the receiver should be allowed to go into the oscillating condition.

It was surprising how far we could reach out with an oscillating receiver, especially later on when we dropped down to 200 metres. I remember how 6TM and I used to work each other without switching on our transmitters, merely by chasing round the band till we found each other's oscillating receiver carrier and then keying with a wet finger on the grid terminal!

It is interesting to note in passing that in April, 1922,

there were 7,000 receiving licences in Great Britain. Two months later the number had risen to 11,000. The number of transmitting licences was about 450.

The Beginning of National Broadcasting

Those Whittle transmissions opened up the way to a full scale broadcasting service over the whole country in 1923, but unfortunately the growing importance of broadcasting and the widespread public interest in it threatened to be the end of the British amateur. The trouble arose out of the interference that amateurs were said to be causing to the public's reception of the broadcast programmes. The Americans were having the same difficulties, too, and the best they seemed to be able to do was to institute a system of "quiet hours" by which amateurs were under an obligation to shut down for some part of the evening so that the broadcast listeners could have the air to themselves. At this time in America, the majority of amateurs were on 200 metres, while the broadcast band covered from about 350 to 500 metres. In this country, there were crowds of amateurs still on the old 440-metre wave, although a good many had gone down to 200. But the interference seemed to be intolerable even when the amateur was on 200. People did not pay much attention to the question of selectivity in those days and it was not at all uncommon to find that the broadcast receiver had only one tuned circuit. It is hardly surprising that there was so much interference.

"Quiet Hours" for Amateurs

The system of "quiet hours" was tried over here, but it was not considered satisfactory because the amateur was forbidden to transmit for the greater part of the evening. Then the 440-metre amateur wavelength was abolished, and all the amateurs were pushed down to the shorter waves which nobody else wanted. I do not think it would be an exaggeration to say that if it had not been for the efforts of the *Society* in those critical times, the amateur might have been squeezed out of existence, ironically enough by the very developments which he had initiated.

The Coming of the Superhet Receiver

The problem of interference eventually solved itself by the self-evident need for much higher selectivity in the ordinary broadcast receiver. It took us a long time to reach that happy stage, and I would say that it was the rising popularity of the superhet, in 1930, that helped us to turn the corner. The rapidly increasing number of broadcasting stations all over Europe made everybody selectivity-conscious and there was a real demand for sets with high selectivity. And when there is a real demand, the trade always sets out to meet it. In this case, the mass-produced superhet was the answer. This solved the broadcast listeners' problem of separating out his broadcasting stations and at the same time it eliminated the interference from the amateur transmitters.

The Trans-Atlantic Tests

Going back to 1921-22 again, there was a drive being made in America to get amateur signals across the Atlantic. At that time, nobody had ever sent short-wave signals over that distance. Nobody knew whether in fact it would be possible. Any idea of being able to get amateur signals right round the world to Australia and New Zealand seemed almost fantastic.

Some elaborate tests were organised by Mr. Philip Coursey (2JK) with the help of the *American Radio Relay League* and the *Wireless World*, by which British experimenters would listen at scheduled times for American amateur transmissions on 200 metres. The first tests were unsuccessful, but they were repeated a year later with improved technique, and

this time some of the stations were heard in Great Britain.

The following winter (1923-24)—by which time the more progressive stations had come down to 100 metres—two-way working across the Atlantic was established. The British and the French were the only Europeans active in those days, and on the other side there were the Americans and the Canadians. All the tests had to be made in the middle of the night during the winter months in order that the whole of the transmission path should be in real darkness. Because of the interference caused to the broadcast programmes on the other side, the tests could not be started until about 10.30 p.m. local American time. That meant that we had to wait until after 3.30 a.m. However, by that time, the mush from the arc transmitter at Northolt, which used to spread all over the short waves, had stopped for the night and everything was fairly quiet. Of course, most of the American signals were weak and took quite a lot of finding, and I think everybody's chief aim was to get as much sensitivity as possible out of his receiver. People began to send in lists of calls heard and these were published in *QST* and the *Wireless World*, and for many years afterwards they served a very useful purpose in letting amateurs know that they were getting across even if they could not actually make contact.

First Amateur Contacts with Australia and New Zealand

In the autumn of 1924, two-way contacts were effected by British amateurs for the first time with Australia and New Zealand. All sorts of other DX contacts were being made month after month, and amateurs soon began to appear in new countries. In most of Europe, excepting Britain and France, amateurs were not permitted, but that did not stop them. Some of these "under-cover" Continental stations became quite famous in the DX-world. Holland produced PCTT and PCII, Denmark had 7EC, 7QF and 7ZM, and in Italy there were ACD, 1ER and IMT. These were, I think, the most outstanding Continental stations at that time. Other countries that soon followed were Luxembourg, Belgium, Sweden, Switzerland, Finland and Russia. For some obscure reason, Norway, Spain, Germany and the Balkans did not produce any amateur transmitters until much later, but South America soon became active. Carlos Braggio in Buenos Ayres, using the call CBS, was the star station. Africa and the Far East came last.

Co-operation with Expeditions

About 1924-25, several expeditions to the tropics and to polar regions took short-wave sets with them, and there was keen competition at home to try to establish and maintain contact with them. The grandfather of all these expeditions was the one that went to the North Pole in 1923-24, using the call WNP. Throughout the whole period of the expedition, their only possible communication was with amateur stations, although they were equipped and licensed for communicating with commercials.

Early Work on 5 Metres

In 1925, there was considerable amateur activity in this country on the new 5-metre band, mostly in the London area. Still working with triode valves and battery supplies, we explored the possibilities of mobile communication, directive radiation, and many other aspects of the ultra-short wave field. It is remarkable that some of the equipment used by the Services in the present war is essentially the same as that which we found so effective in those pioneer days.

World-wide DX was well established by 1925.

British amateurs were allotted 44-46 metres and 23 metres for trans-oceanic work by special licence. The rest of the amateur world seemed to be using 20 and 40 metres.

Birth of the I.A.R.U.

In the spring of that year, I joined the party of British amateurs who went to Paris to attend the International Amateur Radio Congress. The International Amateur Radio Union was formed there, with personal representatives from 25 countries. We were appointed to various sub-committees and everybody was very busy. For me it was a great experience to meet people like Hiram Percy Maxim, K. B. Warner, Major Borrett, the leading lights of America and Canada, and to see the big amateur chiefs of so many different countries getting together to make a strong international union.

The B.E.R.U. and Empire Broadcasting

Three years later, in 1928, the British Empire Radio Union was formed, due largely to the energetic efforts of our Past-President, Mr. Arthur Watts (G6UN).

The next event I want to recall is the lead that amateur radio gave to Empire Broadcasting. To all old-timers, Empire Broadcasting will always be associated with the name of "Gerry" Marcuse (G2NM), President of the *Society* 1929-30. By relaying B.B.C. programmes through his own station (having been granted special permission to use 1-kilowatt and a wavelength of 32 metres), he awakened the interest of listeners in all parts of the British Empire and forced the pace of official progress. The *Wireless World* at the same time was also agitating the Government to do something about Empire Broadcasting. That was in 1926 and '27. Soon afterwards, when they had seen that the demand existed, the B.B.C. started to build its first experimental short-wave station (in June, 1927) and the short-wave Empire Service was officially opened in November, 1928.

World-Wide Interest in Short-wave Radio

From 1928 onwards, there followed a big increase in activity on the amateur DX-bands, and a great many new national prefixes were to be heard on the air. DX-contacts were being made for the first time on the 28-Mc. band.

It would take far too long if I were to try to make an adequate survey of the history of amateur radio through the 1930's, but there were two important landmarks during that period which should not be forgotten. They were the *International Telecommunications Conferences* held in Madrid (1932), and Cairo (1938). Mr. Arthur Watts (G6UN) was present at both of them as the official delegate of this *Society* and a representative of the I.A.R.U. Amateur Radio has been well defended on these battlefields where commercial and broadcasting interests have been eager to squeeze us out of the frequency spectrum, and I think we must look forward to similar battles in the future. The importance of proper representation at these Conferences cannot be too strongly emphasised.

Technical Progress

In the sphere of technical progress we tend to forget what enormous strides have been made, and I regret that lack of space prohibits any attempt to review them here. I think it is very important, however, that we should realise quite clearly where all this progress has been made. As amateurs, we are rather fond of blowing our own trumpet, and we certainly have something to be proud of in the record of our past deeds, as I have tried to show, but we must not delude ourselves with a false sense of our importance. What

we have to realise is that millions of pounds were being spent by the industry before the present war, and no doubt this will continue when peace returns. The industry knows what it wants and it knows how to get it. There does not seem to be very much left for the amateur to do. Yet on the other hand, even the industry cannot do everything. Where amateur radio *can* take the lead is in tackling problems which are not yet being tackled by the industry. Some of these problems may be set for us quite incidentally as a consequence of the conditions in which we, as amateurs, may have to work, and there is a real chance that in solving these problems we shall make new progress which the industry may have to acknowledge when the time comes. This has happened in the past. Amateur short-wave transmission opened the eyes of the industry to the unexpected possibilities in short-wave propagation. And in other ways, too, amateurs have provided unexpected answers which were indirectly the outcome of their very existence as amateurs.

Because we exist in tens of thousands, scattered all over the world, we are in a position to make new studies and new discoveries which the industry is hardly likely to be able to do. The amount of money, capital and technical and operative skill invested in all the amateur transmitting stations of the world is so overwhelmingly large that no commercial enterprise could think of setting up an organisation in competition with us. I do not think it would wish to do so, anyway.

In America, the amateur has always earned considerable respect from the public and civil authorities, especially because of their heroic public service in times of disasters caused by floods and storms. Over here, that opportunity is denied us, and there is very little we can do to earn similar respect in times of peace, and because of that I would like to suggest that we should be even more careful not to get ourselves into bad favour—which is all too easily done in various ways. The point I want to make is that whereas certain practices may not have harmful effects in America, for various reasons related to American conditions and the American way of living, similar practices in this country could have unfortunate consequences. I think it will pay us well to observe other differences between British and American amateur radio when we all return to activity after the war, and not to assume that what is good for one is also good for the other.

My survey of the development of amateur radio has been far from complete, and I hope I may be forgiven for omitting some of the other episodes in our history which may be highly treasured by other old-timers. It has, however, given me great pleasure to offer this contribution towards a proper appreciation of the history of amateur radio and I trust that it may be an inspiration to those who are to carry our traditions into the future.

OUR FRONT COVER

THIS month's cover shows a Mullard EF50—a single-ended short-wave H.F. pentode. This is a typical example of the "pinchless" form of valve construction, in which the electrode system is mounted directly on to the short lead-out pins of a circular pressed glass base. With this technique it is possible to reduce losses considerably at the higher frequencies.

A "UTILITY" VALVE VOLTMETER

By C. A. SIMMONS (G3SV)*

THE instrument to be described makes no pretence to displace the more conventional valve voltmeter employing a sensitive moving coil movement (probably in the micro-ampere range), nor does it claim a very high degree of accuracy. Rather has it been designed as a "utility" instrument requiring, for its construction, only components which the average amateur is already likely to possess, or can fairly easily acquire in these difficult days. At the same time, its sensitivity is quite high, full scale deflection being 3 volts, which, in the writer's instrument means a scale arc of five inches, using a 5 milli-ampere moving coil movement such as is built into the usual switchboard meter. Not entirely unimportant is the fact that it is practically impossible to damage the instrument by overloading, partly by virtue of the robustness of the movement and partly because the D.C. amplifier valve, which it incorporates, reaches saturation before harm is done.

pulses transferred to the grid of V_1 by way of C_1 cause a P.D. to be developed across the grid-leak R_2 which biases the grid negatively and so reduces the anode current through the valve. This in turn, reduces the voltage-drop over the anode-load resistance R_3 with the result that the potential at the point P rises. This rise in potential reduces the negative bias on the grid of V_2 by way of R_4 with the result that an increase in anode current takes place in V_2 which is indicated on the meter.

The resistance R_4 together with the capacities C_2 and C_3 , form a filter system which smooths out the pulsating D.C. and prevents excessive vibration of the needle at wide deflections. At the same time it provides a convenient damping system for the movement. The time-constant of this filter combination can be varied to provide any degree of damping which may be desired. As a result, even a moving-iron 0-10 milliampere meter can be used as the indicator and

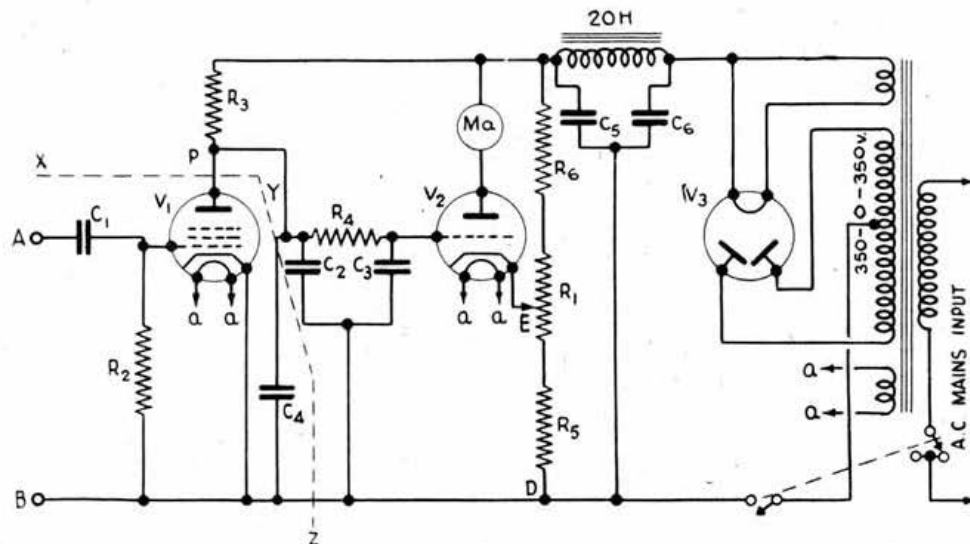


Fig. 1.
Circuit Diagram of "Utility" Vacuum Tube Voltmeter.

R1	10,000 ohms.	C1	.01 μ F.
R2	10 megohms.	C2, 3	.1 "
R3	.25 "	C4	.001 "
R4	2 "	C5, 6	4 "
R5	5,000 ohms.	V1	MS Pen.B.
R6	60,000 "	V2	MH4.
		V3	Rectifier.

Working Principles

The arrangement employs a D.C. amplifier following a grid-leak detector, which, although not one of the most stable types is certainly among the more sensitive. It also possesses the advantage that the meter scale reads from left to right, due to the phase reversal which takes place between the detector and amplifier.

The action seems to be as follows:—

After preliminary heating-up, the potentiometer R_1 (Fig. 1) is adjusted until the meter indicates zero on the dial. This is an arbitrary point but obviously as far to the left as possible so that the maximum length of scale is available for calibration. The voltage to be measured is now applied across AB. The positive

the objectionable "needle wobble" common to this type of meter can be prevented by increasing the damping of this circuit.

Components and Construction

The components within the area bounded by the dotted line XYZ constitute the detector unit, which is separate and detachable. The valve is an R.F. Pentode (MS Pen.B), connected as a triode. This valve was chosen for its top-grid connection, as no British triode, having the grid brought out in this way, was known to the writer. If an American valve had been used the 6F5 would have been chosen. The MS Pen.B is surmounted by a shield which earths to the metallising of the valve. In this shield the grid condenser and leak are housed, and connected by leads only half an inch long. The terminal A is

* North Lodge, Pyrgo Park, Havering-Atte-Bower, Essex.

mounted in the centre of a disc of polystyrene, or other suitable insulation, covering the end of the shield (see Fig. 3).

In the measurement of audio and lower frequencies this unit can be plugged straight in to the main unit (Fig. 2). It could also be used in this position for higher frequencies up to perhaps 100 kc/s providing a short lead to terminal A can be easily arranged. For the measurement of higher frequencies, however, the existence of any lead at all becomes important, and for this reason a flexible extension (Fig. 3) has been made. One end of this is equipped with a male seven-pin plug, which can conveniently be made from an old valve base, while the other terminates in a valve holder into which the detector unit can be plugged, the other end of the extension being inserted in the socket from which the valve has been withdrawn. The terminal A, can now be brought right up to the circuit on which the measurements are to be

take place it will be found that the zero setting will not keep correct; this however can be re-adjusted with the aid of the potentiometer R_1 , which should be wire-wound. If other valve types are used it may be necessary to alter the values in the potential divider, but whatever the values chosen, that of R_1 should be such that it represents no more than is necessary to give a few volts above and below zero adjustment. If this is not done, it will be an awkward business to set the needle to the beginning of the scale accurately. The power supply calls for no detailed comment. The writer feels, however, that if a stabilizer circuit, using, say, the C130 Neon Stabilizer, had been incorporated here, some improved accuracy, over longer periods could be achieved.

Calibration

Owing to the high value of grid-leak and comparatively large capacity of grid condenser, the reading



Fig. 2.
Main Unit with Detector Head in position.

made. The extension carries the heater and power supplies and a bypass condenser (C_4) to provide a short high-frequency path to earth, with reference to the circuit being measured.

The main unit is constructed on a wooden base-board with the power supply arranged along the back edge. The meter-movement occupies the centre of the base-board on a block which supports it at the correct height and angle to suit the aperture in the cover through which it will be viewed. The detector unit socket, "on-off" switch, and "Zero-set" control are spaced along the front edge, projecting forwards.

Before the instrument was made up into its permanent form it was tested on the bench as a series of loose components held together by crocodile clip leads and its performance in this form differed very little from the final arrangement. It can thus be said that the exact form is of little importance and can be adapted to suit any conveniently available chassis or cabinet.

The resistors, which form the voltage divider across the H.T., need to be of ample rating, particularly on the negative side of R_1 as the whole of the current flowing through the amplifier stage, plus the standing voltage-divider current, must flow through this resistance; at full scale deflection this may amount to 10 mA. If any considerable heating does

approximates very nearly to the peak value. If, therefore, the instrument is likely to be used to measure complex or peaky waveforms, this fact must be remembered if calibration is carried out at 50 c/s A.C. using an ordinary metal oxide meter giving R.M.S. values.

When calibration was carried out on the writer's instrument, the zero was chosen at a value of plate current through the amplifier of only a few microamperes above cut-off, where the characteristic is not by any means straight, with the result that the adjustment to this point at each time of use is rather a ticklish job. It would have been better to have chosen a value of one or two milliamperes where the characteristic is sensibly straight and less fugitive in its value for a given value of grid-bias. If such a choice of zero reduces too much the useful amount of needle movement for calibration, the mechanical zero can be adjusted so that a small amount of spring loading against the stop makes the passage of a small current necessary before the needle shows any deflection at all. It must be realised, however, that the zero of the calibration must be electrically set, and must therefore be away from the stop, or the readings will be meaningless.

It will be found that the calibration is logarithmic in character so that the scale is more open at low readings—a distinct advantage.

Performance

After allowing a fairly generous warming-up period of perhaps 15 minutes, the meter remains fairly stable and an accuracy of 2% or 3% can be expected if readings are made as required. If, however, the meter is connected in circuit for long periods, the chief limitation of most D.C. amplifiers makes itself apparent. This is due to the very great difference between the static (no reading) and deflected conditions in the meter circuit. Under this latter condition of use an error of over 5% had been noted. If, however, the zero is reset by adjustment of R_1 as



Fig. 3.

Detector Head connected to set by Extension.

required, the performance satisfies most requirements.

No serious attempt has been made to extend the range of the instrument except by an input potential divider made up of a chain of high resistance leaks.

The instrument has been used in making measurements on gramophone pick-ups at frequencies between 8 kc/s. and 25 c/s. and its low range has made it very useful in this connection. It has also been used to measure induced voltages across resonant circuits up to as high a frequency as 14 Mc/s. and although it begins to load the circuit somewhat at this frequency, it has very little effect on, say, the oscillator of a broadcast superheterodyne.

Further Development

Work along these lines is not finished, although the instrument has been completed. An obvious improvement would be to increase the number of ranges, but with the grid-detection type of meter, this cannot be carried very far. This suggests that a different type, to cover the higher ranges, is desirable, and the self-bias type seems to be indicated, but difficulty may be experienced in taking low readings.

However, the experiments leading up to the construction of this meter have proved so interesting that the writer feels sure that other members may care to follow the same line, and he would like to hear of the experiences of any who do so.

Applications for Membership

Members who sponsor applications for Corporate Membership are requested to insert their call sign or B.R.S. number after their signature in the space provided on the application form.

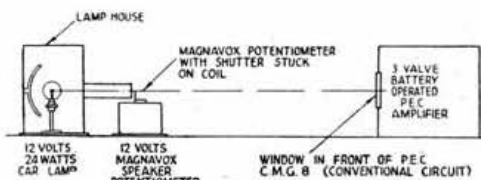
B.B.C. Annual for 1936 Wanted

Mr. R. C. Horsnell, G2YI, 80, Mayfield Drive, Caversham, Reading, is anxious to obtain a copy of the *B.B.C. Annual* for 1936. He has all editions from 1928 to 1944, apart from the one mentioned. Can any member help him to complete his collection?

Light Transmitters

By E. V. R. MARTIN (G2TL)

A FEW years ago I was called upon to deliver a course of lectures, one of which dealt with Sound-on-Film Technique. To demonstrate the general principle of "Talking Light" a simple arrangement was used comprising a car lamp bulb of 24 watts, an old Magnavox moving-coil speaker unit and a photo cell (CMG8) with amplifier. The light from the lamp was focused into a nearly parallel beam, superfluous light being cut-off by enclosing in a box with an aperture about 1 in. diameter. The Magnavox had the cone removed from the coil and a piece of card measuring $\frac{1}{2}$ in. by $\frac{1}{4}$ in. stuck on in place, so that as the moving coil vibrated in the gap, the card moved up and down like a shutter. The sketch shows the general arrangement.



The Magnavox pot. with shutter is placed close to the light source in such a way that when no signal is flowing round the winding about half the light aperture is covered.

The moving coil is fed with a signal from a two-stage amplifier and gramophone pick-up. When the beam shines on the photo cell (which is followed by a three-stage amplifier) sufficient power is available to operate a loud-speaker.

Another method which was demonstrated (with not quite so much success) was to feed a 6-watts bulb with the audio current from the gramophone amplifier output transformer low resistance winding. D.C. was passed round the lamp to "pre-heat" it. Incidentally this current went round the transformer core the opposite way to the H.T.

A very profitable line of investigation in my opinion, lies in modification of the old Philco "Shadow Tuning," in which a vane tilts through a varying angle in a beam of light. Tilt the vane by driving it from a reproducing unit and an efficient system should result. Might even fit a giant one to searchlights.

The transmission of a single tone instead of speech reduces the problem considerably.

New Books Received

PLASTICS SIMPLIFIED. By D. Warburton Brown, A.M.I.A.E. Pitman: 1s. 6d.

Although the science of Plastics is involved and embraces not only complicated chemical reactions, but also the use of specialised machinery, there are many non-technical people who are interested in the subject, yet have neither the time nor inclination to study the more learned books on the subject. *Plastics Simplified*, the latest Pitman Pocket Handbook, is written for such people.

The subject is carefully treated in six chapters entitled: (1) What are Plastics? (2) The More Common Materials. (3) The Moulding of Plastics. (4) The Forming of Thermo-Plastic Sheets. (5) Applications. (6) The Future of Plastics.

In addition to a dozen line diagrams the book is illustrated with 12 half-tone plates. *Plastics Simplified* will meet a demand for an authentic, yet simple description of the manufacture and use of plastics in the world to-day. Remember this is "The Plastic Age."

THE COMPLETE MORSE INSTRUCTOR (with a section on Semaphore) By F. Tait. Pitman: 2s.

The author is a telegraphist and wireless operator at the C.T.O., London, and as such is well qualified to give advice on Morse Instruction.

After describing well-tried methods of teaching Morse the author introduces his readers to a series of 17 graded exercises each one of which represents a good deal of careful thought and study. Although the word-group system adopted is unusual, it is definitely attractive. Lists of plain language and Mixed Groups are given.

A selection of simple buzzer and valve oscillator circuits is followed by a series of helpful hints, many of which could be adopted with advantage by "old timers." Later chapters deal with International Prefixes, the Q Code, Visual signalling, Punctuation signs and Semaphore.

Members training Cadets will find this booklet of considerable use, both to themselves and to their trainees. J.C.

SOLAR RADIATION AND THE STATE OF THE ATMOSPHERE. G. T. Stetson. THE SUN AND THE EARTH'S MAGNETIC FIELD. By J. A. Fleming. Publications 3710 and 3711 of the Smithsonian Institution, Washington, D.C.

Reprinted from the Smithsonian Report for 1942. These papers are available on loan to any member making application in writing to Headquarters. The papers will be despatched on a rota at the beginning of June.

KHAKI AND BLUE

Radio Club formed at No. 2 R.S.

The instructional staff at No. 2 Radio School, R.A.F., have recently formed a Radio Club for the purpose of increasing the general standard of knowledge of members above that required by Service tests. A workshop, equipped with communal tools, has been secured and already several pieces of equipment have been constructed. The scope of the work in hand at present ranges from straight receivers of the most simple types to superhets incorporating all the modern devices required for perfect reception. In addition amplifiers, oscillators, and test equipment are receiving attention. On the theoretical side, lectures have been arranged on the C.R. tube, fault-finding and home recordings.

The Secretary (J. Harvey) can be contacted via the Station Education Officer.

The Duration Dx'ers Club

W./C. John Hunter, G2ZQ, having moved south, S./Ldr. H. Edge, G6GD, has furnished a report of the third meeting of the Club held in New Delhi on March 13. Those present included G2IC, G6D, BR5405, W1XTY, 3FYD, 4BRF, 4GBN, 4LK, 6NNE, 6NIP, 8WAK, 9EYE, 9JPD, 9NQO and 9ZHE. Membership cards were distributed, after which talks on directional aërials and crystal grinding were given by F./Lt. Hobday and F./Lt. Linch.

Members in the neighbourhood of H.Q.A.C., S.E.A., should contact G6GD for details of meetings.

● D. T. Boffin, G3HS, Farlington, Bucks, after serving for four years with the R.A.F. in England, has now left for an overseas destination. He sends greetings to G2CL, GG, LR, 3HC, JO, 5LO, 8PX and 2CGN.

● Sgt. J. G. Scott, BR55320, who is with the R.A.F. in Canada, sends 73 to all whose numbers start with 760 and 761 and who were at Cranwell during 1939-40. He also wishes to be remembered to GMSMQ, 8KQ, 3DD, 6YR and 4JO.

● Sgt. P. H. Hardie, GM6JH, Linlithgow, West Lothian, at present in the M.E., wishes to be remembered to GM6NX, RV, SR and other old friends in Edinburgh.

● D. F. Craig, BR54046, now in Gib. has met G2KQ, GM3XQ, 3TD 2CIW and others.

● Mr. Dickson, R.N.V.R., G2HV, writing from Taranto is in favour of the idea of a standard vocabulary for international contacts. He advances a strong claim for the word "Pronto," which seems to mean almost everything in his part of the world.

● Cpl. Reg Farr, G8IJ, in a letter from India reports the arrival there of G3JG. G6PJ and BR55357 are also with him.

● F./O. A. G. Williams, BR57052, now in Italy, has one other member on his station—G3HG. As BULLETINS tend to arrive rather erratically whichever comes first is shared with the other.

● F./Lt. Dudley Nourse, VK2DQ, who is still in hospital, sends greetings from the M.E. to all old friends. He has recently contacted G5OI, 6LK and GW6KY. "Dud" hopes to return to Australia at an early date.

● Sgt. W. Hicks, G4JP (R. Sigs.), wishes to get in touch with G2PC, 5FA and 8NY. His C.M.F. address can be obtained from H.Q.

● L.A.C. A. J. Williams, 2DOS, reports that a successful radio club is now operating from No. 3 Signals Depot, R.A.F., M.E.F. The club (formed by F./Sgt. Alexander, 2CXX, and L.A.C. Williams) has received excellent support from the C.O. of the Depot, S./Ldr. H. L. Bird, Sgt. H. G. Hughes, G4CG, and others, have delivered lectures on a wide variety of subjects. In addition to those mentioned, G4VL, 2HBG, 2DFP, BR5436, 6192, 6483 and 6730, have signed the attendance book at recent meetings. 2DOS would appreciate hearing from the Micro-wave Group of the R.S.G.B. Experimental Section.

● Capt. J. V. Widdowson, R.E.M.E., 2BZO, in a letter from Assault Brigade Workshops, India Command, asks that his greetings be conveyed to G2LR, 6GH and SBQ. Whilst wandering round an obscure Indian bazaar, 2BZO came across a pile of old BULLS tucked away in the corner of a bookshop. Who was the original owner?

● Cpl. J. R. Raby, R. Sigs., G8RF, 20 Lord Street, Wolverhampton, would like to correspond with European amateurs now serving in Great Britain.

● F./Lt. Frank Adams, G2YN, writing from India, asked to be remembered to all old friends. He would like to contact members in Assam and Bengal.

● Early Bird J. A. Easterbrook, 2FNY, now a Sergeant in the R.A.F., has just returned from Moscow after an absence of 18 months. He was in close contact, whilst abroad, with 2AOU and 2FFZ. 2FNY sends greetings to all old friends.

● F./Lt. R. A. Butterworth, G8BI, who took part in the original British landing on Terceira, Azores, is now back in the U.K. and stationed in Hants. He did not meet any other member whilst in CT2.

● S./Sgt. W. Lee, G6LZ, now with the R.E.M.E. in the B.C.M.F. area sends greetings to BR54268 and all old friends in District 2.

● L.A.C. F. Monk, BR54297, who has been in India for the past two years met G3UC on the boat going out and has kept in touch with him ever since. In August, 1942, he met G6VR at a hill station. Since then he has met G5ZX, 2BFV, VE4TI and VE3MS, who, incidentally, is now 4297's S.O. He would like to hear from G6UX, G8ON and G8GG, and sends 73 to G3HL, 3UC, 4PA, 6VR and 6YN.

Silent Key

AIR COMMODORE VISCOUNT CARLOW, Royal Air Force, G6XX, of Dunfold, Surrey.

THE death on active service of Air Commodore Viscount Carlow, G6XX, son and heir of the Earl of Portland, has deprived the Society of one of its staunchest and most influential supporters.

The public announcement, on April 19, of his passing came with dramatic suddenness to the writer, who was looking forward keenly to meeting him again after his long spell of duty abroad. It was on the evening of April 6 that Lord Carlow telephoned from his home in Surrey to enquire about the progress which the Society had made since his Air Force duties compelled him, in 1940, to relinquish the position of Honorary Treasurer. His last words that evening were "remember me to all my old friends." The long-awaited meeting can never take place, but we shall remember his cheery voice and his intense enthusiasm for amateur radio; we shall remember his casual calls on Sunday mornings before the war and that amazing station which he created in a hanger at Hendon Aerodrome.

During his term of office as Honorary Treasurer, Lord Carlow put forward the suggestion that the Society should establish a completely mobile medium-power amateur station, which would be loaned to any group of members desirous of conducting open-air experiments under ideal conditions. But for the war that project, which incidentally Lord Carlow had guaranteed to finance, would have matured, as would the establishment of a Society station outside Central London. The latter plan, which would also have been backed financially by Lord Carlow, was close to fruition when war broke out in 1939.

Lord Carlow's love for amateur radio was second only to his love for the Royal Air Force, in which Service he served for many years prior to the war. His knowledge of radio brought him recognition in the early days of the R.A.F. Auxiliary Reserve. For some years he was Signals Officer to No. 600 Squadron (City of London) based on Hendon; in addition he was a first-class pilot. The writer has a vivid recollection of a pre-war meeting with him, the day after his return from a special course where he had been taught to fly a prototype Blenheim preparatory to passing on his knowledge to the other pilots in his Squadron.

It is worthy of record that Lord Carlow was one of the first British amateurs to recognise the importance of Service Wireless Reserves and, although his original overtures made in collaboration with the writer as far back as 1930, led to no positive results at the time, it is certain that his persistence contributed to the decision made seven years later to form the R.A.F. Civilian Wireless Reserve.

Lord Carlow had a brilliant war record. After a spell of duty at Hornchurch during the Battle of Britain, he was appointed Air Attaché to the British Embassy in Helsinki and promoted to Wing Commander. Later he acted in a similar capacity to the British Embassy in Rio de Janeiro. Whilst in Brazil he was promoted to the rank of Acting Air Commodore.

Lord Carlow was an accomplished linguist and a traveller of world-wide repute. He had visited amateur stations in almost every European country, and was in very truth, the R.S.G.B. Ambassador Extraordinary during his term of office as a Member of the Council. His knowledge of the European amateur situation in the days immediately preceding the present war was unique.

He was an ardent philatelist and an expert in the printing of rare manuscripts.

His death at the early age of 36 has deprived the Society of a member who, in spite of the many calls upon his time, never failed to give of his best. May his visions of 1939 become the realities of post-war years.

On behalf of those members who shared his friendship, we extend to Lady Carlow and her family, our heartfelt condolences in their grievous loss.

J. C.

R.S.G.B. Prisoners of War Fund

DONATIONS.—The General Secretary acknowledges with thanks, on behalf of Council, receipt of donations from: District 4 per G8DZ, 12s.; J. Hobson, 4157, 5s.; Ashton-Lynde Radio Society per 2HAP, £1; E. Taylor, G5VC, £1; 2nd Stratton St. Marvarets Boy Scouts Exhibition per L. E. Drake, £1; E. R. Dolman, 2DCG, 15s.; P. Pennell, G2PL, 5s.; G. W. Reade, 1957, 10s.; F. A. Hinden, G8LX, 5s.; "MAC" £1 5s.; Scotland "C" District, 10s.; A. J. Matthews, G6QM, 6s.; Mrs. Woollett, £1 2s. 6d.; Birmingham P.D.M., £12 12s.; Vic's Party, £1 8s.; S. Allen, G8TR, 5s.; R. Bradley, 4209, 10s.; F. McAlinsh, £1 0s. 6d.; D. Nash, 6873, 3s.; L. H. Webber, 2CPW, 5s.; District 7 per G2DP, 14s.; Anon., 5s. 11d.; H. Arnfield, G3LX, 10s.; G. B. Hunt, G8FU, 5s.; Mrs. Horsnell, wife of G2YI, £1. **Receipts to date, £1221 16s. 10d. Expenditure to date, £625 18s. 7d. Balance in hand £595 18s. 3d.**

BOOKS.—Mr. C. H. L. Edwards, G8TL, Hon. Administrator of the R.S.G.B. P.O.W. Fund, acknowledges, with thanks, the receipt of parcels of books from Messrs. Macvie and Brabner. He again appeals to members for light literature. Parcels should be sent to Mr. Edwards at Speedways, St. Bartholomews Lane, Sudbury, Suffolk. It is hoped to make a further distribution of books to prisoners of war during June.

THANKS.—To Mrs. Horsnell, wife of G2YI, for a donation of £1, obtained from the sale of artificial flower sprays made from old coils of wire from her husband's junk box and odd pieces of silk.

News from the Kreigies

● We understand from Mrs. Barry that the attache case and suit case sent to her husband, W/O. G. D. Barry, **BRS3745**, arrived safely. W/O. Barry has passed his C. & G. Radio Communications examination and his certificate has been sent to his wife.

● Cpl. Denis Carr, **G8UC**, now in Stammlager 8B, reports the safe arrival of parcels sent from the R.S.G.B. Fund. He would like to hear from Stan Cook, **G5XB** and other old friends in District 16. Letters are also to hand from Lt. Rodwell, **G8AG**, Sgt. Spink, **G5SP** and Radio Off. Hindle, **BRS3692**, all of whom report fit and well.

● Lt. M. L. Quartermaine, **G3FZ**, in a letter to his mother acknowledges with grateful thanks parcels of cigarettes sent from the Fund. He recently arranged the lighting for a camp performance of "I Killed the Count."

Congrats.

● To Council Member Rowley Scott Farnie, **GW5FI**, on his promotion to the rank of Group Captain. **GW5FI**, who is the first ex-Civilian Wireless Reservist to reach this high rank, served in the Middle East for two years, returning last year on sick leave after a serious air crash. He is now stationed in England and associated with W./C. Ben Wallich, **G6BW**, S./Ldr. Stan. Henton, **G5VU** and S./Ldr. Stan. Conway, **V56AQ**.

● To Cecil Waywell, **BRS4413**, on his marriage to Miss Phyllis Matthews. The ceremony took place at Clapham Parish Church. Mr. and Mrs. Waywell are living at 172 Clapham Road, Hall End, Maudslayi, Beds.

● To F/O. Frank Robb, **GI6TK**, and his wife on the safe arrival of Frances Rosina Cecilia on April 4, 1944. Frank has been ill with septile tonsillitis, but is making a good recovery after "hitting the deck" from an overdose of MB 693.

● To Cpl. Kenneth C. Smith, **BRS6245**, of Perry Barr, Birmingham, who acquired a Junior Op.—Keith Thomas—on April 3, 1944.

● To P.O. Tel. R. Foster, **GW4LK**, and his wife on the birth of a son—Hugh—on February 24, 1944.

● To Sgt. Leslie Parnell, **G8PP**, and his wife, now the proud parents of a daughter—Margaret Wendy.

● To S./Ldr. J. N. Walker, **G5JU**, and Mrs. Walker, of Bristol, on the birth of a daughter—Hilary Beryl.

● To Mr. and Mrs. Stevens, **2DHF**, now proud parents of a son—Christopher Antony—born on April 30, 1944.

● To Mr. H. T. McFarlane, **G8SK**, of Enfield, on his recent marriage.

Newfoundland Amateur Radio Association

The following have been appointed to serve on the Council of the above Association:—**President**, R. W. Munro, **VO1D**; **Vice-President**, F. H. Skiffington, **VO1M**; **Hon. Secretary**, E. S. Holden, **VO1H**; **Hon. Treasurer**, C. Butt, **VO1L**; **Members**, H. Wells, **VO1Y**, Alton Earle, **VO1C**, Oscar Hierlihy, **VO1L**.

The Association is most anxious to extend hospitality to visiting amateurs, who are invited to communicate with the Hon. Secretary (Mr. E. S. Holden) at 218 Le Marchant Road, St. John's, or at Confederation Life Association, Bank of Nova Scotia Buildings, St. John's.

Golden Voice

Under the heading of "News from VK," page 77 of the November, 1942, issue we told the story, so far as it was then known of "Golden Voice," the Australian mystery man who kept the allied troops informed by radio of the Jap Airforce movements on the opposite side of the Owen Stanley range in New Guinea.

We now learn, from a reference in the London Press, that the man responsible was F./Lt. Lee Vial, of Melbourne, since killed in an air crash.

He kept a six months vigil in a tree top on a hill behind the Japanese-held town of Salamaua and throughout his long watch reported every movement of the Japanese by radio to the Allies at Port Moresby, 200 miles away. At that time Port Moresby was the heaviest bombed allied base in the south-west Pacific, but Vial was able to tell its defenders whenever a raid was imminent. He sat for hours on end in his observation post staring through binoculars. Twice this sent him blind. Sick and hungry and pestered by leeches, he was often hunted by the Japs, but never found. When he became too ill to carry on he walked 25 miles to Wau and was then flown to Port Moresby.

Although this brave officer appears not to have been an ex-amateur, he could certainly show all of us a thing or two on field-day technique!

A Word of Warning

The following is an extract from a letter received from a London member:

"I am trying to get the necessary parts together before building a small AC/DC receiver, so I endeavoured to get the necessary valves before building the set. I required a 12B8 and a 25Z6. The dealer produced a 12B8 which was loose in an old carton, but did not have the 25Z6. He professed not to know the list price, so said he would take the price of a typical American valve at 12s. 6d. plus 3s. purchase tax. When I got home I tested the filament. It was 'dud.'"

"When I returned to the shop I was told I must have burnt it out. My assurance that I had no set to try it in went for nothing. I was told he was not prepared to do anything about it, and I must stand the loss of 15s. 6d. After more talk he 'met' me by producing a secondhand 6C5 which type I thought I could introduce into the circuit and which he would let me have for 3s. 6d. Wishing to retrieve something from the ruins I did this, but on reflection afterwards I realised I have paid this man 19s. for a dud valve and a secondhand valve."

"A statement he made when I queried the valve flopping about in an old box, that it was a lease-lend valve and would not have a maker's carton, has since been disproved by a reputable dealer who has sold me a valve which he automatically tested before handing over, in the makers' carton clearly marked with the correct B.O.T. price including purchase tax."

"I fully realise that one has not a leg to stand on nowadays, but the lamentable fact is that the R.S.G.B. emblem was displayed on the door of the dealer's shop, and although I disclosed that I was also a member, it made no difference."

We publish the above letter as a warning to other members, although we believe our member's unfortunate experience could have been avoided if he had insisted upon the valve being tested prior to leaving the shop.

★ TECHNICAL ARTICLES are still wanted

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Letters to the Editor

Communication-Type Receivers. Standards of Performance

DEAR SIR,—Recent correspondence on the subject of "What is a communications receiver?" has prompted me to contribute to the discussion.

If the term is to be accepted—and surely some form of distinction is needed—then a definition should be accepted universally, and should be laid down by a recognised body such as the R.S.G.B. in co-operation with the British Standards Institute.

The difficulties which obstruct such a definition are nearly all a matter of degree. There is not one essential feature of a receiver of this type which is peculiar to that class alone, with the possible exception of the B.F.O. or crystal filter.

Strangely enough most of the respects in which a "communications receiver" is eminently suitable for its job, are mechanical. For instance, an efficient broadcast short wave receiver which could not by any stretch of imagination be included in the category, would be transformed into a first-class communications receiver if the following details were eliminated:

- (a) Cramped scale calibration.
- (b) Dial backlash.
- (c) Frequency instability due to mechanical shock.
- (d) Frequency/temperature drift due mainly to poor coil and condenser construction.
- (e) Difficult adjustment, i.e., jerky rotation of the tuning dial for very small changes.

There are only a few non-mechanical essentials to a communications receiver. These include, as mentioned before, a B.F.O., also A.V.C. on-off switch, R.F. and/or I.F. gain control, headphone output, etc.

Mr. McNicol, in his letter in the April issue of THE BULLETIN, has dealt concisely with the last essential feature, viz. a good standard of performance; although however good the performance may be it does not exclude other types of receiver such as a good broadcast short wave receiver, except in the matter of very high selectivity.

For this latter reason I would prefer selectivity to be specified at less than 10 kc/s. off resonance—say at 1 kc/s. Such a figure would provide an indication of "single-signal" performance and could be quoted with and without crystal filter.

As an alternative to quoting sensitivity in terms of "millivolts in" for "milliwatts out" I would suggest that a straightforward figure of gain representing the ratio of I.F. volts at the second detector to R.F. volts across a 100 ohms-feeder input, would give a more accurate figure of merit, since this eliminates sheer L.F. amplification which more or less looks after itself.

A simple but effective test for noise is to measure the change of noise resulting from short circuiting the first tuned circuit, i.e. the grid circuit of the valve to which the aerial is coupled. The test should be carried out with the aerial disconnected, the gain controls adjusted for full R.F. gain and sufficient I.F. and L.F. gain to give measurable noise voltage. Since ideally all noise under these conditions should be contributed by the thermal agitation effects in the first tuned circuit, a high ratio of noise voltages before and after the short is applied, will indicate both good Q in this circuit and low subsequent noise generation. The only omission in this test is the effectiveness of coupling between aerial and coil, but this is still an unknown factor with more widely accepted tests owing to the uncertainty of aerial and feeder impedance over wide frequency limits.

Temperature/frequency co-efficients should be expressed as kilocycles/sec. per degree Centigrade rise of temperature in the vicinity of the oscillator LC circuit. This will embrace all possibilities of drift and calibration error due to warming up of the body of the receiver and changes of ambient temperature.

Further correspondence on this subject will, I am sure, be of interest and value to many, and may, if pursued thoroughly, fill a gap in the somewhat mysterious realm of receiver performance.

Yours faithfully,

R. H. HAMMANS, (G2IG).

Electrical Guitars

DEAR SIR,—For the benefit of Mr. H. G. White, BRS5027, and others interested in electrical guitars, and electronic music in general, may I give a few references that should prove helpful? *Practical Wireless* (March, 1943) contained an article by L. O. Sparks on the conversion of an ordinary guitar to an "electric" model and also the design of an electric one-string fiddle. *The Electrician* (December 18, 1936—January 22, 1937) included seven articles on electronic music by Dr. L. E. C. Hughes. A fine survey of the development and design of electronic musical instruments was published in the *Journal I.E.E.* for June, 1940. A long illustrated extract from this latter appeared in *Electronics and Television and Short-Wave World*, August, 1940.

Yours faithfully,

DONALD W. ALDOUS (BRS1006).

As others see us

DEAR SIR,—The December issue of THE BULLETIN which has just reached me here in India, seems to be just about the best war-time number I have seen. The article on the "Synthescope" is, in my opinion, the most interesting and best illustrated contribution THE BULLETIN has yet produced, and I must congratulate the author and all concerned. "An Architect's

Point of View" on the post-war amateur station, had a particular interest for me as both the conversions illustrated were carried out in my parents' house before the war. I should add, however, that the conversion shown in Fig. 1 was done before construction of the house was completed. Although made for more general reasons, than those Mr. Parsons' considers in his article, I can testify to their effectiveness.

If the R.S.G.B. can maintain this standard in 1944 and onwards, we shall have nothing to fear after the war.

Yours faithfully,

D. G. FARQUHARSON, B.Sc., A.C.G.I. (G3MF).
(Capt. R. Sigs.)

WWV Schedules

DEAR SIR,—You may care to publish in the next issue of THE BULLETIN the latest information available about the schedules of the National Bureau of Standards standard frequency station WWV. I have been receiving this station well of late, the 15 Mc/s. transmission coming in at good strength from about 1600 hours until about 2100 hours though sometimes until well after midnight. The 10 Mc/s. signal is heard from about 1900 hours onwards. (All times are D.B.S.T.) The signal strengths on 15 and 10 Mc/s. are some two points below those of the 19 and 31 metre North American broadcasting stations transmitting at the same time, so it is a good plan to carry out a check on conditions on the appropriate broadcast band before looking for the corresponding WWV transmission.

Since the last publication of WWV Schedules in the February, 1944, issue of QST, one frequency has been added to the service, namely, 24 Mc/s. during the hours of darkness at Washington.

A copy of the full announcement made by telephony from WWV at every hour and half-hour is given below.

Receiver in use is an 8X16.

Yours faithfully,

W. N. CRAIG (GM6JJ).

Telephony announcement made every hour and half-hour.

"This is radio station WWV of the National Bureau of Standards, Washington, D.C., broadcasting standard frequencies and standard time intervals. Radio carrier frequencies of 5 and 10 megacycles are broadcast continuously. In addition, 15 megacycles is broadcast in the daytime and 24 megacycles at night. These radio frequencies are modulated by frequencies of 440 cycles per second except the 59th second of each minute. The 440 cycle tone is the standard musical pitch A above middle C. The tones are interrupted precisely on the hour and each five minutes thereafter. They are resumed after a time interval of precisely one minute. This voice announcement is repeated on the hour and half-hour. This is Station WWV."

Book Review

RADIO VALVE MANUAL. Bernards (Publishers), Limited. The Gramplan, Western Gate, London, W.6: 3s. 6d.

The compilation of an accurate and comprehensive guide to American and British valve data, with the present-day multiplicity of types, is a difficult task, so that any effort to undertake it is deserving of careful examination.

In this new volume 33 pages are devoted to data and characteristics on U.S.A. valve types, given in the customary order of ascending valve numbers, which facilitates reference. The 186 American valve bases, showing connections, are clearly illustrated, including the acorn valve series. A useful innovation is an American type valve classification chart, under seven groupings, e.g., Diode Detector and Rectifiers, Converters and Mixers, Power Amplifiers, etc., with their sub-divisions, indicating uses for particular valves, printed in order of ascending filament or heater voltage. This chart could have been augmented to advantage with classified values of heater currents, which would be helpful to users and designers of AC/DC equipment.

The remaining 27 pages cover British valves but, as might be expected, this section is neither so complete nor so comprehensive as the American data. Only Brimar, Cosor, Mullard, and Osram valves are listed, although a footnote states that "where details of a particular manufacturer's valve are missing, it is entirely due to the information not being available; the table of different manufacturers' equivalents will, however, give all the necessary details that are required." Nevertheless, one would like to have seen data on Mazda and Hivac valves, and extended interchangeable valve tables, as the equivalents, confined to Brimar and Cosor types, are necessarily limited.

British valve bases and connections are shown, and the final section on Osram valves includes details of suggested substitutes for many Osram types, either discontinued or not readily obtainable, with any circuit modifications required, and the probable effect on the apparatus of the change.

The aforementioned point of incomplete information once again raises the vexed question of standardisation of valve types and the seeming reluctance of British manufacturers to reveal certain parameters relating to their valves, but this cannot be discussed here. It must suffice to say that this manual can be recommended as a worthy attempt to supply essential valve information in a compact form.

D.W.A.



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BRITISH ISLES NOTES AND NEWS

DISTRICT 1 (North Western)

D.R.: H. W. Stacey (G6CX), "Sandlax," Eddisbury Road, West Kirby, Cheshire. Hoylake 337.

Plans for the P.D.M. to be held in Liverpool on July 8 are now well advanced and full details will be published next month. It is hoped that all members—Service and Civilian—within easy reach of Liverpool will make every effort to attend.

Ashton-under-Lyne.—Fifteen members supported the meeting of the local Society held on April 23 at the home of G5PX. A welcome was extended to new member G4LQ. G3PM and 5FX have, recently attended an A.T.C. Signals Course at Cranwell where contact was established with G2OC and 8ON. The next meeting will be held on May 21 at 2FXW, 33 Bank Street, Hadfield (meet Ashton Town Hall, 1.45 p.m., Glossop bus). G6CX.

DISTRICT 2 (North Eastern)

D.R.: C. A. Sharp (G6KU), 316 Poplar Grove, Gl. Horton, Bradford. Bfd. 10772. Scribe: H. Beadle (G8UO), 13 Chandos Street, Keighley.

G5VC and 6HF are welcomed back to membership. 2DM has been on leave. SUO has received a visit from 4412 (R.A.F.). 6568 assures Bradford members that their transmitting gear is being well looked after by the G.P.O. 2QM was in the town recently. It is rumoured that 2VO is to be married. 6ZN is now a L/Cpl.

Notes are few this month—Please write your T.R. or D.R. with any item of interest. GSUO.

DISTRICT 3 (West Midlands)

D.R.: V. M. Desmond (G5VM), "The Chestnuts," Hanley Castle, Worcester. Scribe: E. J. Wilson (2FDR), 48 Westbourne Road, Olton, Birmingham.

Birmingham.—Letters have been received from L.R.M. G. A. Collins, Fleet Air Arm, and Cpl. D. W. Surman, R.A.F. Both are in good health.

At a meeting of M.A.R.S., held on March 16, at the Hope and Anchor Hotel, it was decided to move the activities of the Society to the Chamber of Commerce, New Street, Birmingham. In future, meetings will be held on the second Tuesday in each month at 6.30 p.m. prompt. Mr. E. L. Gardiner, B.Sc., G6GR, has been elected a Vice-President and Mr. John Clarricoats, G6CL, and Mr. George Brown, G5BJ, have been re-elected Vice-Presidents of the Society.

On June 13, Mr. G. Brown will speak on the future of Broadcasting—all R.S.G.B. members are welcome.

Coventry.—Mr. Gardiner, G5GR, "Gaydon," 40 Meriden Road, Coventry, would be pleased to hear from local members with a view to arranging meetings. 2FDR.

DISTRICT 4 (East Midlands)

Deputy D.R.: Albert E. Clipstone (GSDZ), 14 Epperstone Road, West Bridgford, Notts.

Derby.—It is with regret that we record the death of Mr. S. G. Taylor who held the original call G2IX. Mr. Taylor was also licensed prior to 1914 and was a pioneer member of the Derby Wireless Club—the oldest in England. He was 63 years of age. G2OU reports visits from G8SI and 2CVV. G2OU.

Leicester.—At the April meeting held at the home of G6VD, the following were present: 2IX, 3BU, 6VD, 8CZ and 5605. The April BULLETIN editorial was discussed and opinion favoured a regular meeting place but not a workshop, as existing shacks are readily available in each neighbourhood for anyone lacking space for experimenting work. We are pleased to report that Mr. J. C. Lucas, BRS2793, is now fit again, following a delicate eye operation. BRS5605.

Mansfield and Sutton.—There is good news for local members this month—a works visit has been arranged, details of which will be found under Nottingham notes. It is hoped that all members will make an effort to attend. BRS7171.

Nottingham.—The April meeting, held at the Beeston Lads Club, was made very interesting by Messrs. Taub and Norman who gave talks on Valve Voltmeters and Beat Frequency Oscillators respectively. A collection for the P.O.W. fund realised 25/-; a further works contribution brought in 15/-.

On May 21 local members will join their Mansfield friends in a super-meeting. The party will visit the Radio Works of Messrs. Whiteley Electrical Radio Co., Ltd., for which purpose we shall meet at Victoria Street, Mansfield, at 2.30 p.m. Messrs. Lakin and James will guide the party round the works. After the visit, thanks to the efforts of 7171, tea will be served at Davies' Cafe, 7 Stockwell Gate. The inclusive charge is 3/6. Reservations to G8DZ.

G4PB and G8DZ would like to hear from G4LY who has recently returned home. W6QW has arrived in this country and will shortly visit District 4: he would like to meet or hear from members during his stay. G8DZ can supply his QRA.

Peterborough.—Mr. Frisby, 2FQV, the T.R., is disappointed at the lack of support given by members in this town. Show him that you are still alive by writing or calling upon him at 32 Line Tree Avenue, Peterborough. G8DZ.

DISTRICT 5 (Western)

D.R.: R. A. Bartlett (G6RB), 31 King's Drive, Bishopston, Bristol. Bristol 46960.

Bristol.—The attendance at the meeting held on April 23 showed a great improvement: just a few more and it will begin to look like old times. We were pleased to welcome G6UR (ex-ZBIR), 3RQ and 6871.

Swindon.—2BTJ is at present on the South Coast undergoing treatment for a "crooked foot." He recently met 3NC when on leave. G6RB.

DISTRICT 6 (South Western)

D.R.: W. B. Sydenham, B.Sc. (G5SY), Sherrington, Cleveland Road, Torquay. Torquay 2097.

Exeter.—A very successful meeting was held at Exeter on April 1, the first for a very long time. There was an attendance of nineteen, which included G2AT, 3MU, 5QA, 5WY, 5YR, 2ARA, BRS1711, 2027, 1879, 5750, 6778, H. Pollard, J. Watkinson and L. King. A very hearty welcome was extended to three members of the R.C.A.F., including VE4AAO and VE4ADH. On this occasion the time was mainly spent in ragchew, followed by tea, but for future meetings the T.R., G5QA, hopes to arrange discussions. "What is your idea of post-war R.S.G.B. plans?" is a suggested topic. This is capable of raising considerable argument!

Torquay.—There is nothing to report this month. It is hoped, however, to hold a meeting on Sunday, May 28. Local members will be notified. G5SY.

SOUTHERN PROVINCIAL
DISTRICT MEETING

to be held on

SATURDAY, JUNE 17th, 1944

at the

SAVOY STUDIO (adjoining Savoy Cinema)

BROAD GREEN, WEST CROYDON, SURREY

PROGRAMME

ASSEMBLE	2 p.m.
BUSINESS MEETING	3 p.m.
TEA	4.30 p.m.
OPEN DISCUSSION	5.30 p.m.

INCLUSIVE CHARGE 4/-

Reservations to Mr. F. G. HOARE (G2DP), 6 Dunheved Close, Thornton Heath, Surrey, not later than June 10th, 1944

ALL MEMBERS CORDIALLY INVITED TO ATTEND

DISTRICT 7 (Southern)

D.R.: W. E. Russell (G5WP), Milestones, Mayford, Woking, Surrey. Woking 1589.

A Provincial District Meeting will be held in Croydon on June 17. For details see separate announcement. In the event of the meeting being cancelled owing to military activities all money will be returned or sent to the P.O.W. Fund as requested.

Bournemouth.—G4KV and 3789 were on leave. 3RU is building a nine-valve super. VK2DQ, writing from hospital in the Middle East, sends best wishes to old friends. Dud has been six months in plaster, but hopes to return to VK shortly. Welcome to new member 7058 of the R.A.F. (via 2HNO.)

Coltsdon.—Congrats to STB on his promotion to the rank of Flight-Sergeant. The T.R. was pleased to meet 4BW (whom he had not seen for the last two years) at the local meeting. (via BRS3003.)

Croydon.—Among the members attending the April meeting were G2VB, 4BW, 5BT, 5PV, 2FWA, 2HHD, 1545, 3003, 4324, 4584, 4814, 6653, 7943 and 2DP. G5BT gave a very interesting demonstration and talk on oscilloscope construction. A welcome was extended to new members 6653 and 7943. The sum of 14s. was collected for the P.O.W. Fund. See "Forthcoming Events" for details of the next ordinary meeting. (via G2DP.)

Reading.—At the April meeting it was agreed to form a small Committee to organise local activities. 2BTY was elected Chairman, 2YI Hon. Treasurer, and 2DIO Publicity Agent. Plans for future meetings were discussed. Those present at the meeting included G2IT, 2YI, 5IV, 6SY, 8KJ, 2BGU, BTY, BYZ, HIY, BRS5225, 5518, 6957, 7578. 2BGU and HIY travelled many miles to attend.

A 955 Acorn triode will be raffled at the next meeting by 2BYZ, who will also display some interesting equipment. This meeting will be held at The Comrades' Club (1st Floor), 42 Oxford Street, Reading, on May 27 at 6.30 p.m.

Southampton.—Mr. D. L. Davies, GSQW, 17 Calmore Gardens, Totton, has kindly undertaken to act as T.R. If the few members still left in the vicinity will give him the necessary backing there is no reason why Society activities should not take a new lease of life in Southampton.

General.—A most interesting letter from Tom Arnold, VU2AN revealed that he is a temporary resident in this District. G2YK, Richmond, has returned to this country, but in spite of displaying THE BULL prominently, has only managed one contact so far—G5IV, Barnsley. BRSS243, Oxford, bemoans the lack of activity and news from that town with which the D.R. concurs.

G5WP.

Forthcoming Events

- | | |
|--------|--|
| May 21 | District 4 (Nottingham section), 2.30 p.m., visit to Messrs. Whiteley Electrical Radio Co., Ltd., Victoria Street, Mansfield. Tea at Davies Cafe. Charge 3s. 6d. Reservations to G8DZ. |
| " 21 | District 5, 3 p.m. at 17 Colston Avenue, Centre, Bristol. |
| " 21 | District 12, 3.30 p.m. Tea party at The Mulberry Restaurant, Heddon Court Parade, Cockfosters Road (near tube station). Charge 3s. No. 29 bus passes the door. |
| " 21 | District 14 (Chingford section), 3 p.m. at 25, Clivedon Road, Highams Park, E4. (Train to Highams Park Station, or 35 bus.) |
| " 28 | Scotland "A" District, 3 p.m. in Royal Technical College, George Street, Glasgow (Montrose Street entrance). |
| " 28 | District 4 (Leicester section), 2.30 p.m. at G3BU, 15 Abbeymeade Road, Leicester. |
| June 4 | District 12 (St. Albans section), 3 p.m. at BRSS412, 18 Sandfield Road, St. Albans (turning off main Hatfield Road, near Cemetery bus stop). |
| " 4 | Districts 7 and 13.—Combined meeting, 3 p.m. at Y.M.C.A., North End, West Croydon. |
| " 11 | Scotland "C" District, 2.30 p.m. at 7 Airlie Place, Dundee. For subject of lecture see local press. |
| " 17 | Southern P.D.M., 2 p.m. at Savoy Studio (adjoining Savoy Cinema), Broad Road, West Croydon (see separate announcement). |
| " 24 | District 15, 6 p.m. Dinner and Dance at The Park Royal Hotel, Western Avenue, Hanger Hill, Ealing, W.5 (see separate announcement). |
| July 8 | North Western P.D.M. Full details next month. |

DISTRICT 8 (Home Counties)

Deputy D.R.: L. W. Jones (G5JO), 16, Leys Road, Cambridge. Telephone: Cambridge 3406.

Most of the members who have reported this month, seem to be interested in low frequency amplifiers.

The chief item of news to report is that the Cambridge and District Group of the Institution of Electrical Engineers, Wireless Section, has agreed that R.S.G.B. members and those interested in radio may attend the local meetings. We tender our thanks to this body for their kind invitation. Members who wish to attend future meetings are asked to get in touch with the writer. Recent speakers have included: Mr. T. E. Goldup, M.I.E.E., "General Aspects of Radio Engineering Progress." Mr. C. P. Edwards M.Sc., "Enemy Airborne Radio Equipment." Mr. R. H. Angus, M.A., "Transients on Transmission Lines." Mr. B. J. Edwards, A.M.I.E.E., "A Survey of the problems of Post-war Television." Dr. E. B. Moulin, M.A., Sc.D., "The Contributions of Cambridge to Radio Communications."

A suggestion has been made that it would be useful to discover from each member what his interest is likely to be in the immediate post-war period. On receipt of this information it is proposed to call a meeting to see how we can help one another in getting going on our individual requirements. If, for example, a large number of members hope to take part in transmission experiments, the problem of interference is something which we may have to contend with. It is felt that if we can meet now to discuss ways and means of overcoming this problem, and others, something may be achieved which may be of assistance to all concerned. We look forward to hearing from members on this matter at the earliest possible moment.

G5JO.

DISTRICT II (North Wales)

Deputy D.R.: C. Spillane (BRSS1060), "Woodside," Meliden Road, Prestatyn.

G2GZ reports meeting GW2PH, 4CK, 2DAH and 5520, all of whom have recently been home on leave. 2GZ who is doing a good job of work in his unit by interesting members in Society activities, would like to contact GW3CF. G2KI (now in District

10) in response to our appeal in the March issue forwarded news of his recent moves. He sends 73 to all old friends in District 11. GMSMQ is at present working with him. Congrats to Frank Dobson, 4444, and his wife on the arrival of a son. 5770, whose home is in Coventry, writes from India to say that he has just received a large parcel of BULLETINS. He wishes to be remembered to all members he met, whilst at 14 S. of T.T., and at the Luton and North London meetings. The R.S.G.B. emblem enabled 2HIY, now in Hants, to contact 2BGU at a dance. 2BNI (Rhyll) who is stationed in the Newcastle area with R. Sigs., reports via 2GZ. Arthur Goode, 2DTQ, after 3 years in the M.E. and now in Anglesey, hopes to meet local members if meetings can be arranged.

The writer, still in District 17, recently contacted P./O. Pritchard, BRSS482, of Chesterfield. They last met when 4882 was a Corporal instructor at 14 S. of T.T. BRSS1060 would like to arrange a meeting in the Louth area. (Suggest you write to G5BD.—Ed.).

District 11 members are hoping to support the N.W.P.D.M. in Liverpool on July 8. Those who plan to journey from the Rhyll and Prestatyn areas are asked to contact the writer.

BRSS1060.

DISTRICT 12 (London North and Herts)

D.R.: S. Buckingham (G5QF), 41 Brunswick Park Road, New Southgate, N.11. Enterprise 3112.

North London.—A tea party has been arranged for Sunday, May 21, at the Mulberry Restaurant, Heddon Court Parade, near Cockfosters Underground Station. Charge 3/-. Reservations to the D.R. by the 19th please. An invitation is extended to the ladies and to Service members and members from other Districts. We guarantee a jolly time.

The April meeting, held at BRSS386, provided the opportunity for an interesting discussion on a variety of radio topics. Our thanks are recorded to Mr. and Mrs. Laister for a splendid tea.

St. Albans.—For details of next meeting see "Forthcoming Events." This will probably be the last in this area for some time, unless a little more local enthusiasm is shown and volunteers come forward to take their turn in holding meetings.

Congrats to 2CNC on his engagement, and election to membership of the Brit. I.R.E.

G5QF.

DISTRICT 14 (Eastern)

Scribe: L. J. Fuller (G6LB), 167 Galleywood Road, Chelmsford, Essex. Chelmsford 3920.

Chelmsford.—We were glad to welcome at the April meeting PAOFL and his companion, Cpl. Beets (Dutch Army). They are now residents of the Cape, where Mr. Beets is in the radio industry, and both are hoping for an early return to their adopted land. They had many interesting stories to relate about life in South Africa.

Chingford.—The T.R. has been on the sick list, but is in action again. See "Forthcoming Events" for date of next meeting.

G6LB.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

D.R.: H. V. Wilkins (G6WN), 539 Oldfield Lane, Sudbury Hill Greenford, Middlesex. Byron 3369.

The April meeting was attended by G5LN, 6WN, 2ADL, BRSS5027, 5301 and 6275, also new members, Baker and Weller, whom we were pleased to meet. Congrats to BRSS5301 who has been promoted Sergeant.

The D.R. has received visits from Mr. and Mrs. G2KI, GSPD, BRSS7235 and his lady. 2ADL had a visit from W7IKF while he himself visited 4781 at High Wycombe. G5JL sends greetings

DISTRICT FIFTEEN

DINNER AND DANCE

to be held on

SATURDAY, JUNE 24th, 1944

at the

PARK ROYAL HOTEL, Western Avenue,
Hanger Hill - EALING - LONDON, W.5

RECEPTION 6 p.m. DINNER 7 p.m.

INCLUSIVE CHARGE 8/6

Tickets, which must be purchased in advance, are obtainable from Mr. K. FREEMAN (2ADL), 106 Cavendish Avenue, West Ealing, W.13. Last day for reservations June 15th, 1944

from Italy, where he is now in charge of a fixed workshop. He has built a P.A. equipment which is used for E.N.S.A. concerts. A cheque for £3 10s. 0d. was recently sent to Mr. and Mrs. Charman, G6CJ, as a rather belated wedding present from their Society friends.

The District Dinner and Dance has been arranged and details will be found in a separate announcement. Book early as accommodation is limited to 150—and we expect 500!! The Park Royal Hotel can be reached by Piccadilly Tube (book to Park Royal) or by bus (83, 195, 112 or 187). The G.W.R. also links up with the Piccadilly line. G6WN.

DISTRICT 17 (Mid East)

D.R.: A. C. Simons (G5BD), Admiralty Road, Mablethorpe. Phone 69.

BR57716 now based in South Africa, contacted ZS5DA by spotting the D.R.'s QSL on a "shack" photograph going the rounds. G5LL reports from Sicily. G4DY, in a welcome airgraph from India, sends good wishes to all old friends in District 17. G5BD.

DISTRICT 18 (East Yorkshire)

District Scribe: S. Davidson (G6SO), 10 Sidney Street, Scarborough.

Scarborough.—R. Philpot, 2DDA (R.A.F.) spent the first part of his recent leave in sick quarters but was granted an extension of leave as compensation. Sep. Stephenson, G3KS, still in Grantham, also spent a week-end in the town. Both inquired about and wish to be remembered to old friends. More reports are wanted. G6SO.

DISTRICT 19 (Northern)

D.R.: R. J. Bradley (G2FO), 36 Raby Road, Stockton-on-Tees.

Newcastle-on-Tyne.—The T.R. wishes to point out that the Northern Radio Club (affiliated to R.S.G.B.) holds its meetings on the first Wednesday of each month at 7 p.m., at Bourgoin's Wine Rooms, Newgate Street, Newcastle. A hearty welcome is extended to all R.S.G.B. members.

Durham.—BR52977 is at present in Iceland, where he is looking forward to meeting two more amateurs who, he has heard, are in the same camp. G2FO.

Scotland

Scottish Records Officer: J. Hunter (GM6ZV), 51 Camphill Avenue, Glasgow, S.1. Langside 237.

"A" District.—There was a better attendance at the April meeting and it is hoped that this will be maintained. Due to the falling-through of the arranged lecture, several short talks were given without previous preparation. Mr. James spoke on his experiments with wire recorders, a subject which aroused considerable interest. Mr. Macadie, GM6MD, described at some length his proposed layout for post war station, which proposals have already been partially carried out. Mr. R. S. Cameron also spoke on the same subject. Visitors to the meeting were BR54499 (District 3) and 5726 (District 14).

"C" District.—In spite of the fact that no notes have appeared for a few months there is plenty of activity, and regular meetings continue to be held in the district each month. The D.O. is compiling a history of the district and will welcome information concerning the period from 1924 to 1933 as the local records in his possession only go back to 1934. What about it "old timers"? GM6ZV.

Northern Ireland

D.R.: J. N. Smith (GI5QX), 19 Hawthornden Drive, Belmont, Belfast. Phone 63323.

Belfast.—Members will learn with regret that Ian Campbell, 2DDI, has been reported missing from operations over Germany. He was chairman of the R.S.N.I. up to the time he joined the R.A.F. We extend sympathy to his family and sincerely hope that good news will be received of his safety.

A welcome is extended to new members 7720, 7732, 7637, and W. G. Dickson.

GI5HU has received letters from W9EEZ and W8VYH; the former is back near his home town in the U.S.A. and 8VYH is somewhere in "G." Sgt. Mills, 5796, is now in Iceland after a lengthy stay in the N.W. area; in a letter to 5HU he says he hopes to organise a radio club there. We wish him luck, in his venture.

There is little to report from GI6YM, the morse classes are still well attended and extra nights will have to be taken to separate the "fast" from the "slow."

GI5HU has finished his frequency meter and wonders if it would be worth describing in THE BULL. (Yes.—Ed.)

Londonderry.—Two members of the old Derry Society—2BGM and P.O. Mills—have visited the T.R. The former, back from South Africa, sent 73 to the new Society. G2FS recently gave a graphic account to the N.W.A.R.S. of how he W.A.C. with four watts input way back in '29. GI5QX.

LIKE OLD TIMES

It was indeed like old times for the 50 odd members who attended the West Midlands Provincial District Meeting on April 15 at the Imperial Hotel, Birmingham; not only were the old familiar faces once more "on parade," but the old-time ham spirit (always so much in evidence at District 3 P.D.M.'s in pre-war days) seemed to be more pronounced than ever. Possibly the high spirits and the general feeling of "joi d'vive" was to some extent attributable to the very excellent arrangements made by the D.R. (Mr. V. M. Desmond, G5VM), but whatever the reason there is no doubt that few P.D.M. luncheons have opened in such lively style.

The Council of the Society was represented by the President (Mr. E. L. Gardiner, G6GR), the Immediate Past President (Mr. A. D. Gay, G6NF) and the General Secretary (Mr. John Clarrie, G6CL) who, in spite of their recent train journey from London, arrived "full of beans" and ready to tackle any problem put to them. The presence of such well-known Birmingham personalities as George Brown, G5BJ, Doug. Edwards, G3DO, Wilf. Butler, G5LJ, Charlie Young, G2AK, and Eric Wilson, 2FDR, to say nothing of the Coventry contingent, headed by G5GR and 5PP set the seal of success upon the gathering. It is not possible to list the names of all who attended, but we recollect meeting, in addition to those mentioned, Miss Ruth Jebb, G3YL and Ernie Prior, G3SH, from Malvern, Albert Clipstone, G8DZ and his party from Nottingham, as well as G3PR, 4MN, 4OI, 4PR, 5YY, 6KI, 2ATK and 2COP.

The Meeting

Immediately after lunch, which for war-time was a most sumptuous repast, the party adjourned to another room for the business meeting. This was opened by the D.R. who extended a warm welcome to the representatives from Headquarters. Incidentally, most of those present were making their first acquaintance with the President and Mr. Gay. We noted that the D.R. did not find it necessary to introduce G6CL!

During the course of a much-appreciated speech, Mr. Gardiner made reference to post-war plans for increasing Provincial Representation on Council, and also to the oft-heard suggestion that the Society should possess its own station similar to WIAW (A.R.R.L. Headquarters station).

The Secretary followed and with his customary eloquence gave the meeting a most interesting and informative review of current Society events. He mildly criticised the District membership for not sending in reports for publication and suggested that much of the apparent apathy could be overcome if members would offer to act as temporary Town Representatives in the less populated parts of the District. He spoke of the excellent work being done by the Midland Amateur Radio Society, under the able guidance of G2RQ, 5BJ, 2FDR and others. This society, in his opinion, had done much to further the cause of the amateur movement. The speaker voiced his personal views about the re-issue of licences after the war, and delighted his audience by stating that he felt quite confident that licences would be re-issued with the minimum of delay. He next referred to the very great increase in membership which has occurred during the past three years. This was largely due he thought to the enthusiasm of pre-war members who had lost no opportunity of "spreading the gospel of amateur radio." Mention was made of the present highly satisfactory financial position of the Society which he considered was most heartening, having in mind the need which may arise later for fighting post-war issues.

Mr. Gay (who received the heartiest congratulations of the meeting when it was announced that he had just been elected an Honorary Member) delivered a short, but nevertheless interesting talk on Society matters, during which he also stressed the need for increasing Provincial Representation on Council.

A collection was taken for the R.S.G.B. Prisoners of War Fund and this produced £12 12s. 0d.

Before closing the meeting Mr. Desmond moved, Mr. Wilson seconded, and it was unanimously resolved to record a very hearty vote of thanks to the representatives of Council for their attendance. The meeting adjourned for tea, after which G5BJ kindly gave a few members a very interesting hour with some U.H.F. equipment in operation. Later in the evening, G6GR, 6NF, 2COP and others visited G3DO, whilst G5VM, entertained G6CL at his home in Hanley Castle.

The hospitality extended by Mr. Desmond will not be forgotten by those who were fortunate enough to be present at this the second P.D.M. to be held in Birmingham under war-conditions. Thanks a lot G5VM! "DEEJAY."

Swanage Meeting

F./Lt. P. Thorogood, G4KD, is arranging a meeting at Strong's Cafe, 37 Station Road, Swanage, on May 25, at 7.30 p.m. Three Society members, including Miss Hollingsworth, BR56022, from Bournemouth, and five others supported the meeting held on April 20. The suggestion has been made that a meeting be held in Bournemouth at an early date.

Car Radio Wanted

Cpl. J. Webb, 2 L.S., C.F.P., C.M.F. (BR53626), is in need of a 6 volt car radio set. He is willing to pay a reasonable price to provide a little entertainment for himself and his friends. Can you help?

HEADQUARTERS CALLING

COUNCIL 1944

President:

ERNEST LETT GARDINER, B.Sc., G6GR.

Executive Vice-President: S. K. Lewer, B.Sc., G6LJ.

Honorary Secretary: H. A. M. Clark, B.Sc., G6OT.

Honorary Treasurer: A. J. H. Watson, A.S.A.A., G2YD.

Honorary Editor: Arthur O. Milne, G2MI.

Immediate Past President: A. D. Gay, G6NF.

* * *

Members: F. Charman, G6CJ, D. N. Corfield, D.L.C.(Hons.), G5CD, Group Capt. G. R. Scott Farnie, GW5FI, F. Hoare, G2DP, Wing-Com. J. Hunter, G2ZQ, W. E. Russell, G5WP, H. W. Stacey, G6CX.

General Secretary: John Clarricoats, G6CL.

March Council Meeting

Resume of the Minutes of a Meeting of the Council held on Monday, March 20, 1944, at New Ruskin House, London, W.C.1, at 6 p.m.

Present:—Messrs. E. L. Gardiner (President), S. K. Lewer, H. A. M. Clark, A. J. H. Watson, A. O. Milne, A. D. Gay, D. N. Corfield, G. R. Scott Farnie, F. G. Hoare, W. E. Russell, H. W. Stacey, and J. Clarricoats (General Secretary).

Apologies were received from Messrs. F. Charman and A. E. Watts.

1. It was unanimously resolved to elect 143 Corporate Members (117 proposed by Corporate Members, 26 supported by references), and 13 Associates. An application for Life Membership from Mr. H. Turner, G6ZT, 54 Station Road, Billingham, Co. Durham, was approved.

2. An application for affiliation from the Northern Radio Club (Newcastle-on-Tyne) was approved.

3. It was resolved to accept the monthly Balance Sheet and Statement of Account.

4. It was agreed to accept an offer from a member to deliver a lecture, during the 1944/5 session, on the subject of Sound Recording and Reproduction.

5. It was agreed that the President and General Secretary should apply for membership of the Radio Industries Club with the object in view of maintaining social contacts with members of the radio industry.

6. It was agreed to consider at the next meeting a suggestion that manufacturers of valves and components be invited to meet representatives of the Council. The purpose of the meeting would be to indicate to the radio trade, the possible trend of experimental work after the war, and to obtain some assurances that the industry is prepared to cater for the post-war amateur radio market.

7. A letter was read from Mr. Freeman (Advertising Manager) in which he recommended Council to approve an all-round increase in BULLETIN advertising rates. Mr. Freeman pointed out that since February, 1940, when the rate was reduced to £6 per page, circulation has risen by nearly 100 per cent. Production costs have also increased considerably.

8. It was agreed to accept the new rates which would become effective as from July, 1944. Present contracts would continue at the present rates until due for renewal.

The new rates are as follows:—

Front cover (two colours)	£10
Back cover (two colours)	£12
Page (one colour)	£10
Smaller spaces <i>pro rata</i>	
Special positions	£12

9. It was agreed to increase the value of the parcels sent to members who are prisoners of war in Germany, from £1 to £2 per month.

10. It was reported that a member, Col. F. E. Wenger (G2VG), had donated the sum of £100 to the R.S.G.B. Prisoners of War Fund.

11. A ballot was conducted for the election of Mr. Alfred Duncan Gay, G6NF (Past President) to Honorary Membership. The ballot proved unanimous in favour of Mr. Gay's election. Mr. Gay expressed his thanks to the Council for the honour conferred upon him.

12. The Norman Keith Adams Trust Deed was approved in final form for submission to Mr. and Mrs. Adams. (Details of the Trust Deed will be published at an early date.—Ed.)

13. Post-war licensing matters were discussed and correspondence considered from the A.R.R.L.

14. With a view to a strengthening the Society's representation at meetings with the G.P.O. and other Government Departments, and in order to permit the Executive Officers to keep in close personal touch with the licensing authorities, it was agreed to appoint Mr. S. K. Lewer (Executive Vice President) to serve

with Messrs. E. L. Gardiner (President), A. D. Gay, (Immediate Past President), A. E. Watts (Past President) and J. Clarricoats (General Secretary) on the G.P.O. Liaison Committee.

15. It was reported that a successful Provincial District Meeting had been held in the Leicester area on March 12.

Approval was given for the holding of a P.D.M. in the Croydon area.

The meeting closed at 8.50 p.m.

London Meeting

An excellent attendance was recorded at the meeting held on April 29 at the Institution of Electrical Engineers, when Mr. H. A. M. Clark, B.Sc., G6OT, delivered his lecture entitled "Negative Feedback and its application to Receivers and Transmitters." The demonstrations, in which Mr. A. L. Westlake BRS648 collaborated, were greatly appreciated.

A vote of thanks to the lecturer was proposed by Mr. A. D. Gay, G6NF (Immediate Past President) after which Mr. E. L. Gardiner, G6GR (President) extended, on behalf of the Council, a warm welcome to the many visitors who were present from the Provinces and overseas. He also stated that Mr. Clark's paper would be published at an early date.

Before the meeting adjourned for tea the General Secretary announced that the Council had decided to cancel the I.E.E. booking for May 27, in view of the fact that three of the London Districts are arranging special functions during the summer months. (Details of these events appear under District Notes).

Changes of Address

Members who change their permanent address are asked to note that at least one month must elapse before the change can become effective for BULLETIN despatch purposes.

The Society cannot, under existing conditions, send the BULLETIN direct to a Service address. Members on Active Service should arrange for re-direction from their home address. Provided re-direction is effected promptly, no additional postage is required.

Technical Publications

The attention of members is directed to the fact that no facilities exist at Headquarters for obtaining technical publications other than the American publications listed below. Considerable inconvenience is caused by members who send cheques and postal orders for other publishers' books when forwarding either their subscription or an order for American publications.

American Publications

The Society is in a position to accept orders for the following publications which are ordered individually from America:

"QST" (Official monthly publication of The American Radio Relay League). By subscription, per annum	17s. 6d.
"The Radio Amateur's Handbook" (A.R.R.L.)	10s. 6d.
"The Radio Amateur's Handbook"—Special Defence Edition (A.R.R.L.)	8s. 6d.
"The Antenna Handbook" (A.R.R.L.)	4s. 0d.
"A Course in Radio Fundamentals" (A.R.R.L.)	3s. 6d.
"The Radio Handbook" (Editors and Engineers Los Angeles)	12s. 0d.

Orders must be accompanied by a remittance made payable to the Society and rates and prices are subject to alteration without previous notice. Delivery can be expected in about 12 weeks from date of order. Service Addresses must not be used. Single copies of text books only may be ordered.

Subscriptions to "Radio"

Until further notice no further subscriptions to the American monthly publication *Radio* can be accepted by the Society.

The Amateur Radio Handbook

The tenth printing (22,500 copies) of the Society's Handbook is now on sale price 4s. post free. Cloth bound copies are also available, price 6s. 6d. Headquarters will be pleased to allow trade terms on orders for 12 or more copies.

Cash Sales Department

The following items are now in stock at Headquarters:—
Members' Notepad (new style), 100 sheets 3s. 6d.
Car Plaque of Emblem 3s. 6d.

The above items will be sent post free to any address in Great Britain on receipt of remittance. Orders for Eire are despatched via the Censorship authorities.

Headquarters Address

A considerable amount of official Society correspondence is still being delivered to the General Secretary's private address. This, in spite of frequent requests for all R.S.G.B. correspondence to be sent to New Ruskin House, 28/30 Little Russell Street, London, W.C.1.

Those who act as sponsors to applicants for membership are kindly requested to record the above address on the application form, if the latter bears the temporary war-time address of the Society, viz. 16 Ashridge Gardens, Palmers Green, London, N.13.

When communicating with Headquarters the Society's name must *always* preface the address. Embarrassment and delays are often caused because letters intended for the Society are opened by one of the other firms operating from New Ruskin House.

EDITORIAL—(continued from page 161)

Trowell, 2HKU, of Sheerness, drawing attention to an earlier announcement that F./Sgt. R. Nicholas (a local resident) had been Mentioned in Despatches. In a masterly manner Mr. Trowell mentions that G8BJ is the airman concerned and follows up with an excellent description of the way local radio amateurs are serving their country on active service, concluding his letter with a full list of their names, addresses, rank and branch of Service, and a brief reference to the Sheppey Amateur Radio Club. This is a first-rate example of the seizure of an opportunity on behalf of our cause.

Our third example takes the form of a full-length article entitled "Calling CQ" in *Union Jack* (Western Italy edition) dated January 13, 1944, written by Mr. F. H. Martin, 2CDDT, a member of its editorial staff. The style is that of the popular journalist with the difference that the writer knows his subject. Space forbids a full reproduction of the article, but one sentence strikes a telling note.

"It makes one ponder," says the writer. "We radio Hams who talk across the world—are we the sort of people who squabble over international differences? Is our friendliness just a sham? I think not" . . . "Nation shall speak peace unto Nation" is an axiom little quoted these days. It was the radio amateur who made it possible. His triumphs over difficulties opened the way for long-distance communication."

We think we have said enough to show what is wanted; it is now up to you: our Public Relations Department! A.O.M.

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G5XY offers 11 volumes of *QST*, 1933–43, complete except from Sept. 1936 to June 1937, in part exchange for miniature camera.—Offers to DAVIS, "St. Magnus," Eastern Road, Havant, Hants.

MONOMARK service.—Permanent London address. Letters redirected. Confidential. 5s. p.a. Royal patronage. Key tag 9d.—Write BM/MONOTVA, W.C.1.

OFFERS wanted for Hammarlund Crystal Gate Receiver with coils from 5 to 40 Mc.—G3TI, 83 Merridale Road, Wolverhampton.

"RADIO Trouble Shooters Handbook" by Ghiradi, just received from U.S.A., £2. "Amateur Call Book" (1939), offers. Universal AvoMinor wanted.—Write BM/DGL, London, W.C.1.

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SALE.—DB20, perfect.—G6CC, 20 Hesketh Crescent, Birmingham, 23.

SALE or Exchange for S.W. gear. "Bulletins," January, 1939 to December, 1943 (four copies missing).—Offers to W. TOZER (2HKV), 15 Bramble House, Devons Road, Bow, London, E.3. **SALE** Simpson Turntable, £4. Rothermel crystal pick-up, £4 10s. Latest Mullard Oscilloscope unit, £12. Lantern and few slides, £15.—G5LJ, 32 Pilkington Avenue, Sutton Coldfield, Warwickshire.

SALE.—Valves as new: (3) 1A5G, (2) 1A7G, 1H5G, 1N5G, 3Q5G, 6J7G, 6K6G, (2) 6K7G, 6L7G, 25A6G, (2) 25Z4G, 25Z5, (2) 25Z6G, 35Z5G, (3) 70L7G, AC/VPL, AC/S2/PEN, C1, C1C, DC2/SGVM, DC3/HL, FC4, (2) FW/DH/4 Rect. (3) H2, H21DD, MM4V, N14, QP22B, TDD2A, TDD4, TH21C, U31, VMP4G, VP2. Best offer the lot.—Box 353, PARRS, 121 Kingsway, London, W.C.2.

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