THE T&R

BULLETIN

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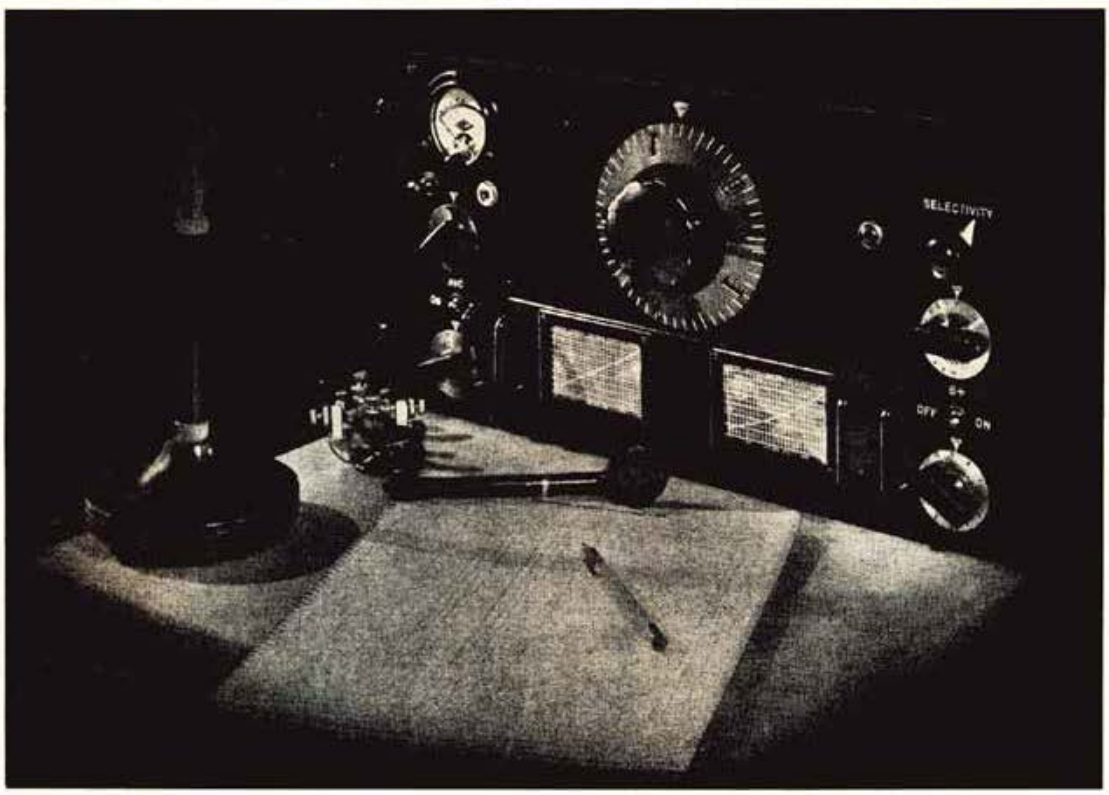

THE T. & R. BULLETIN

OFFICIAL JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

DEVOTED TO THE SCIENCE AND ADVANCEMENT OF AMATEUR RADIO

Hon. Editor: JAMES W. MATHEWS. Secretary-Editor: JOHN CLARRICOATS

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Vol. XVI. No. 7 JANUARY, 1941

CONTENTS

PROGRESS

NEVER before in the long history of this Journal, have so many executive changes been recorded in one issue as is the case to-day. In bidding welcome to our new Officers, Council members, Experimental Section Manager and District Representatives, we would do well to pause for a moment, and reflect upon the remarkable progress our Society has made during the past twelve months under the leadership of Mr. Arthur Watts.

Towards the end of this, and every other, issue, there appears a list headed "New Members." How often do you glance through that list? Maybe every month, maybe never, but if, as we hope you are among those who read "the 'Bull.' from cover to cover" you will probably have been surprised, even if not amazed, at the very considerable total recorded since 1940 began to run its course. If you don't believe us turn up those twelve issues and count the names. You'll find no less than 300 of them.

For various reasons, Service information never appears in the lists of new members, but again if you run through the appropriate Active Service list appearing in a particular issue you will usually find that over 50 per cent. of those entering the Society are in either Khaki or Blue.

That fact is in itself, impressive, because it means that pre-war members are singing the praises of Amateur Radio—and organised Amateur Radio at that—to their new-found friends who are serving with them.

What is the reason for this increase in interest in our work? Possibly the answer can be found in this Journal itself, for in spite of its "thinness," it certainly links us all together in a manner which two years ago would have seemed impossible. Perhaps it is because the Society is a "friendly" organisation which, on every occasion and at every opportunity, offers the hand of comradeship to all associated with it and with our Movement. Or is it that a vast new body of enthusiasts, rising above the drudgery of war, see—dimly, perhaps—that the Society provides one shining light, which in the years to come will help them to turn to Amateur Radio as a relief from their past trials and privations?

Whatever the reason, we at Headquarters feel intensely grateful to all who are making it possible for the Society to continue unchallenged as the champion of organised Amateur Radio in Great Britain.

Under the guidance of our new President and Executive Vice-President, supported by three new Council members and many others who have served us faithfully and well, we look forward to still further progress during the year ahead.

J. C.

PRESIDENTIAL ADDRESS

Delivered by Alfred Duncan Gay (G6NF), at The Institution of Electrical Engineers, London, on December 14th, 1940.

I DEEPLY appreciate the honour which you have conferred upon me by electing me as your President. When I look back at the line of my distinguished predecessors, I can only hope to serve you and the interests of the Society as well as they did. At least, I have had an example set me by constant touch with the Immediate Past President, Mr. Arthur Watts, and I look forward to his help and the co-operation of the Secretary-Editor, Officers and Council of the Society towards a common purpose.

When Great Britain has secured the freedom of those countries known to us by the familiar prefixes OK, YM, SP, OZ, LA, PA, ON and F, and of her other friends abroad, what a reckoning there will be amongst amateur ranks, what tales and adventures to unfold. There will be the hatching-out of many well-laid schemes which have been incubating in the interim and lots of new circuits to try out. When that longed-for time will come, no one can predict, but I fervently hope that it may be during my period of office. It is certain that we all have to spur every effort and make many sacrifices before victory is achieved.

It is therefore the duty of every amateur, whether he is in one of the Services or on civilian work of National Importance, to exert himself to the utmost for his country. In fact, a suitable motto is: "QRL? QRO es GA."

* * *

After the election of a new President of a Scientific Society it is usual for the person so honoured to deliver an address upon a subject or subjects in which he has specialised or made some particular achievement. Whilst the latter is not the case in the present instance, I think I can claim to several years of experimental study and much interest in the gradual improvement of amateur frequency measuring apparatus. Much of the earlier experience gained was invaluable because it was not available in any Radio text book. I propose, therefore, to give a brief sketch of my reminiscences in this direction in the hope that it may be of interest and possibly an incentive to others.

Frequency Standards

Every experimenter in frequency measurement will need some standard of comparison. These are more correctly described as *sub-standards*, as they have usually been calibrated against some National Standard such as the one maintained at the N.P.L.

Early experiments on frequency standards began about the same time as the advent of crystal control. This latter development made it possible for local sub-standards of frequency to be maintained. These consisted of plates of quartz approximately 2·5 mm. in thickness, giving a range of frequencies between 970 and 684 kc. The harmonics of these transverse oscillators were extremely useful in providing checking points throughout the amateur bands.

Before the discovery of the X-cut, most crystals were known as Y-cut, and the variation in temperature occurring in the upper rooms of a house which were being used by me then as a workshop, etc., quickly brought to notice slight frequency variations due to this cause. This was particularly the case as the accuracy of measurement began to improve.

Later, about 1931, I began to experiment with crystals oscillating on their longitudinal mode, as certain of the commercially-made transverse oscillators (which were either square or circular in shape) could be persuaded to oscillate around 120 kc. according to their width. It was then considered that pebbles, or quartz spectacle lenses, might be useful in this connection as they were larger in dimensions than commercial plates.

Lo! and behold! it was found that some of these *could* be coaxed into oscillation on three different frequencies, corresponding with their length, width and thickness, and various fundamental frequencies from 80 kc. upwards were obtainable.

After several trials four of these pebbles were selected for constancy and their fundamentals accurately determined. The number of harmonics available from these four crystals was overwhelming compared with previous standards and much time was spent in calculating them up to high orders.

It was not long after this that a pair of quartz plates were purchased and adjusted to 100·00 kc.; these saved many headaches over calculations.

Later, Colonel Dennis, EI2B, gave me much assistance over the production of frequency sub-standards with a negligible temperature co-efficient, and acknowledgments and grateful thanks are here recorded to him. These were plates of quartz of quite economical dimensions, being 28 mm. long, 4 mm. wide and 1 mm. thick. It was quite impossible to make them oscillate with a contact holder, but with a suitable type of air-gap mount, which I described in the January, 1933, issue of THE T. & R. BULLETIN, they functioned, and indeed continue to function in a satisfactory manner.

These were used with various types of locked oscillator to produce frequencies down to 1000 cycles; the first of these oscillators was described in the above-mentioned issue of THE T. & R. BULLETIN. Subsequently, by the substitution of more efficient valves, this early oscillator was quite easily locked directly on 10 kc.

An interesting point about this oscillator is that the field around the tuned inductance is so strong that the frequency can be distinctly heard. Followed by a pair of valves in the usual multivibrator circuit, we were able to produce a 1000 cycle output which made it easy to check frequency standards directly by known stations of high accuracy, which were not always an exact multiple of ten. Of course, with the advent of WWV* on 10, 15 and 20 Mc., we could dispense with the final unit, but much interest was to be obtained by seeing how some of our old friends compared with the Bureau of Standards.

To-day, by means of more efficient valves (for instance, a 57 and a 53), it is quite easy to jump from 100 kc. down to 10 kc. By making one leg of the multivibrator capacities a variable condenser, the circuit may then be quickly tuned or switched from 50 to 10 kc., thus making identification of harmonics easier.

* *The U.S.A. Bureau of Standards Station.*

Frequency Meters

Now for a word or two about frequency meters. Like most amateurs of some 18 years ago, I began with an absorption " instrument." This consisted of a coil of wire, an " Osglim " lamp (minus base), and a variable condenser of 500 $\mu\mu$F. capacity suitably housed in a square box. This large capacity may cause some consternation, but it had other uses than the measurement of frequency. For instance, complaints of broad-tuning and spreading of carrier were easily dispelled by a simple demonstration to the complainant. Also the tuning of the transmitter to the amateur bands, which were indicated by a number of scratches on the dial, was a simple matter.

When we all descended to 45 meters, a new coil had to be made, and here again it was not surprising how easy it was to tune the transmitter to this " spot " frequency. The process of calibration in those days was to adjust one's transmitter and call test. If no reply was received that day, the same performance was repeated the next day, slightly changing the tuning, and so on until you effected contact with some other lonely soul who was striving to establish communication !

However, those halcyon days soon passed and the serious study of frequency measurement began. The result of experience in this field quickly teaches us that no component is *too* good for inclusion in a frequency meter. Until recently, very few components on the market were good enough to ensure the permanency of an instrument. The chief difficulty is inconstancy of components, due to variations of temperature.

Quite a lot of time was spent in testing different components over various ranges of temperature and in most cases the results were disappointing. However, to-day the constructor can obtain at least one important component which is proved to be stable, *i.e.* a fixed capacity ; both the metallised mica and ceramic types of fixed condenser being good in this respect.

The inductance is still the chief difficulty, and variation of frequency may amount to some 50 p.p. million per °C. due to this cause. A very good type of coil to use and one which is low in temperature co-efficient, consists of metallised turns sprayed on a ceramic former, but so far I have not been able to make one or get one made !

The Neumanns, Dynatron, Electron-coupled and Franklin oscillators have in recent years received attention, each circuit having some advantage over the other for frequency meter work.

Actually, a battery-driven triode oscillator is still one of my favourite circuits. No time need elapse after switching-on for cathodes to reach a stable temperature and, providing the inductance is well constructed, the temperature changes and the consequent effects on frequency stability are the same as in any other circuit.

The Neumanns and Dynatron oscillators are dependent upon the negative resistance possibilities obtainable with a four electrode valve. Personally, I am of the opinion that the Hartley and Colpitts electron-coupled circuit is superior to any circuit yet devised, as it can easily be made reasonably free from variation due to supply voltage fluctuations, whilst the circuit can be loaded without much effect upon the frequency.

The Franklin circuit can be recommended to those who do not object to using an extra valve to render the circuit independent of changes in valve internal capacities.

Calibration Signals

Towards the end of 1933, experiments were begun in transmitting three frequencies within the 3·5 Mc. band to provide a service for checking the calibration of amateur-made frequency meters. A special transmitter had been constructed employing a power of 100 watts and crystals were in the process of adjustment to the required frequencies. However, owing to certain difficulties with these quartz blanks, it was decided to turn to M.O. drive for this transmitter.

This was eventually described in the December, 1933, issue of THE T. & R. BULLETIN and consisted of a Mazda A.C./SG valve acting as an E.C.O. with a circuit designed to ensure good frequency stability. Whilst no special precautions were taken over the regulation of power supply, which was supplied from the mains (and these fluctuated slightly due to keying loads), some check measurements made by the G.P.O. were within the 0·01% claimed for the transmissions.

It was with a feeling of much satisfaction that these transmissions were given for the use of others. To think that by the result of much experiment we had built up a number of pieces of apparatus which would remain constant and reliable and could be utilised by others to check their own instruments was a source of much pleasure to me. However, as amateurs began to acquire their own sub-standards in the shape of 100-kc. crystals, less and less use was made of the transmissions, so they were discontinued. This was quite a natural sequence of events, as no one who wanted to check his apparatus regularly could await weekly transmissions for this purpose.

The regular transmissions from WWV have supplanted all amateur transmissions for calibration purposes, although at this time of year there is some difficulty in receiving them on the high frequencies.

Calibration Section

With the cessation of amateur transmission and the necessary restrictions on the use and purchase of crystals, the activities of this section ceased when war began. From the date of its inception, several hundred certificates were issued stating the frequency of members' crystals within close limits. A number of frequency meters were calibrated, but it is dubious whether many retained their calibration for very long !

Conclusion

In conclusion, I must say that I feel that I have dealt most inadequately with many of the circuits, etc., in this address. In reading it to you I have amplified some of the paragraphs, according to the time at my disposal, but in print it will only appear as an abridged version. Also it would have been more instructive if I had given you some demonstrations of the effects of instability in an oscillator. It was also my intention to demonstrate the stability of these air-gap crystal holders, one of which I have shown you, but on reflection I realised that, had I loaded up my car with power-packs, frequency meters and sundry oscillators, I might never have succeeded in reaching here to deliver this address !

However, I only hope that I have, perhaps, aroused your interest in what has, to me, been a most absorbing subject.

Frequency measurement is undoubtedly a most suitable subject for an address, as I am sure no President has wished more than I do, that every British amateur would become frequency conscious. Well, I can only say that for some of you, now is the time to start, and be ready for the days when hostilities cease.

By choosing a technical subject for my address I have differed from the principle adopted by most Past Presidents, for they dealt with the policy which they intended to adopt during their term of office. I can assure you all, however, that with the help of your other Officers, the Council, and Headquarters Staff, every effort will be made to safeguard your interests and those of the Society. In these difficult times, when the active interest of our Hobby is—shall we say quiescent—little can be done except to make plans. We have made plans for the future and will pursue them with the utmost vigour when the war is over.

Wishing you all good luck—and stable oscillators!

OUR NEW PRESIDENT

ALFRED DUNCAN GAY succeeds to the Presidency of the Radio Society of Great Britain after serving as a Council member since 1930. During this lengthy apprenticeship for the high office which he now holds Mr. Gay has acted as Honorary Treasurer (1937) and as Executive Vice-President (1938-40). In addition to the experience which he has gained as a Council member, our new President has acquired a considerable knowledge of local affairs, having been Representative for South London for a period of several years.

Mr. Gay's work as Calibration Manager to the Society, a task which he has undertaken for the past ten years, is well known to most members, whilst his specialised knowledge of frequency measuring equipment and the problems involved in the production and checking of standard frequency transmissions is unequalled among the lay members of the Society. Mr. Gay has contributed many important articles, on a variety of technical subjects, to the Society's Journal, many of which rank high in the literature available on subjects connected with frequency measurement. The gear which is used to run the Society's Calibration Section was designed and built by our new President whose laboratory, at Shirley, Croydon, contained in days of peace, some of the most ingenious equipment it is the lot of most amateurs to examine.

Mr. Gay has travelled considerably and for some years was engaged on research work in East Africa. His cheery voice has been heard at Provincial District Meetings and Conventionettes throughout the British Isles, where he has frequently been called upon to respond to Society toasts or give technical advice.

Alfred Duncan Gay, G6NF,
President 1941.

No President since Gerald Marcuse has earned such a reputation for DX work as G6NF, for that is his call in case any should be in ignorance of the fact! To attempt to enumerate his successes is beyond the capabilities of the writer, but suffice it is to record that he holds every certificate of achievement issued by the Society (including the British Empire Radio Transmission Award), as well as the DX Century Club and Worked All States certificates issued by the American Radio Relay League. G6NF was the holder of the Braaten Trophy for 1937, 1938 and 1939, the three years it was available for competition. This trophy is awarded to the British Isles Amateur returning the highest score in the Annual DX Telegraphy Contest sponsored by the A.R.R.L.

Mr. Gay, in spite of his DX accomplishments, has for the past 12 years been an active worker on the 56 Mc. band, whilst his call is known to hundreds who have operated or listened in past days on 1·7 and 3·5 Mc.

Our new President thus takes office with a vast store of practical amateur knowledge.

Like his predecessor, Mr. Gay is an amateur in the full sense of the word, for in professional life he is Chief Chemist to a large London concern.

We wish him well.

J. C.

A TWO STAGE PRE-SELECTOR WITH BAND SWITCHING

By T. B. WIMBUSH (G6HP)

The demand for an up-to-date Pre-Selector design has been met by the author of the present article. The introduction of new low noise R.F. Hexodes has materially assisted in overcoming the original difficulties attendant upon adding R.F. amplification ahead of the first stage of a commercial receiver.

THE pre-selector here described was designed to precede an *Eddystone* E.C.R. receiver, its chief use being to reduce image interference on the 14 Mc. band. A secondary consideration was to improve overall performance, although this is hardly necessary with the E.C.R. Such a pre-selector can precede any straight or superhet receiver, and its use will invariably result in greatly improved performance.

The effectiveness of any receiver is mainly dependent upon a low inherent noise level, which itself is controlled largely by the very first valve in the line-up. The use of a pre-selector of the type described enables the noise level to be reduced considerably, at the same time increasing the signal strength.

Valve Design Features

It is a simple matter to construct an R.F. amplifier which increases the noise level as well as the signal, but by using one of the new *Tungsram* E.F.8 low-noise R.F. hexodes, and by reducing the I.F. gain, signals become more easily readable, whilst more efficient working of the A.V.C. in the receiver itself results, and weak stations previously unreadable can be brought in 100 per cent. Image interference, too, is completely eliminated.

The E.F.8 is described by the makers as an indirectly heated low noise-level screened R.F. amplifier hexode, specially designed for the first stage of high-gain receivers. The exceedingly low value of self-generated noise is obtained by an application of the principles of Electron Optics.

In practice it has been found that, other things being equal, the value of self-generated noise is dependent upon the value of screen current. By the addition of a further grid preceding the accelerator screened grid (which has an identical pitch) an electron optical shadow is cast upon the accelerator grid such that the electrons are concentrated into a beam which avoids the said accelerator screen grid; consequently the screen current is reduced to a very low value. By these means the equivalent grid noise-input resistance has been reduced to the very low value of 4,100 ohms.

In addition the E.F.8 has a short cathode and very close inter-electrode spacing. This considerably reduces transit time effects; consequently the input impedance on short waves is high. (In this respect, as well as of capacitances, it is intermediate between the acorn and the usual 4-volt range of valves.)

The side contact base which is fitted to the E.F.8 has been specially designed to minimise R.F. losses between the contacts; it also has smaller inlet contact capacitances than the pin type of base and socket.

The possibility of instability is present when using modern high-gain hexodes if care is not taken in the circuit design, but the pre-selector described is entirely stable throughout its range and provides a high degree of effective signal amplification over noise level.

Circuit Details

Fig. 2 shows the circuit diagram to consist of two hexode amplifying stages with separate grid, primary, and aerial coils for each of four bands.

Provision for a dipole input line is made, whilst a Marconi type aerial may be used by earthing A.2. A dipole is to be recommended, since it provides maximum signal with minimum noise.

Transformer coupling between the two stages is employed so that the degree of selectivity can easily be controlled by varying the number of primary turns. Regeneration, which is chiefly used to increase selectivity, is not always desirable, and in this case, therefore, is not necessary. Chokes in this position are inclined to resonate on certain frequencies, and do not permit of high selectivity without a loss in gain.

Each anode and screen is decoupled, and all by-pass condensers are taken direct to cathode and not to earth.

A built-in power supply is included, and a four-pin socket arranged so that this supply can be used for other apparatus.

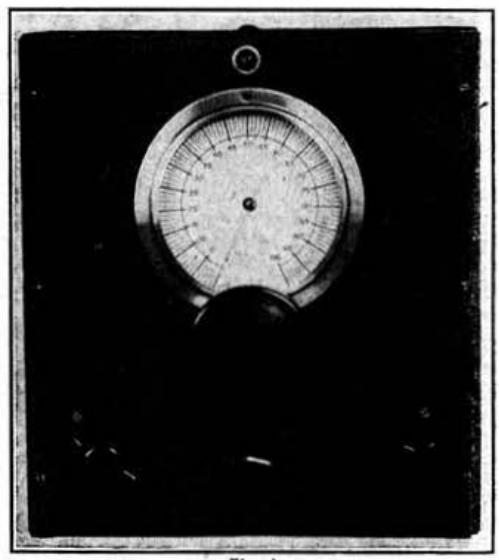


Fig. 1.
Front view of the completed Pre-Selector. Controls are main tuning, mains switch, band switch, gain control and send-receive. A red panel indicating light is wired across the heaters.

R.F. gain is controlled by a variable resistor in the cathode circuit of both valves. A send-receive switch is incorporated with the gain control, and this breaks the high tension supply at the minimum gain position, whilst a double-pole on/off switch breaks the mains supply.

Band switching, by means of a *Wearite* ceramic switch, is used, and details of the coils appear in the table together with their frequency ranges. It was arranged that each band covered should coincide with the various frequency ranges of the E.C.R.; consequently the 1·7 and 3·5 Mc., and the 7, 14 and 28 Mc. bands appear at the same relative position of the tuning dial. It is, therefore, only necessary to switch over to the band required without retuning. Each amateur band, with the exception of 1·7 and 3·5 Mc., is arranged to appear near the minimum capacity position of the main tuning condenser. The output circuit impedance is an R.F. choke with a series mica condenser coupled to the main receiver.

Coil Data

The grid coil is identical in each case, the aerial winding being wound at the earthy end of the first grid coil, and the coupling winding at the earthy end of the second grid coil. No. 28 s.w.g. enamelled wire is used for the two lower frequency bands, and No. 24 s.w.g. enamelled wire for all other coils. All coils are close wound with the exception of the two higher frequency grid coils, which are spaced approximately the diameter of the wire.

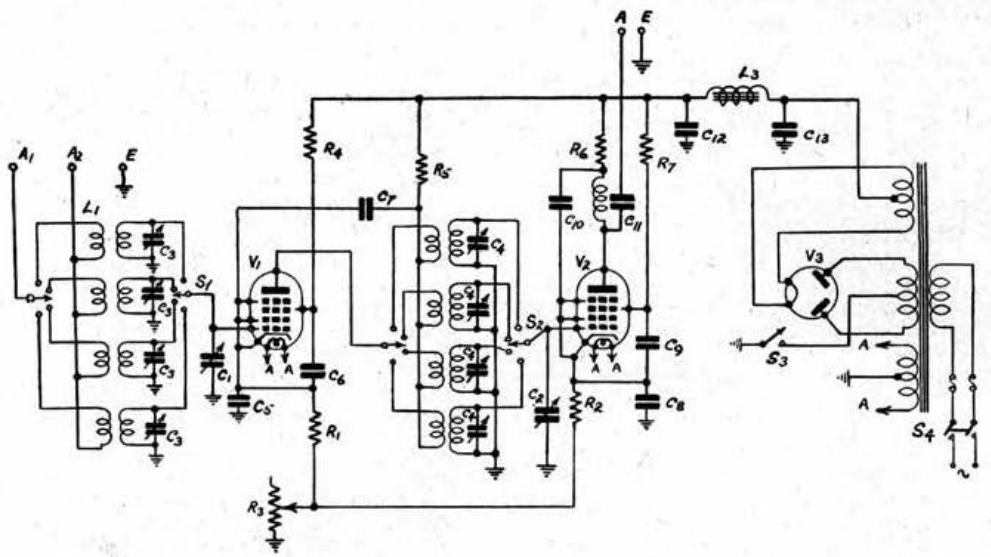


Fig. 2.

Circuit Diagram of Pre-Selector using E.F.8 Low-Noise Hexodes.

Keyed Components

L1	See text.
L3	Bulgin L.F. choke, L.F.15.
S1, 2	Wearite ceramic switch assembly, type A.28. 2 pole 4 position with additional wafer of same combination.
S3	Send-receive switch incorporated in R.3.
S4	Bulgin D.P. on-off rotary switch, S.115.
R1, 2	Bulgin 300 ohm ½ watt resistances.
R3	Bulgin 10,000 ohm volume control and switch, VS.144.
R4, 5, 6, 7	Bulgin 10,000 ohm 1 watt resistances WE.2.
C1, 2	Twin gang ·00025 μF S.W. type, Jackson Bros.
C3, 4	Bulgin 4-way ceramic trimmers, CP.21.
C5, 6, 7, 8, 9, 10	Bulgin 1 μF tubular condensers, PCP.1
C11	Erie ·0001 μF mica condenser.
C12, 13	Bulgin 8 plus 8 μF electrolytic, EC.8.

Valves

V1, 2	EF8, Tungsram.
V3	5Z4G.

Other Components

Eddystone

1 Cabinet, No. 1033.
1 Dial, No. 1115.
1 S.W. choke, No. 1010.
1 Octal valve base, No. 1120.
1 4-pin valve base, No. 1073.
1 4-pin lead connector, No. 1030.

Bulgin

8 Unit coil formers.
1 Fuse-holder and mains connector, F.15.
1 Red miniature signal fitting, D.19.
2 Side contact chassis valve-holders, VH.24.

All Power Transformers, Ltd.

1 Transformer, Primary, 220 v. sec., 250–0–250 60 mA. 6·3 v., c.t.2A; 5 v., c.t.2A.

COIL TABLE

Coil.	Frequency Range. Mc.	Aerial.	Grid.	Coupling.
1	1·3– 4.0	12	62	27
2	3.0– 7·5	8	28	15
3	6.0–14.0	4	12	9
4	13.0–32.0	3	5	4

Coil Assembly

A very neat, compact and efficient coil assembly results by using a *Bulgin* 4-way ceramic trimmer as

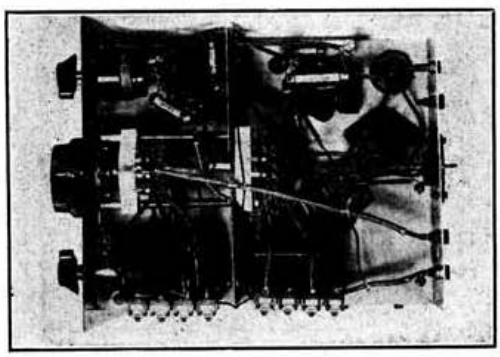


Fig. 3.
Under-chassis view of Pre-Selector. Condensers and resistors are grouped around their respective valve holders. Note screens supporting the switch and copper braid.

the foundation, and *Bulgin* "unit" coil formers. The latter are drilled and secured by a single 4BA nut and bolt to alternate sides of the earthed frame of the trimmers. Two of these bolts are 1½ in. long,

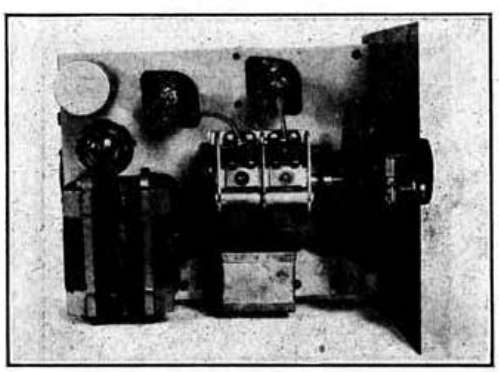


Fig. 4.
Plan view showing location of components on top of chassis.

and are used to fasten the complete assembly to the chassis.

The trimmers on the main tuning condensers are set to their minimum capacity positions; consequently it is only necessary to adjust two trimmers for each band. This can be done orally, or by tuning to a signal and noting the deflection on the "S" strength meter fitted to the receiver.

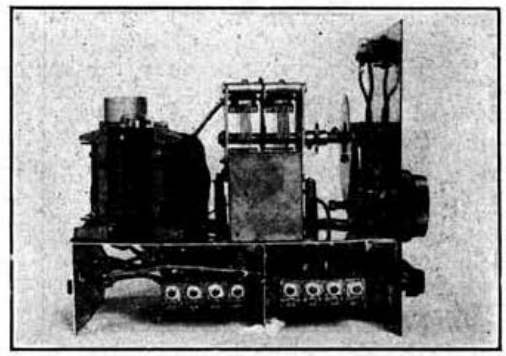


Fig. 5.
Side view of Pre-Selector.

Construction

The unit is built into an *Eddystone* cabinet (Fig. 1) on a chassis made of 16 s.w.g. aluminium measuring 7¾ in. wide by 13 in. long. The aluminium sheet is bent over ½ in. to bolt to the panel, and 2½ in. to form the rear flange, on which the 4-pin socket and the input and output plugs and sockets are mounted. Two screens 2½ in. high and 3½ in wide are bolted to the chassis underneath. These are used for screening, and also as a support for the wave-change switch.

Fig. 3 which shows an under-chassis view can be used as a guide. In following these directions the trimmers on the two sets of coils can be adjusted through ¼ in. holes drilled through the side of the *Eddystone* steel cabinet. Wiring is carried out as direct as possible, whilst a common earth point to the chassis should be used. The tuning condenser moving plates and the two screens and screened wires should be anchored to this point by means of heavy copper braid.

Screened leads are only necessary on the grid lead of each valve, and for the doublet input connections. These can be seen in Figs. 3 and 4. All condensers and resistors are grouped around their respective valve-holders.

The main tuning condenser is supported on two brackets 1½ in. high, each bracket being mounted on rubber washers to allow a certain amount of movement. The mains transformer is also mounted on rubber washers to avoid mechanical vibration.

A screened lead from the pre-selector to the receiver aerial terminal should be used, the screen of which can be used as the earth connection between the two points.

In actual operation it will be found that this pre-selector will give more effective gain than is normally required—it has not so far been found necessary to turn the volume control to absolute full gain, although even in this position it will be found entirely stable.

MATHEMATICS FOR THE RADIO AMATEUR

By T. R. THEAKSTON, B.Sc. (2DBK).

PART IV.—COMMONLY USED FORMULAE

Wavelength and Frequency

Electromagnetic Waves. Definitions.

ELECTRIC oscillations in a conducting circuit, when they are of sufficient rapidity, set up a succession of electromagnetic waves in the surrounding medium. These electromagnetic, or ether waves travel outwards in all directions.

To appreciate the facts and formulae of wave transmission, Fig. 4 will be studied.

This waveform OMAQBR represents the transverse disturbance in the ether due to the propagation of the ether wave in the direction OAB. To have a clearer picture of the meaning of this, the behaviour of a pond surface on dropping in a stone should be visualised. The ripples—alternate crests and troughs travelling forward—show the disturbance of the water in an "up and down" direction. This disturbance is clearly in a direction transverse to the actual motion of the energy of the wave which simply travels forwards and outwards from the centre of disturbance.

The waveform in Fig. 4 represents in the curve from O to B one complete set of varying conditions, and is called a *cycle* of the wave. The half-cycles above the mean line OAB are usually termed *positive half-cycles;* those below OAB, *negative half-cycles.*

If several successive cycles were represented, we should have a *wave train.*

Associated with this wave motion are five quantities, as follows :—

Velocity (V).—The speed at which the waveform and its energy travel outwards.

Amplitude.—The maximum displacement of a moving particle from its mean position, *i.e.* ML and RS in the positive direction, and PQ in the negative direction.

Frequency (f).—The number of complete waves passing a given point per second ; in other words, the number of cycles per second.

Wavelength (λ – pronounced "lambda").—The distance from wave crest to the next one ; *i.e.* the straight-line distance MR = LS, and clearly = OB.

Period (T).—The time in which the waveform moves through one wavelength ; *i.e.* time from O to B, in seconds. This is exactly equivalent to the time interval between the passing of successive waves past any one point ; for when the particle at O has reach B, one complete wave will have replaced OMAQB.

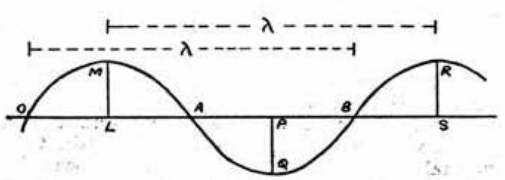


Fig. 4.

Representation of Electromagnetic Waveform.

The Relationship between Frequency and Wavelength

(*a*) From definitions above

Number of waves per second = f

Time between two waves = T seconds

$$\therefore \mathbf{T = \frac{1}{f}\ seconds}$$

(*b*) Since Velocity × Time = Distance, for the wave we have $V \times T = \lambda$

$$\therefore V \times \frac{1}{f} = \lambda$$

$$\text{or, } \mathbf{V = f \times \lambda}$$

(*c*) For electromagnetic waves, V, practically = 300 millions = 300000000 = 3×10^8 metres per sec.

$$\therefore \mathbf{f \times \lambda = 3 \times 10^8}$$

This formula gives wavelength in metres and frequency in cycles per sec. (c/s), and will give unwieldy quantities for the frequency. Hence a larger unit for frequency is adopted. This unit is "kilocycles per second," written "kc/s."* Since 1 kilocycle = 1000 cycles, *when frequency is in kc/s. and wavelength is in metres.*

$$f \times \lambda = \frac{3 \times 10^8}{1{,}000} = 3 \times 10^5 = 300000$$

$$\therefore \mathbf{f = \frac{300000}{\lambda}\ kc.} \text{ and } \mathbf{\lambda = \frac{300000}{f}\ metres}$$

or, to convert wavelengths in metres into frequency in kilocycles per second, divide 300000 by the wavelength ; and *vice versa.*

(*d*) At very high frequencies, even when expressed in kilocycles per second, the numbers tend to become unwieldy. Another unit, "Megacycles per second" (Mc.)* is used.

1 Megacycle = 1000 kilocycles (= 1000000 cycles), and so *if frequency is in Mc/s. and wavelength is in metres.*

$$f \times \lambda = \frac{300000}{1000} = 300$$

$$\therefore \mathbf{f = \frac{300}{\lambda}\ Mc.} \text{ and } \mathbf{\lambda = \frac{300}{f}\ metres}$$

Examples.—

(1) A wavelength of 20 m. = frequency of

$$\frac{300}{20} \text{ Mc.} = \mathbf{15\ Mc.}$$

(2) A frequency of 3500 kc. = wavelength of

$$\frac{300000}{3500} \text{ m.} = \frac{3000}{35} = \mathbf{85{\cdot}71\ m.}$$

* *Although the abbreviations kc/s. and Mc/s. are strictly correct it is standard practice in Society publications to write them as kc. and Mc.*

(3) A BBC Home Service programme is given as being on 449·1 metres.

$$\text{Frequency in kc.} = \frac{300000}{449 \cdot 1} = \mathbf{668 \cdot 003\ kc.}$$

Which (correct to the whole number) is the published frequency of 668 kc.

Resonant Frequency of Oscillatory Circuits

The inductive reactance of a circuit of inductance L henrys at a frequency of f cycles/sec. is

$$X_L = 2\pi fL$$

and increases as frequency increases.

The capacitive reactance of a circuit of capacity C farads at a frequency of f cycles/sec. is

$$X_C = -\frac{1}{2\pi fC}$$

and decreases as frequency increases.

For a combination of inductance and capacity in a circuit, there is a frequency at which the inductive and capacitative reactances are equal; and since they are in opposition they balance each other leaving the total reactance zero. *It is at this frequency that the given circuit is resonant.*

At this frequency, by definition,

$$X_L = -X_C$$

$$i.e.\ 2\pi fL = \frac{1}{2\pi fC} \text{ (L in henrys, C in farads)}$$

$$\therefore \text{ cross-multiplying, } 2\pi fL \times 2\pi fC = 1$$

$$\therefore \quad f^2 \times (2\pi)^2 \times LC = 1$$

$$\therefore \quad f = \sqrt{\frac{1}{(2\pi)^2 LC}}$$

$$i.e.\ f = \frac{1}{2\pi\sqrt{LC}}$$

In this formula f, L and C are expressed in cycles/sec., henrys and farads respectively. To change to the more practical units of kilocycles per sec., microhenrys and micro-microfarads

$$\text{we have } f = \frac{1}{2\pi\sqrt{LC}}$$

substitute $\frac{\mu H}{10^6}$ for H, $\frac{\mu\mu F}{10^{12}}$ for F and 10^3 kc. for c/s. (*See note below.*)

$$\therefore 10^3 \times f = \frac{1}{2\pi\sqrt{\frac{L}{10^6} \times \frac{C}{10^{12}}}}$$

$$\therefore 10^3 \times f = \frac{1}{2\pi\sqrt{\frac{LC}{10^{18}}}}$$

$$= \frac{10^9}{2\pi\sqrt{LC}}$$

$$i.e.\ \mathbf{f = \frac{10^6}{2\pi\sqrt{LC}}} \text{ or } \mathbf{\frac{10^6}{6 \cdot 28\sqrt{LC}}} \begin{cases} \mathbf{f \text{ in kc.}} \\ \mathbf{L \text{ in } \mu H.} \\ \mathbf{C \text{ in } \mu\mu F.} \end{cases}$$

Note on change of units.—The substitution referred to does *not* mean of course that 1 Henry = $\frac{1 \text{ microhenry}}{10^6}$, nor does it mean that 10^3 kc/s. = 1 c/s., etc. The original formula gives "f" in cycles sec., and if we wish to read it in kilocycles per sec., since our new unit is 1000 times larger than the old one, the *number of units* we should get would be one-thousandth of the real number. Hence we must *multiply* by the 1000. The argument also applies to the conversion of henrys and farads.

Resonant Wavelength

When frequency is in kc., Wavelength in metres

$$= \frac{3 \times 10^5}{f}$$

$$\therefore \text{ for resonance, } \lambda = 3 \times 10^5 \Big/ \left(\frac{10^6}{2\pi\sqrt{LC}}\right)$$

$$= \frac{3 \times 10^5 \times 2\pi\sqrt{LC}}{10^6}$$

$$= \frac{3 \times 6 \cdot 283\sqrt{LC}}{10}$$

$$= 1 \cdot 8849\sqrt{LC}$$

and as usually given,

$$\lambda = \mathbf{1 \cdot 885\sqrt{LC}} \text{ metres} \quad \begin{cases} \mathbf{L \text{ in } \mu H.} \\ \mathbf{C \text{ in } \mu\mu F.} \end{cases}$$

Note.—This formula is sometimes given as $\lambda = 1885\sqrt{LC}$, where C is given in μF. Invariably the frequency formula is given with capacity expressed in μμF, and hence it seems, to the author, more reasonable to have the same units in the wavelength formula, and thus impose less strain on the memory. In addition to which, the expressing of capacity in μμF obviates the decimal quantity, under the square root sign, which capacity in μF always gives.

From the two formulae for resonance it is seen that for a given frequency, or wavelength, the product Capacity × Inductance in the oscillating circuit is constant. Hence if one is increased the other must be decreased proportionally to maintain constant frequency; otherwise the alteration of either will give resonance at a different frequency.

Examples.—

(1) (*a*) For a circuit to resonate at 1800 kc.

$$1{,}800 = \frac{10^6}{6 \cdot 28\sqrt{LC}}$$

$$\therefore 1800 \times 6 \cdot 28 \times \sqrt{LC} = 10^6$$

$$11304 \times \sqrt{LC} = 10^6$$

$$\sqrt{LC} = \frac{10^6}{11304} = 88 \cdot 464$$

$$\therefore \quad LC = (88 \cdot 464)^2$$

$$= \mathbf{7{,}826} \text{ approx.}$$

(*b*) If capacity were 200 μμF (0·0002 μF)

$$\text{Inductance } L = \frac{LC}{C} = \frac{7826}{200} = 39 \cdot 1\ \mu H \text{ approx.}$$

(*c*) If inductance were 50 μH.

$$C = \frac{LC}{L} = \frac{7826}{50}\ \mu\mu F = 156 \cdot 52\ \mu\mu F.$$

(or = 0·000156 μF approx.)

(2) A condenser of 50 μμF (0·00005 μF) capacity would tune a coil of 2·5 μH inductance to a wavelength of

$$= 1 \cdot 885\sqrt{LC} = 1 \cdot 885\sqrt{50 \times 2 \cdot 5}$$

$$= 1 \cdot 885\sqrt{25 \times 5}$$

$$= 1 \cdot 885 \times 5 \times \sqrt{5} = 9 \cdot 425 \times 2 \cdot 2361$$

$$= \mathbf{21 \cdot 075\ metres.}$$

Notes.—(1) Having evaluated the necessary inductance which will be tuned, with a certain capacity, to a given frequency, the dimensions of the coil can be ascertained by using the chart and instructions on pp. 294 and 295 in *The Amateur Radio Handbook* (second edition).

(2) The Chart on p. 296 of the Handbook can be used to evaluate the calculations given above, though the aim of the author is to make the reader independent of such excellent aids by enabling him to work out the problems from first principles!

(3) If should be noted that here we have seen only the method of calculating wavelengths, frequencies, the product LC, etc. For information on the correct choice of the L/C ratio the Handbook may be consulted.

* * * *

We have now reached a point at which more mathematical knowledge is needed before going on with the formulae. For that reason this article will close, for the time being, Section 1 of our series (see Bulletin, p. 102, October). Part V will open Section 2, and in preparation for logarithms will deal with indices and their manipulation. It will also include a revision of the arithmetical method of evaluating the square root.

Problems

(11) What wavelengths correspond to (*a*) 37500 c/s. (*b*) 125 kc. (*c*) 62.5 Mc.?

(12) What frequency, in Mc., corresponds to a wavelength of 5·5 metres?

(13) What frequency, in kc. corresponds to a wavelength of 40·6 metres?

(14) What is the value of the product LC for a circuit oscillating at (*a*) frequency of 14000 kc. (*b*) wavelength of 40 metres?

(15) At what frequency would a coil of inductance 5 μH with capacity of 20 μμF resonate?

(16) What capacity would be needed to tune a coil of 20 μH inductance to a wavelength of 40 metres?

Solutions to Problems set in Part III

No. 6. **450 V.**; **25,000 Ω**; **25 mA.**; **666·6 Ω**; **25 mA.**; **0·2 V.**; **2mA.**

Note.—All the values are obtained by applying the formula E = I × R, remembering that this formula is for Volts, Amperes and Ohms; and that the symbol m, as in mA. and mV., means *milli*, and divides unit by 1000; symbol μ, as in μA., means *micro*, and divides unit by 1,000,000; symbol M, as in Mc, means *Mega*, and multiplies unit by 1,000,000.

No. 7. **32000** Ω approx.; tapped at **25000**, and **30000** Ω from negative end. *No.* 8. **1000** Ω. *No.* 9. **60000** Ω. No. 10. **2250** Ω.

Instructor Wanted

The Tunbridge Wells Squadron of the A.D.C.C. are in need of a Signals instructor. If any member is in a position to help we would ask him to write to Cadet S./Ldr. K. Darvil Miall, Rusthall Place, Tunbridge Wells, or phone 443.

Commonwealth. The ties of Empire, so vital to-day in the preservation of our political freedom, can be woven into the pattern of amateur radio, and there serve as a design for greater service and better understanding in the days to come."

The Shape of Things to Come

AT the present time, it is imperative that we, the organised radio amateurs of Great Britain, should know what our brothers-in-arms are thinking and saying in other parts of the British Empire.

It is, therefore, with pleasure that we reproduce verbatim an Editorial which recently appeared in *Xtal Jr* official publication of the Canadian Operators Association.

" Most of us have a pretty good idea what would be the fate of amateur radio should the Democracies be overwhelmed in the present struggle. This is an eventuality that we need not, nay, that we refuse to consider. It is profitable, however, to contemplate our probable position as radio amateurs when victory has been achieved, and when we can begin the reconstruction of the activities of peace. What will the world of the ham be like then, and what can we do to prepare for it now?

This war, like the last, is giving a tremendous stimulus to technical advances in radio communication. These may become generally known only with the advent of peace, but many of our fraternity in the Services will be familiar with them earlier. As the amateur operators are mustered out, they will be accompanied by a group perhaps even larger, made up of men who became proficient in radio communication while on active service. These will serve to swell the ranks of potential hamdom. We may thus expect an overwhelming rush into amateur radio activities immediately the ban is lifted.

It is possible that some commercial interests will seize the opportunity of claiming our frequencies for their supposedly more valuable services. We must be prepared for this. Our Government have been very considerate and generous to us in the past, but pressure may be applied against our interests. The most cogent argument in our favour will be the record of services that we have been able to render through our training as radio amateurs.

British Empire communication will be of more interest to VE's than in the past as the returning hams strive to keep up the contacts that they made in war time. Empire spirit will be strong, and the influence on us of our friendly neighbour to the south, once so overwhelming and now so insignificant, will gravitate to a proper mean. **Canadian amateurs will take the place that they should occupy in British Empire and world communication and the B.E.R.U. will exist in fact as well as in name.**

If this is to be our future, let us play the role in the present drama that will contribute most to its fulfilment. Many of us have joined the armed forces, and more will be needed. Those of us who cannot yet serve directly can maintain our skill and technical knowledge, and can pass it on to others who may take a direct part. The record of our services and achievements can be kept, whereby the role of Canadian amateurs in war can be recorded for the years of peace. No opportunities should be lost for meeting and co-operating with amateurs from other parts of our

(*Continued in previous column*).

EXPERIMENTAL SECTION

Manager: DENIS HEIGHTMAN (G6DH)

IN taking over, for the time being, the managership of this Section it is perhaps desirable to review briefly our aims. They are: (1) To provide a means for R.S.G.B. members, with a genuine interest in various branches of experimental radio, to contact one another and to exchange their views and results. (2) Where necessary, to form such members into convenient groups working on any particular subject, the Group members keeping in touch with one another by means of monthly letter budgets. (3) To publish in THE BULLETIN any worthwhile results achieved by members of the Section. (4) To keep members informed of the latest radio developments.

In recent years we, as a Section, can hardly claim to have produced anything startling in the way of results. To some extent this is bound to be the case, because of the rapid development taking place in large commercial concerns and research laboratories, but at the same time there are still many specialised subjects which need developing.

During the past few years there has been a tendency for the average amateur to carry out his experimental work in a rather haphazard fashion. In the opinion of the writer it would appear a better plan for each E.S. group or individual member *to work with a definite object in view.* For example, let us suppose an aerial is required with specified directional properties and which will cover certain frequencies. Additionally it must be capable of erection in a small space. The members of the Aerial Group are informed of the requirements, they then proceed first to consider the matter from a theoretical standpoint and then to test out the designs in a methodical experimental manner, using proper measuring apparatus for the purpose. They do not, as has often been the case in the past, put up a wire and try it out for several weeks and then claim as evidence of its performance that they have received " so and so " countries on it at S.9. !

The same general remarks apply to all other branches of our work. First, we must have a definite object in view, second, the theoretical considerations must be studied, third, methodical experiment must be conducted, and lastly, results must be confirmed and published.

Under present conditions, the amount of research and experimental work which can be carried out is somewhat limited but as has already been mentioned in past issues many members are now afforded an opportunity for constructing and designing pieces of measuring apparatus which will prove invaluable later.

Often the greatest difficulty is finding a definite subject for original investigation. In this respect all members can help with suggestions from time to time. In our own everyday radio experience we come across queries for which the text books offer no ready answer. The next time you experience this difficulty make a note of it and write to the E.S. Manager. The subject may prove a useful one for investigation.

It is not the writer's intention to publish Group Reports each month unless there is something of general interest to be brought to the notice of members. It should not, however, be assumed that the work of the Groups is at a standstill when reports fail to appear.

Receiver Group

The G.M. (G5HF), has received a number of letters from readers who are not members of the Section, and although there is no question of turning the Receiver Group into an enquiry bureau, we do wish to emphasise the fact that letters from non-members are always very welcome. An offer to assist readers has already been made in these notes and to this we would add that correspondence of any kind will bring an answer from either the G.M. or one of the Group Managers.

There must surely be few amateurs who have no ideas, comments or suggestions to make in regard to the technical aspects of radio; it may be that they are not suitable for publication but there can be no harm in sending them in to the Section. In exchange the senders may obtain useful information or perhaps start a discussion among Group members.

This Frivolity

Being many miles away from my junk box, I found difficulty in getting together a receiver for the purpose of logging ham signals during off-duty hours.

Many dealers were approached unsuccessfully with a view to obtaining an old set that had been traded in. This was to be still further broken down and eventually hotted up to " ham standards."

Patience was finally exhausted when, after a lengthy lecture intended to be knowledgeable advice against the project, the owner of an apparently up-to-date shop gave me the enlightening information: " *You know, all that sort of frivolity has stopped.*"

* * *

Tailpiece.—GI6TK in his generosity has loaned an Eddystone " All-World Two," with which I can now join the ranks of those 30,000 odd members of the " frivolous " brigade ! 2AMW, R.A.F.

Webb's Winning War-time Windows

Not being possessed with a brain which allows bouquets to gush out from our pen, we must content ourselves with formally offering warmest congratulations to *Webb's Radio*, 14 Soho Street, London, on their outstanding example of enterprise in obtaining the services of that gifted cartoonist, Mr. W. Heath Robinson, to create a series of unique drawings for their wooden substitute windows.

Like little Audrey, we " laffed and laffed " at the reproduction of a portion of the design in our last issue, but the real thing is worth travelling far to see, for the ingenuity shown by the great cartoonist is remarkable. Incidentally the well-known artist, Norman Keene, was responsible for the actual colour reproductions.

Well done, Webb's ! We always *said* you could deliver the goods.

KHAKI AND BLUE

Items for inclusion in this exclusive feature should reach the Secretary-Editor not later than the first day of the month preceding date of publication.

For 17 months Ben Wallich, G6BW, has been trying to persuade " the powers that be " that at the " ripe old age " of 47 he is still full o' beans. Unfortunately he was knocked about rather extensively during the last war, with the result that his pleas to the Army were abortive. Now at last " Captain Ben " becomes Pilot Officer Wallich, for the R.A.F. has accepted him for Special Duties. Ben held the substantive rank of Captain in the R.A. as far back as 1915 so his past Army experience, coupled with a long amateur career, should prove very valuable to him in his new job. As Mrs. 6BW is still at " White Orchard," Churchill, Somerset, letters can be sent *via* that address. Good luck, Ben.

* * *

F./Lt. R. Turner, BRS3841, is anxious to test out the possibility of arranging a meeting for R.S.G.B. members located in the R.A.F. camps around the N.W. coast. Those interested should write to him at his temporary home address, 24 Westcliffe Drive, Layton, near Blackpool, or enquire at Nutbrown's Bazaar, near Queen's Square. Headquarters has for long been anxious to organise a Service meeting in the N.W.; this may be the means to that end.

* * *

Writing from Air H.Q. in Cairo, S./Ldr. A. F. Johnson, SU1AF, ex-G3JN, records his appreciation to G5BQ for suggesting the " 73 " feature. He also tells us that the " BULL." is eagerly awaited each month as it provides the only real link with amateur radio. The voice of SU1CH is often heard over the Cairo B.C. transmitters, bringing back memories of " CQ DX Twenty ! "

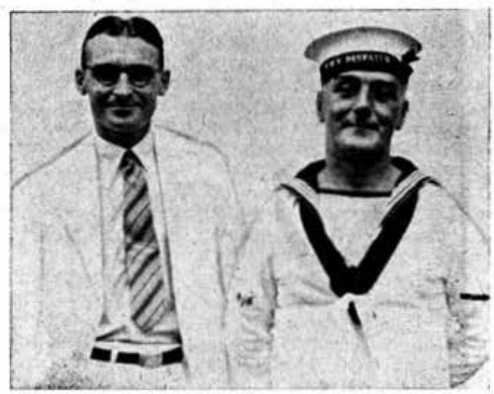
ANOTHER BOUQUET !

This time the charming bride is Mrs. Hall. As a matter of minor interest, the bridegroom is Cpl. Stanley Hall, G3BR, R.A.F., of Bromley, whilst the best man, hidden away to the left, is Brian Herbert, G2WI.

O/Tel. F. J. Gregory, BRS3734 of North London, in company with Tel. R. Frew, GM8FR, is serving aboard H.M.S. *Brighton*, one of the " Churchill " squadron of destroyers bought from the U.S.A. The first thing that greeted them on entering the W/T office was a National 100XC, the performance of which they say is very good indeed. BRS3734 sends 73 to G5FA, 6WU and other District 12-ites.

* * *

Writing from a troopship under date of October 10, L.A.C. J. Raven, G3HG, advised us that he, in company with 2FPI and G4JY, were off to a Middle East destination. G2ZY was due to join their draft but was prevented from doing so through illness. G3HG sends 73 to G3IP, 5PY, 5UX and 8IL. " Early Birds " will be interested to hear that one of their old colleagues, Maurice Brookes, G5OI (now a P/O.), censored G3HG's letter, and in doing so, sent his 73.



WHITES.

E. Metcalf, VP5EM, President of the Jamaica Amateur Radio Club, entertains F. Jackson, G3NJ, of Doncaster.

News reaches us from VE5ZM that his brother, A.C.1 E. F. Wadsworth, VE5AAD, is now located with the R.C.A.F. at Vancouver Island, British Columbia. VE5AAD sends 73 to all old friends.

* * *

Further news from the Land of the Maple Leaf is given in a letter from F./Lt. R. M. Bangay, G3DW, who reports that he is now attached to H.Q., R.C.A.F., Ottawa. He is actually stationed at Moose Jaw, Sask., and hopes to meet many local hams during his stay with the VE4's. Mr. Bangay's address can be obtained from G6CL.

* * *

Cpl. Sidney Hall, G3BR, whose wedding is pictured in this column, wishes to place on record his thanks to the GI hams who extended hospitality to him recently. G3BR enquires whether any member has a record of the 65 C.W.R'ites who spent a memorable three weeks at No. 1 E. & W. School in September, 1939.

A.C.2 J. H. Payton, G2JB, who can be found in Hut 4, C Squadron, 4 Wing, No. 2 Signals School, is now completing a special radio course. He strongly recommends the R.M. grade to hams in the Service. With him are G3CI, 3KI, 3TL, 3YQ, 4BY, 8IX and GM8RJ. G2JB sends greetings to all old friends.

* * *

Norman O'Brien, G3LF, of Cheltenham, who has recently passed his exam. to qualify for L.A.C. rank, reports heavy QRM from 3·5 Mc. U.S.A. amateurs. He is wondering whether a *l'appelle generale* would cause consternation, or just suspicion !

PROBLEM PICTURE No. 1

Ten years ago he was a well-known G and a frequent visitor to Convention. In recent years he operated as Z—6—. Who is it? If you Old Timers cannot guess, turn to page 226.

Major Thallon Wood, GM3ND, R.C. of Signals, now serving with the Home Forces, wrote thanking us for introducing the maths. articles, which, to quote his words, " should be very valuable to O.C.T.U. candidates who have allowed their maths. to get rusty." He concluded by saying, " I hope it never becomes necessary to discontinue publication of THE BULLETIN, which I find of very great value to me in the Service, and I am sure that many others feel the same about it."

* * *

The next letter we opened came from A.C.1 S. R. Richards, BRS3723, who has been in the R.A.F. since last January, and is now an Instructor at a Bedfordshire School of Technical Training. He congratulates the Society on the way it has kept alive interest in amateur radio, and says that he looks forward eagerly to receiving THE BULL. each month.

* * *

Mr. F. H. Fennesey, BRS2190, of 90 Leeds Old Road, Thornbury, Bradford, who since April has been serving as a Radio Officer in the Marconi International Service, has made two interesting DX journeys to date, during which time he has inspected several U.S.A. broadcast and amateur stations. He writes in warm praise of the friendly welcome extended to him by his many American hosts.

* * *

L.A.C. L. C. Carden, G8HY, who is now a Radio Mechanic stationed at an R.A.F. station in Norfolk, would be pleased to hear from old friends, especially those with whom he was associated in the Kingston and District Radio Society. He is particularly anxious to contact G2ZY and 8IP. Letters should be sent *via* his home address at 13 St. Leonards Road, Surbiton, Surrey.

* * *

V.H.F. enthusiasts of pre-war days will be glad to hear that Joe Rockall, G2ZV, of Angmering, now a Warrant Officer in the R.A.F., is engaged on a job after his own heart. G2ZV wishes to be remembered to all who contacted his station in peace time. Incidentally his O.C. is none other than our old friend F./Lt. John Hunter, G2ZQ.

* * *

Congratulations to Frank Adams, G2YN, who after serving as a Sergeant in the R.A.F. for some months has been granted a commission as Pilot Officer. Frank is now at a station in Wiltshire.

* * *

Our best wishes are sent to F./Lt. Bloxam, GM6LS, F./O. Dykes, 2AIJ, F./Lt. Henton, G5VU, F./Lt. Maddox, BRS3828 and F./Lt. Money, G2UP, who recently left for an unknown destination in the Middle East, taking with them a goodly number of R.M.s and W.Op.s. Before sailing F/Lt. Bloxham sent messages of greetings to all old friends, especially those who had been associated with him in the "land of the Tumuli" F./Lt. Maddox called on G6CL and asked that his good wishes should be sent to his R.A.F. friends—especially G6PG and 5VU. Just before sailing G5VU also visited G6CL, from whom his address can be obtained.

* * *

We understand that Mr. Henton's successor at the R.A.F. station to which he was previously attached is our old friend Blundell, G5LB, who is a P./O. Mr. Maddox's station in South Devon has been taken over by H. E. Bennett, G8PF, who has just been promoted to F./Sgt.

* * *

For some months prior to the war H. J. Smith, BRS3044, was a regular visitor to W. G. Hall, G8JM. Then they lost touch. Last month G8JM read in the " Bull." that a weekly meeting is held at BRS1060, Prestatyn. Being in the neighbourhood he decided to call. His surprise can be imagined when he found BRS3044 present in R.C. of S. uniform. Motto, " Read your ' Bull '."

* * *

Yet another stalwart of the Edgware Radio Society has changed from civvies to R.A.F. blue—this time it is Fred Harris, G3LT, who is a P./O. undergoing instruction at No. 2 Signals School. G3LT sends greetings to all old friends.

* * *

Mr. H. R. Hulbert, M.B.E. (BERS413) of Khartoum, informs us that he has received an Honorary Commission, with the rank of Bimbashi (the equivalent of Major) in the Sudan Defence Force. ST troops, please watch for the R.S.G.B. windscreen sticker on his car !

* * *

Memories of early morning DX on 14 Mc. were revived when we had a letter recently from Harry Boakes (G8SB) now an A.C.1 in the R.A.F. stationed, at the time of writing, near Hindhead. G8SB tells us that he is on the air again from a station "stuck out in the middle of a field," in company with four other hams who help to produce an N.F.D. atmosphere. He wishes to be remembered to all old friends.

New Year Greetings and 73.

G2AO (Gavinwood, Willingdon, Eastbourne), to G2AX, 2CF, 2UJ, 3CX, 3RC, 3YY, 4FV, 5JZ, GW5KJ, 5OC, G5TZ, 6GO.

* * *

G2AT (ex-VQ5NTB The Vicarage, Exminster, Devon), to G2SH, 3BI, 6LH, 8CP, EI8J, ST6KR, VQ3BAL, 4CRH, VU2JG.

* * *

G2BB (The Cottage, Park Lane, Colney Heath, Herts), to G2DP, 2RD, 2XV, 3SH, 3WJ, 4HW, 5BQ, 5JO, 6BY, 8KZ, W4ECF, VE2BV.

* * *

G2MN (78 Wroxham Road, Norwich), to G2UT, 2UJ, 2XS, 5IX, 5JL, 5LW, 5QQ, 5UD, 5UF, 6TI, 8IY, and GM8MQ.

* * *

G2NS (26 Southlea Avenue, Southbourne, Bournemouth, Hants), to G2GG, 2PS, 2XC, 5AO, 6GS, 6GZ, 6NA, 6NZ, 6SS, 6XM, W2IXY.

* * *

G3AD (R.A.F.), to G2RX, 3KZ, 3YM, 5ZJ, 6CT, 6NH, 8KZ, 8NK, 8QH, 8WM, 8ZD, SU1RH.

* * *

G(GM)3BA (R. Signals), to G3HX, 3ID, 3UM, 3YN, 5GK, 5SX, 8RU, 8UO, GM3BZ, GW8WJ.

* * *

G3BR (Cpl. R.A.F.; 54 Ridgeway Drive, Bromley, Kent), to G3ZI, 4AU, 4DC, 4DD, 6JB, 6LK, 6HM, 6PK, 8DI, 8GP, 8PT, 8WO.

* * *

G3CU (R.A.M.C.), to G2GZ, 2JK, 2MR, 2MV, 2NH, 2UJ, 2UX, 3DF, 3JG, 3VK, 5MA, 5PY, and all South London amateurs.

* * *

G3DF (Tooting, London, S.W.17), to G2DP, 2FX, 2JK, 3CU, 3FJ, 3HV, 3RR, 3ST, 4KY, 8TN, 2FQQ.

* * *

G3FT (R.N.V.(W.)R., Home address: 3 Geneva Gardens, Whalebone Lane N., Chadwell Heath, Romford, Essex), to GW4CZ, G4BC, 4BW, 6UT, 8AX, 8GA, 8HV, 8TK, 8VN, EI9J, and members of Romford and D.A.R.S.

* * *

G3GH (Knowle, Braunton, N. Devon), to all old 1·7, 3·5, 7 and 14 Mc. friends.

* * *

G3HJ (R.A.F.), to G2FX, GM2MP, G2SU, 3BW, 3WU, 3WH, 6JZ, 6WR, 2AUM, 2AYH.

* * *

G3IS (59 Eastlands Road, Rugby), to G2JN, 2VB, 3BC, 3DI, 3FT, 3GS, 3LT, 3PZ, 6GO, GM5IM, GW3JI, 2HIK.

* * *

G3JW (Crockwell House, Exminster, Devon), to G3MV, 3LA, 3CQ, 3MD, 3GW, 3GH, 4AH, 4AK, 5MM, 8TL, 8HV, 8AB and any of the "Tuesday night top band school."

* * *

G3LY (6 Mayday Gardens, Blackheath, London, S.E.3), to G2UX, 2ZZ, 3WX, 4DC, 6AG, 6CS, 6RH, 6VX, 8CS, 8GP, 8GX, 8VR.

* * *

G3MD (22 Benton Road, Ilford, Essex), to G3GH, 3IV, 3JW, 3MV, 3OA, 3TS, 4LV, 6HG, 8AO, 8PC, 8RT, BRS1295.

G3MF (Risley Club, Warrington Road, Risley, Lancs.), to G2JK, 3AP, 3DK, 3JG, 3OR, 3VK, 3YU, 4CI, 6DW, 6ZO, GI8TS, 2DOK, and members of N.A.R.S.

* * *

G3WU (13 Oslo Road, Burnley), to G2JI, 3FS, 3TU, 3YW, 4HT, GM3KC, 8RU and all old 40 m. friends.

* * *

G3YK (32 Emerson Avenue, Middlesbrough), to G2HN, 2IK, 2LU, 3LP, 3NA, 3QS, 3WH, 3YJ, GM3UA, 6CU, 6MB, 8GM.

* * *

G3YY (1A Dover Road, Brighton, 6, Sussex), to G3JF, 3KJ, 4HS, 4JH, 4KS, 5TX, 6FU, 6RM, 8CP, 2BIL, 2CIL, 2FAD and all old friends.

* * *

G4OQ (R.A.F.), to G2VD, 3GC, 4BA, 5NM, 5WW, 8DR, 8DV, 8NV, GM3SA, GW4CC and 2CQJ.

* * *

G4RX (R.A.F.), to G2LF, 3GX, 3LH, 3MS, 4PY, 4RW, 5CW, 5GS, 8KW, 8QM, 2BOI, 2DVU.

* * *

G5CM (Alfold, Nr. Cranleigh, Surrey), to G2XC, 3YY, 5MA, 8OS, 2CIL, 2DDD, VQ4KTF, W1WV, W8JFC, W9BHT, VE3TY.

* * *

G6BW (R.A.F.), G2HB, 2IW, 2NM, 2PU, 5BW, 5TZ, 8IT, 8KZ, VE1DQ, VK3HG, W4CYU, 8DST.

* * *

GM6LS (R.A.F.), to G2GB, 2IL, 3WJ, 6LV, 8AW, GM6JJ, 6RG, 6SR, VK2NO, W2WD, W5LS.

* * *

G6MN (Castlemount, Worksop), to G2YL, 2WR, 2XS, 5JO, 5UK, 6OO, 6UT, 6WN, 6YP, 6AC, VE2EE.

* * *

G8GP (55 Angus Street, New Cross, S.E.14), to G2RX, 2ZZ, 3BR, 3LY, 3OV, 3SH, 3ST, 3WX, 3ZF, 4DG, 5WG, 6ZI.

* * *

G8JM (R.A.F.), to G2HR, 2XG, 3CQ, 3MD, 3XS, 3YF, 4BZ, 5BB, 5KT, 6SG, 8AB, 8TL.

* * *

G8NL (4 Moreton Avenue, Whitefield, Manchester), to G2HW, 3BN, 3GH, 4KT, 5JL, 5KT, 5MM, GM6SR, 8SK, 2CRM, BRS1295, EID.

* * *

G8ON to G2NJ, 2UQ, 3ZL, 5BJ, 6PZ, 8NS, 8OM, 8OT, 8PO, 8SD, 2CAJ, BRS3577.

* * *

G8PF (R.A.F.; 26, Trafalgar Road, Lexden, Colchester), to G2XK, 6AC, 6PZ, 6TV, 8HW, 8OL, 8PI, 8PQ, 8WI, 3OI and all pre-war R.A.F.A.R.S. members.

* * *

G8PK (R.A.F.), to G2LR, 2XK, 3OF, 3OI, 6AC, 6PZ, 6TV, 8HW, 8PI, 8PQ, 8PZ, and all pre-war members of the R.A.F., A.R.S.

* * *

G8RL (90 Railway Terrace, Rugby), to G2LF, 2OB, 3DI, 3VZ, 6CI, 8DF, 8FC, 8IT, 8QJ, 8RA, 8RF, GW8WJ.

2CLD (R.A.F.), to G2NJ, 2XC, 3GW, 3OA, 4HG, 5NU, 5OQ, 6CI, W21XY, W8JAH, W8OQF.

* * *

2DHV (Sidcup, Kent), to G3GF, 4FN, 5IL, 5OQ, 5UK, 6VC, 8PT, 2BBB, 2CIW, 2CUB, 2DOH, VU2FA.

* * *

2FQQ (R.N.V.(W.)R.), to G2DP, 2JB, 2JK, 2OW, 3CU, 3DF, 3ST, 3UH, 4BW, 5OX, 6OQ, 8TN and members of S.L.D.R.T.S.

* * *

2FYT (R. C. of S.), to G2XN, 3KM, 5UJ, and 2AAK.

* * *

BRS3489 (R.A.F.), to G5QO, 2CPL, 2CWO.

* * *

BRS3825 (R.A.F.), to G4AY, 5OJ, 5PQ, 6LL, 8BS, 8SK, 2DVL, and all the Yatesbury gang and E.R.S. members.

* * *

EI8J, to G2HB, 2IW, 5CG, 5CJ, 5CP, GI5MZ, 6BW, 8IT, 8KZ, 8VF, VE5HR.

* * *

SU1AF (ex G3JN) (R.A.F., Cairo, Egypt,) to G3GH, 3GS, GM3NG, G3YK, 5BQ, 5CU, 5MV, 5XT, 6LL, 6PL, 8CL, 8UJ.

* * *

VU2AN (Jubbupore), to G2QT, 2YL, 5OV, 6DH, 6WY, GI6TK, VK2EO, 3VB, VU2FX, SU1WM, W8OSL, 9HLF and all Dominion members in Signals.

* * *

Ham Hospitality

Service members who find themselves in the West Indies can be assured of a very warm welcome from the Jamaica Amateur Radio Club should their ship put in at that Island. The President, E. Metcalf (VP5EM), late of Erith and Belvedere, tells us that T. Myers (VP5AD), has put in some fine work in entertaining G. Hams. Visitors to VP5 can usually reckon on being taken for a trip either round the banana plantations or sugar cane fields and factories.

Mr. Metcalf's address is Birdsucker, Constant Spring, St. Andrew.

* * *

Members serving with the R.A.F. in Wiltshire will be warmly welcomed by Mr. W. J. Barker, G3NQ, who has recently moved to 46 Dixon Street, Swindon. G3NQ asks civilian members in that town to get in touch with him.

* * *

Mr. N. E. Read, G6US, 24 Church Street, Oswestry will be glad to welcome any Service member stationed in or near to that town.

* * *

L.A.C. Frank Wyer, G8RY, whose home is 315 Stafford Road, Oxley, Wolverhampton, tells us that his parents will be pleased to extend hospitality to any member located in the neighbourhood. Buses 3 and 3a pass the door. Book to Greenwood Road, Oxley.

The following members have kindly offered to extend " Ham Hospitality " :

Burnham-on-Crouch, Essex.—H. A. Savage (G2SA), 53 Station Road (Phone : 2136).

Chelmsford, Essex.—R. L. Varney (G5RV), 184 Galleywood Road (Phone : Evening, 3394; Day, 4401).

Croydon, Surrey.—S. E. Janes (2FWA), 72 Kimberley Road (Phone : Thornton Heath 4552).

Duns, Berwickshire.—Miss D. Burns (GM2IA), 8 South Street.

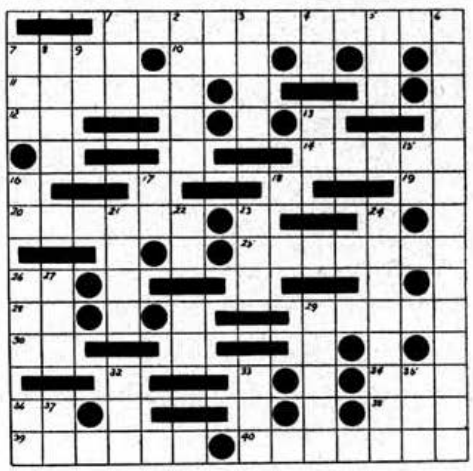
Great Yarmouth, Norfolk.—J. D. Baker (BRS3766), 56 Elsie Road, Southtown.

Northfleet, Kent.—V. H. S. Curling (G6VC), 66 Burch Road (Phone : Gravesend 4601).

Washford, Som.—C. J. Fish (G4OM), County Police Station (Phone : Washford 249).

"HAM-RADIO" CROSSWORD No. 8

Prepared by J. GOUCK (GM3NH)



CLUES

ACROSS.

1. Gone till we win.
7. Retarded berry.
10. Negative.
11. Meaning others can almost have supper or dine with it.
12. For example.
14. Change.
18. Received.
19. Transport section (abbrev.).
20. Resonating.
25. Came together little by little (two words).
26. Holland.
28. Preposition.
29. East Indian product.
30. Two-thirds of 10.
34. Represents energy.
36. Short period of time × 2
38. Avoid stubs here.
39. This tube attempts poetry.
40. Declines or replaces safety device.

DOWN.

1. Small sandhill.
2. Electron's destination after a flight through space.
3. Type of feeder.
4. Inside.
5. French radio.
6. O.K. on 'phone but very bad on secondary cells (two words).
7. Feminine book.
8. Below the belt.
9. Owner of an early call.
13. Milliamp.
15. And across the sea.
16. It is an inverted tuning indicator.
17. A Belgian is two-thirds of one.
21. Thought.
22. Go ahead.
23. Current used in a lamp.
24. Seers.
26. Gentle slap.
27. Consumed.
29. Banter.
32. Often comes after many years.
33. Drink here.
35. Fish eggs.
36. Sounds hollow.
37. Alternatively.

ON ACTIVE SERVICE

SIXTEENTH LIST

WE publish below our sixteenth list of radio amateurs on active service. Additional details and corrections should be advised to Headquarters as early as possible. The present list contains information received up to December 31, 1940.

Rank and Name	Regiment or Branch	Pre-war Call or B.R.S.
A.C.2 J. Atcheson ...	R.A.F. ...	GM4JR
A.C.2 W. G. Chalcroft...	,, ...	2CLD
L.A.C. R. K. Clegg ...	,, ...	G2PB
Tpr. V. Collins... ...	Royal Tank Regt.	2HOF
Cpl. G. W. Cook ...	R.A.F. ...	4002
Sub.Lt. R. H. Dibb ...	R.N.V.R. ...	4004
Gnr. T. Elvy	R.A. ...	G3BD
Sig. K. W. Evans ...	R.C. of S. ...	3899
Ft./Lt. R. C. Fishlock	R.A.F. ...	G3DI
Sig. T. Fleming ...	R.C. of S. ...	2DXP
O./Tel. F. J. Gregory...	R.N. ...	3734
O./Tel. W. D. Hamer...	,, ...	G3WT
P./O. F. J. Harris ...	R.A.F. ...	G3LT
A.C.2 J. R. Huggon ...	,, ...	G3HJ
Sq./Ldr. D. H. Johnson	R.A.F. ...	G6DW
A.C.2 R. A. Ledgerton	,, ...	2ABC
A.C.1 G. C. Lidstone ...	,, ...	G4OQ
A.C.2 G. J. Lumsden ...	,, ...	3489
L.A.C. E. R. Martin ...	,, ...	3990
L.A.C. J. R. Masterman	,, ...	997
Tel. R. Mitchell ...	R.N.V. (W)R.	3994
Tpr. R. Nelson ...	R.A.C. ...	G3VV
A.C.2 C. C. Newton ...	R.A.F. ...	G8PN
L.A.C. W. Oliphant ...	,, ...	3897
Sig. L. Parnell... ...	R.C. of S. ...	G8PP
L.A.C. G. E. Perrett ...	R.A.F. ...	3898
A.C.1 W. Price ...	,, ...	G8OQ
Cpl. J. I. Sadler ...	R.C. of S. ...	4000
A.C.2 D. Tannock ...	R.A.F. ...	2BUD
Gnr. J. W. Turton ...	R.A. ...	2DTV
A.C.2 J. H. Twydell ...	R.A.F. ...	663
Ft./Sgt. G. E. Veasey	,, ...	4016
P.O. B. Wallich ...	,, ...	G6BW
A.C.2 C. D. Whaley ...	,, ...	G6WA
A.C.2 B. A. Wilkes ...	,, ...	4011
Cpl. J. Williams ...	,, ...	BERS 354

Silent Key

Sub.Lt. Lewis Scholefield (G5SO) Fleet Air Arm

Once again it is our sad duty to record the death on active service of one whose name was honoured and respected among a very large body of amateurs.

Lewis Scholefield, G5SO, was educated at Shrewsbury School, after which he went to Leyland Motors as an apprentice. During 1934 he took up amateur radio, operating from St. Annes-on-Sea, Leyland and Birmingham. A year or two later he accepted a post with the Anglo-Iranian Oil Co., and operated in Persia for a few weeks under the call EP5SO. Although using an input of only 3 watts from his receiver power pack he contacted several British stations and was heard in the U.S.A.

Before the war broke out he operated a joint station at Bournemouth with his brother, now F/Lt. J. Scolefield, G2TR. G5SO officiated as best man at his brother's wedding less than one month before his death in a flying accident on November 19, at the early age of 24.

On behalf of all members who had the pleasure of his friendship, we extend deep sympathies to G2TR and his family. J. C.

Ham Coincidence No. 10

One day recently A.C.2 W. G. Hall, G8JM, who is serving as an R.M. in the R.A.F., found himself in a strange North Wales town. Undecided upon which way to proceed to his new station, he made for the first R.A.F. uniform. The airman directed him on his way, but before doing so another Ham Coincidence had been born, for the stranger turned out to be L.A.C. Fred Smith, G6FK, who had frequently contacted G8JM on 1·7 Mc. Since their meeting Fred, who holds a responsible position at the station to which 8JM is attached, has been coaching him in a way " which shows that ' ham spirit ' can never be obliterated."

G8JM, not content with one chance contact, also met 2DGD in similar circumstances, as a result of a lift to town in a Signals car.

Meetings at No. 1 Signals School

There is good news for hams at No. 1 Signals School. Thanks to the enterprise of certain old-timers, notably P./O. W. D. Wadsworth, VE5ZM, and P./O. H. W. Pope, G3HT, regular meetings are now held on Monday evenings at 6.30 p.m. in the Club Room of the R.A.F. Amateur Radio Society. All members stationed at the school will be warmly welcomed. Those present at the inaugural meeting on December 17 included G3BN, 3GD, GW3GL, G3HT, 4KD, 4NQ, 6KD, 8HW, 2AWN, 2BNI, 2CFC, 2CKF, 2DSP, 2FMQ, BRS3674 and VE5ZM.

PROBLEM PICTURE No. 1.

Ted Cook, G6UO, of Gainsborough, Lincs., and more recently ZS6BT, of Johannesburg.

THE MONTH "OFF" THE AIR—December, 1940

By Arthur O. Milne (G2MI)*

Notes and News

G3QD reports hearing several more Germans, including D4XDV, 4AKK, 4BVF, 4AVF, 4VQF, 4XPF and 3BCE. He also notes that contacts are made between these stations and the United States, with no call signs mentioned. EH3G, (not misread), is a new one on 7 Mc., whilst LX1SS has popped up again. All W districts except the 6th have been heard on 7 Mc. together with YU7XI, LY2BZ, PY3BL and PY4IK. 14 Mc. has been very poor.

G3YK contributes the first of what we hope will be many amusing and informative letters. A few days after receiving it, G2MI was in Middlesbrough on business and had the pleasure of meeting him and his wife in person. Both are imbued with the Ham spirit and offer a hearty welcome to any amateur, service or civilian who may find himself in the locality. Ring Middlesbrough 3421 or Linthorpe 8557 and ask for Mr. Kenyon. But to get back to his letter. "What is left of the shack," he says, "still stands gauntly defiant, a few meters, some wallpaper, the lucky dip (junk box to you) and many memories still remain." Amongst those from whom he has heard recently are G3ZI, Pilot Officer n the R.A.F. (thoroughly enjoying himself with some wizard radio gear), GI8PA who is still keeping the flag flying in Northern Ireland in company with the other old stalwarts, GM3ZH, who has signed on a YL junior operator; one time in the pulp business, now grinding his teeth at the very thought of the scourge which sprawls over his beloved Norway, a country he often visited. He has just been awarded his A.R.P.S. (Associate of the Royal Photographic Society) for his outstanding work as an amateur photographer. G3UY who, by the way is blind, is doing his bit as a telephonist at a hospital in Surrey. G8QX is in the R.A.F. and G4BO, a doctor, is hard at it in Liverpool. 2ATB, a young and charming YL, is serving her country as an A.R.P. warden and Canteen worker in London. She acts as sister to homesick Canadians and generally tries to lighten the darkness. She has been forced from her home twice by bombs in the turnip patch but still carries on (variation on a traditional song "There are DA's at the bottom of our garden"!). 3YK himself spends his time in the house of ether and iodine, in other words the North Riding County Hospital of which he is Secretary.

H. G. Nicholson, VK4HN, visits Dorothy Hall, W2IXY, at her home at Springfield, Long Island, New York.

He says he tried to get a quiet job in the R.A.F. but they rumbled him and sent him back to the front line! In conclusion he mentions that, whilst thumbing through the pages of *The Radio Times* he fell to putting Ham interpretations on some of the well-known B.B.C. programme items, which the YL promptly christened "Bullettes." Here is a selection.

"Band Waggon"	7 Mc. on a Sunday.
"Thankin' Yew"	That QSL for DXCC.
"Radio Rhythm Club" ...	The F.C.O.C.
"Record Time"	G5ML's feat of WAC.
"American Commentary"	10 watts? Oh yeah?
"The World Goes By" ...	Final, bust, Band wide open.
"Accent on Rhythm" ...	G2MI on a side-swiper.
"Harmony in 'A' flat" ...	The XYL is also a Ham.

G8TD of Burnley is another northern amateur of whose hospitality G2MI has had recent experience. During a trip to that town he met both G8TD and his wife and G3SJ. Much talk ensued on DX and other subjects, followed by an inspection of what remains at 8TD's shack. This is a genuine low power station; the maximum H.T. available is only 350 volts and the input has never exceeded 20 watts, yet there is a display of wallpaper which would make the average W6 "Californian Kilowatt" green with envy.

G2MI is travelling around quite a bit these days between the northern towns and is visiting as many hams as time will allow.

BRS3766 reports a few local W's on 7 Mc. and also PY2NY at S4 on this band. KA1FS is the outstanding phone DX on 14 Mc., while K4GZR at 559 on 14,395 is the best C.W. DX.

G8UO has heard SV1XA on 7 Mc. and also draws attention to the issue of two letter calls in Hungary, viz., HA2GR and HA5BA.

Receivers for the Forces

Members will be interested to know that so far we have supplied 30 receivers to H.M. Forces. Seventeen to the Navy Comforts Committee, 12 to the Army and one to the R.A.F. The need is still great and we once more appeal for your assistance in this work. We can place any type of receiver, battery, D.C. or A.C. so if anyone has an old set which is workable or can be made to work, will

* *Kent Drive, Harrogate*

they please let G2MI or G6PR know. Some of the sets already sent have been a real godsend to their recipients. Surely there is still some usable junk lying around in some of your shacks which might be donated to this very worthy cause. Sets, components or cash will all be welcomed.

Gibraltar

ZB2B sends greetings to all his pals in G and especially to G4CL. He says there are now sufficient Hams in Gibraltar to justify the formation of a Radio Club and that this is being done. This is an excellent idea, which might well be copied elsewhere, such a club would be a most welcomed and appreciated rallying point for service members and others either stationed at or passing through such places. (Hear! hear! G6CL.)

Jamaica

VP5EM tells of the good work which is being done by VP5AD in entertaining amateurs who call at Jamaica whilst on service in H.M. ships and he mentions two recent visitors, G2LU and G3NJ. Enclosed with his letter is a thrilling account of how the VP5's helped to locate and save a party of schoolboys who were lost in the mountains of the interior, back in the early part of 1939. Some excellent work was done which reflected great credit on local amateur radio. It is a pity we heard nothing about it at the time. Feathers in the amateur cap are always welcome!

The Home Front

BRS191 has had his house knocked about somewhat by a land mine but seems to be quite cheerful about it. He tells us that G2WG of Rayleigh is on police duty. G2DQ is still at Wickford and G2LZ is an Engineer Officer in the Navy.

BRS810 had to leave his house because of a delayed action bomb but is O.K.

So far as can be ascertained the Coventry and Sheffield amateurs are all safe.

* * *

To readers everywhere I wish good health and a happy New Year with freedom from bombs. I would like to thank all those who so kindly sent their Christmas greetings and all those who have helped to keep this feature going. We now manage to run to two pages most months, a clear indication of what a little co-operation can do!

That Cryptic Message

For the benefit of those who were unable to decipher the cryptic message published on page 193 last month, we append the solution.

(Greetings to All—)

DX Century Clubites

The names used as clues are all British Isles members of the DX Century Club (with the exception of Frank Pettitt, SU1SG) or are within one or two countries of the 100 mark. By a very strange coincidence Christian names fitted in exactly with surnames.

As a matter of interest, the cryptic message was evolved during an intensive London night raid.

"CIEL"

OZ1I

2AAM reports having received a message from OZ1I, *via* the Geneva Red Cross Society, to the effect that at the time of writing (August 19) he was fit and well. This is the first news we have received from any amateur in Denmark since the invasion.

The 28 Mc. Band

By NELLY CORRY (G2YL)

NEWS is scarce this month, probably in part due to Christmas and postal delays, but G2RC, 4MR and BRS3893 had time to listen on the band fairly regularly and these notes are based on reports kindly sent by them.

No amateur signals were heard from the Eastern Hemisphere at all, and only a very few commercial harmonics, *viz.*, RCC on 30 Mc., IQA, IRJ on 29 Mc., and HAS2 on 27 Mc. From South America, LSA2 on 27 Mc. was logged on most days, but LSA on 31·5 Mc. was only reported on November 28, 29, December 10–12, 14, 17 and 20. Conditions for reception of South American signals certainly seem to be deteriorating. G4MR heard K4GTH and K4GIG during the afternoons of December 15 and 19; the only other country heard was the U.S.A.

On several days unidentified carriers, presumably of W stations, were heard, but calls were only logged on 10 days up to Christmas Day, *i.e.* on December 3, 5, 9–12 and 14–17 inclusive. The best day of the month, according to G4MR, was December 15, when a large number of W's in Districts 1–5, 8 and 9 were audible all the afternoon and up to 18.00 G.M.T. G2RC and BRS3893 listened for a quarter of an hour around 19.30 G.M.T. on December 10 and heard W6IKY and stations in W2, 4, 8 and 9, whilst a second West Coast station, W6QAE, was logged at 16.30 G.M.T. on December 12. G4MR heard W9's on December 14 and 15, and U.S.A. 26-Mc. stations, including W4XA, W5XAU and W9XPD, on December 3, 5, 7–9, 11–15, 18 and 19.

Reports of anything heard on 28 Mc. during the coming months will be much appreciated by the writer.

Honours List

Science was honoured in the New Year's list, which recorded that Dr. E. V. Appleton, F.R.S., Secretary of the Dept. of Scientific and Industrial Research, had been made a K.C.B.; Professor William Bragg, F.R.S., Cavendish Professor of Experimental Physics in the University of Cambridge, had received a Knighthood; and that Mr. R. A. Watson Watt, Scientific Advisor on Telecommunications for the Ministry of Aircraft Production, had become a C.B. (Civil Division).

Royal recognition of the brilliant work of Dr. Appleton, Professor Bragg, and Mr. Watson Watt, will give pleasure in many quarters. We offer our warmest congratulations.

Eng. Soc. U.C.L.

The Journal of the Engineering Society of University College, London, dated 1939–1940 has just appeared. An appeal is made therein to all ex-members of the Society on active service to advise the Editor of that fact so that his lists may be brought up to date.

As usual the Journal is full of sugar and spice and all things nice!

Advertising

Constant dripping water wears away the hardest stone,
Constant gnawing Towser, chews away the hardest bone,
The constant wooing lover takes away the blushing maid,
And the constant Advertiser is the one who gets the Trade.

Correspondence

To the Editor THE T. & R. BULLETIN

"Contrasting Weather" and 56 Mc. Conditions

DEAR SIR,—I think G6LJ's letter in the December BULLETIN a shade unfair to Mr. Parker. The latter brought forward a theory, and it was criticised for not being cut and dried.

Newton's theory of corpuscular radiation required the velocity of light to be greater in water than in air (which it is not). I infer that Newton was "haphazard" in not verifying the relative velocities.

If we are to condemn theorising because the theorist cannot make himself readily understood by everyone, we are likely to deter constructive ideas which are only half formed. These half-formed ideas may provide food for thought to those who can complete the theory.

I do not know Mr. Parker, but believe that I understood fairly well the trend of his article. At the risk of falling between two stools, I will explain the points raised by G6LJ, showing thereby that the article was not obscure.

The "fundamental conception" referred to by G6LJ is two or three hundred years old, and Mr. Parker can therefore be excused for omitting it. When passing from one medium to another, such that speed of propagation is varied, a change in direction is effected.

The next two criticisms are unimportant; then we come to a criticism of the statement that temperature and pressure are inter-related. I see no reason to doubt the application of this law in the atmospheric belt.

The criticism of Figs. 2 and 3 did not occur to me. The curved paths of Fig. 3 are obviously *not* encountered in a layer of uniform density, since speed of propagation does not vary in a homogeneous medium.

In Fig. 2, where abrupt reflection is shown, the cause can only be due to the sudden and severe change of density as opposed to a gradual change in a "density gradient."

I am inclined to question whether a change sufficiently severe to effect complete reflection is ever likely to be encountered, but this is only a "theory" and cannot be used to upset Mr. Parker's drawing.

Where it was stated that "it seems certain that a high temperature is more favourable for propagation than a low temperature," I think *speed* of propagation was intended, and not propagation *conditions*, as interpreted by G6LJ.

I think, if Mr. Parker's words are considered only as the medium of his thought, and a little "free translation" is allowed, the article is reasonably explicit. I for one do not ask for more.

Yours truly,

59 Stuart Street, Treorchy, Glam. W. H. WALKER (2DXS).

Stray

The Coventry Amateur Radio Society has intimated that they are willing to allow their copy of THE BULLETIN to be sent each month to any Service organisation or Club. Requests should be made direct to the Secretary-Editor.

Book Reviews

RADIO TRAINING MANUAL. By F. J. Camm. Published by George Newnes Ltd., 160 pages, 96 diagrams; Price 5s. 0d.

The first two chapters of this new publication deal with radio as a career and the prospects for those who enter the industry or R.A.F. This is followed by 26 pages devoted to Electrical Units and Radio Formulæ, with examples and answers.

Impedance matching, output combinations, auto-biasing, inter-stage coupling and voltage amplification are well covered in the receiver design section. Problems relating to the all important detector stage occupy 32 pages, in which every type of detector is considered with regard to its advantages and disadvantages.

In a later chapter, Superheterodyne principles and design are explained, and useful information given on second channel interference, oscillator harmonics and I.F. harmonics. Methods of selecting the best I.F. are also discussed and a diagram given to illustrate where second-channel interference for two different frequencies will occur.

Automatic volume control, power units and gramophone pick-ups are dealt with in the final chapter which also gives the colour codes for resistances, and condensers. Hints on power packs, and fuses, together with the procedure to follow when testing to discover faults, round off a very useful publication which should prove popular among all who are training for a commercial job or a service duty. B.S.

* * *

WIRELESS TELEGRAPHY. Notes for Students. By W. E. Crook. Sir Isaac Pitman & Sons. Price 7s. 6d.

Five years ago Mr. Crook offered to students preparing to take the Postmaster-General's Air Licence for W./T. Operators a new book which, from his experience, seemed needed to enable them to derive added benefit from dictated notes delivered by lecturers. That book was fully revised two years ago, and has now been reprinted with further revisions.

For the average amateur its appeal is perhaps not so great to-day as are those with a "handbook" method of presentation, but for all who wish to acquire basic knowledge of wireless telegraphy by means of sound, well-tried methods of instruction this is *the* book.

Modern improvements in receiver design are considered, but no doubt later editions will give additional facts concerning such refinements as noise silencers, pre-selectors and crystal band-pass filters.

The circuit diagrams look a little uninteresting, because in general they only explain basic principles (most amateurs like to see a galaxy of symbols and extensive captions!), whilst one of our pet aversions, the abbreviation "KC." for "kc.," figures largely in the text. On the other hand, the author has contrived very successfully to condense into just under 200 pages a wealth of easily digested information which is essential if a P.M.G. certificate is to be obtained. J. C.

* * *

Mr. Rex Heatley, G5OH, recently of Bournemouth, is now in charge of *Messrs. Stratton's* Service and Technical Dept. His address is c/o above Company, The Bath Tub, Alvechurch Road, West Heath, Birmingham.

BRITISH ISLES NOTES AND NEWS

District Notes

Due to prevailing circumstances we would urge all D.R.'s and Scribes to post their notes in time to reach Headquarters by not later than *January* 28.

DISTRICT 2 (North Eastern)

In taking over the position of D.R. as a temporary measure, I should like to say how much members in the District appreciate the work done in the past by Leslie Parry, G6PY.

Yorkshire members and all those on service in the county will be warmly welcomed at G2MI, 1 Kent Drive, Harrogate. (Phone: 2161.)

Reports by the 25th please.

* * *

The following notes have been sent by G8UO:

Sheffield.—G2LT reports that a number of local members are taking an interest in these notes and he wishes to thank G4JW particularly for much of the following information. G3TB, 4KW and 6TY are on active service, whilst 3IZ, 4KB and 2HMN are with the R.A.F. in a civilian capacity. G3FA and 6LF are special constables. 3RP, who reports from Manchester, is building a multi-range meter. 3PP will now be out East with the R.A.F. Dennis Furzey, BRS3783, after doing well at No. 1 Signals School, is now a corporal in the R.A.F. and sends 73 to all old friends.

Dewsbury.—BRS1151 has been active on 56 Mc. but has heard nothing except harmonics. He would be pleased to entertain any serving amateurs who may be in his locality. QRA is—W. H. Gundhill, Sawley House, Dewsbury. G5YV has left the town.

Keighley.—G3HA is giving morse code instruction to the signals section of the Home Guard. The operator of G3NN (Bradford Shortwave Club) is reported to have become a Signals Officer. 2DM, now a wireless mechanic in the R.A.F., is an old timer who resumed activity shortly before hostilities. G6KU and 2SU are giving wireless instruction to the Bradford Squadron A.D.C.C. G3KB (R.A.F.) says he is using a 500 watt TX and when he gets his 25 watt job back *after* the war he is going to miss the amp! 3VR is doing war work connected with radio and it is rumoured that his receiving speed is now in the region of 30 w.p.m.! 5VC is brushing up his morse and also building a high-power amplifier. A hearty welcome is extended to a new member, Mr. A. Armstrong. G2MI.

DISTRICT 4 (East Midlands)

Leicester.—It is regretted that we missed the December issue owing to Nazi QRM, but it can now be said that all the locals and their families are alive and kicking *hard*! One Service member (whose wife is carrying on the business) had his office reduced to a heap of rubbish, but they re-opened the next day in other premises, the only real loss being a dictaphone, which we often used as a practice code machine in less violent days! Very cheery letters have been received from G5MY, 6IM, 2BAP and 2HBG; the latter has been transferred to a warmer clime so he'll probably have some personal QSO's with SU stations he never got a chance to work! G8CZ is now in the R.A.F.

Northampton.—Through the courtesy of our old friend G3PZ we learn that 3RF (who is still at sea) has recently visited Belfast and Scotland, 2SY is now with the B.B.C. acquiring an accent for 14 Mc. phone! 3MJ is with the A.F.S., 4MU is busy with Post Office and Home Guard duties and 3PI is now in the Navy. Arranging meetings is a difficult matter, but 3PZ will be very glad to meet members who may be in the area. Further, he offers hospitality to Service members whoever they may be. He sends 73 to the Leicester group and to District 4 members generally . . . Thanks O.M.

Mansfield.—G8MR says he was rebuked because notes from his town were missing from the November issue! We dare to hope that members in other towns will get as keen. Meetings are held regularly at The Swan and an S.A. envelope to 10 Welbeck Street, Sutton-in-Ashfield, will bring details and dates. G8DI, 8SA, and 2APT all report fit, but busy with service duties. BRS3593 has a new receiver working very well, his only worry being that the send/receive switch may have rusted up before he gets a chance to use it! G8OM is operating a police radio station with a Yagi beam, and some wags are hoping the temptation to beat his own 25 minute W.A.C. record doesn't prove too strong. His input is said to be "quite reasonable!"

Our hearty congratulations to Council and to Clarry for a marvellous Balance Sheet under unprecedented conditions. When so many organisations have collapsed under the strain of war, it is, indeed, refreshing to see that we continue to flourish. Our very sincere 73 for the New Year to all members.

G2RI.

DISTRICT 5 (Western)

Wake up! wake up! wake up! nearly every District in the country except No. 5 is proving to the world that Amateur Radio is as alive to-day as before the war. Blitz or no Blitz, let's put the West among the Rest. Reports to G6RB, 31 Kings Drive, Bishopston, Bristol, by the 25th *please*.

We are glad to hear that Mr. W. J. Barker, G3NQ of 46 Dixon Street, Swindon, is willing to act as, T.R. for that town, but what has happened to the Bristol, Bath, Cheltenham and Gloucester groups? Volunteers who will send in a brief report each month are needed. Offers please. G6RB.

DISTRICT 6 (South Western)

Reports have been received from North Devon and Plymouth. The latter should have appeared last month but they arrived much too late for publication.

North Devon.—Congratulations to G8US who, after many interviews and disappointing setbacks, has now been accepted in the R.A.F., passing out as an A.C.1 in the trade test. Good luck O.M. 3AM who writes cheerfully from an R.A.F. school, is meeting many members whose calls are very familiar to the group.

Plymouth.—G3TX reports that the informal Saturday evening meetings are still being held, and that 2AGL and BRS3182 are regular visitors. The latter is building a super "battleship class" of receiver. 2CJB has purchased an Evrizone tuner and hopes to be able to find time to complete the receiver. 8PN has been home on leave and 8HF is leaving soon for Trinidad, where we hope he will have the best of luck.

Torquay.—There is very little to report from this area. BRS3171 has been home on leave and called on the D.R.

A letter has been received from 2ACU who states that he is now residing at Rosebank, Colyford, Colyton, Devon. If any members find themselves in that area a call on 2ACU is suggested, especially as he has brought with him the whole of his stock of Hamrad and Raymart goods! G5SY.

DISTRICT 7 (Southern)

Reading.—G5HH of 29 Newcastle Road, breaks the silence from this part of the District with a welcome offer to forward any notes the locals may send him, so come on lets see Reading "mentioned in dispatches" each month. Best wishes are sent by him to G5AO, 6WO, and all those away in the Services.

Croydon.—G2KU is reported to be on a destroyer somewhere on the briny. 2CRD in the R.A.F. has met several amateurs including Bill Gilhespy, 6GS. 2FWA has paid a number of business visits to Eastbourne, and as he expects to be there frequently in the future he would like to contact local members. His QRA will be the Sussex Hotel, Eastbourne. 3179 is busily swotting for some exams, whilst 3003 who sends these notes has spent blitz nights building a receiver from the junk box.

Kingston.—Owing to postal delays the following notes sent by G3MF missed last month's issue. The "Ham-Gang" at Q.C.C. (G2NH, 2MR, 5MA, 3VK and 4CI) are carrying on, although the last mentioned has had his house wrecked. 3JG having moved to Esher has constructed a new superhet and an amplifier incorporating two pick ups feeding a G12. G3JG, 3MF and 2DOK are in the H.G. 3JG is at the Regent Street Poly taking third year communications. Congratulations to 3MF on taking his B.Sc. with honours; he is now posted in Warrington. The T.V.A.R.T.S. has not held a meeting since the war began but N.M.R.S. ran a series of meetings which were later abandoned when attendances dropped.

Bournemouth.—Local members were very sorry indeed to learn of the death on active service of Louis Scholefield, G5SO, for he was well known in the town and extremely well liked.

2HMX survived the Southampton blitz, but is keeping his bike ready for a quick trip into the wide open spaces. 2NS has been obliged to have all his teeth extracted and we wish him a speedy recovery. 2HNO the local scribe met 3SB outside the examination room when taking a law exam. The QSO seems to have done them good, as both were successful.

Guildford.—A very enjoyable contact was made with ZL1YO who has been stationed locally, he is in need of a portable receiver so if anyone has anything suitable lying around the shack please get in touch via 5WP. (ZL1YO is not shown listed in the Summer 1939 Call Book.—ED.) A glimpse of 6NA on Xmas leave was the only other happening during the month.

The D.R. having been almost snowed under with Crossword Puzzle entries has been unable to reply to the seasons greetings enclosed with them but he takes this opportunity to reciprocate. G5WP.

DISTRICT 8 (Home Counties)

First of all a word of apology to those whose letters arrived a day or two after we went to press last month. They must have wondered why they drew a blank, so we hope this explanation will set their minds at rest.

Cambridge.—G2DT wanted to know why he was omitted from the list of members still resident in the town. We see him so rarely these days, hence the omission. 2XV reports "All well." 5JO is still adding to his workshop; what a "rig" he will be able to build when this business is over! 5DR, who tours the country in connection with his work for the Air Ministry, looked in at Xmas for a few minutes. Our Peter (5DQ), now has a stripe up. 8SY recently had a motor-cycle crash, but escaped serious injury.

St. Ives.—Peter Shenton (2DSL) is now in the R.A.M.C., and is stationed in the West of England. He says that he has not yet managed to contact any other "hams" but looks forward to each issue of the Bull. 5RL, now in the R.A.F. is "learning the Morse Code" at a well-known seaside resort. 4AZ's Xmas card came from Carlton, Beds, so apparently he is still living there.

March.—G3WW has some trouble with his R.M.E. 70. A resistor is baked beyond recognition, and he would very much appreciate a line from any other member with a Servicing Chart, who could assist him. (QRA, Cotswold House, St. Peter's Road.) 3BK, newly married, is finding less time for radio these days. G5BQ.

DISTRICT 11 (North Wales)

The writer desires to thank the Council for appointing him deputy D.R. and assures everyone of his desire to keep No. 11 well on the map. To members everywhere—"73 for 1941"—and to those in the District we would also add "Please maintain Contact."

Prestatyn.—Very successful weekly meetings have been held on Tuesday evenings at the home of Neville Ross, a new member. An additional meeting took place on December 17 at the Savoy Café, and this was attended by G2GB, 2KI, 6FK, BRS.1066, 3044 and 3899 from the Services, and by GW3CF, 4CX, 5FU, 2HIY, BRS1060 and Mr. Ross, representing the locals.

At the next open meeting which is to be held on January 21 at the Savoy Café from 7 p.m. onwards, Service members will be very warmly welcomed. Colwyn Bay residents are also cordially invited to attend, as Service members located near Prestatyn find difficulty in visiting the former town. G6US.

DISTRICT 12 (London North and Hertford)

The December meeting held at G2YD was attended by eight members including Sgt. J. Watson G6CT, who was on a few days' leave from the R.A.F. A very interesting discussion took place regarding components and the extent to which specified values could be altered without appreciably upsetting circuit arrangements. Fundamental principles as given in various text books were examined and the conclusion reached that, in general, they require amplification in many respects. After the meeting those present examined with interest the remains of our host's well equipped shack and viewed a well-built model of a naval vessel fitted out by him. On close inspection the "armament" was found to consist of many old radio parts which did the trick in an amazing way.

A letter has been received from G5WW who is still on A.M. work, although moving around a lot these days. He believes there are a number of hams at the stations he visits, but so far none has been met. He asks anyone who reads this to look out for his car, a very conspicuous bright red B.S.A. Scout. (He now has a sticker on his windscreen !—ED). We wish him the best of luck and happiness in his recent marriage which we understand took place at St. Albans during Christmas. 2CNC who is carrying on work with the Aurora Group, bemoans the fact that he had to leave behind his collection of QSL cards when the Channel Islands were evacuated.

We wish a speedy recovery to Jack Goddard, G2GO, who has unfortunately been ill in hospital.

Hearty congratulations to Alec Watson, G2YD on his election to Council. In this connection we were pleased to see the District well represented at the Annual General Meeting.

The next meeting will be held at G5FA, 35 Torrington Gardens, New Southgate, N 11. ('Phone ENT4347) on Sunday, January 26, at 3 p.m.

Enfield.—The O/C No. 36 (Enfield) Squadron, A.D.C.C. is anxious to obtain the services of a competent Signals Instructor. Parades take place on Sunday mornings at 10.15 a.m. Any member willing to co-operate in this important work is requested to get in touch with G6CL.

Central Herts.—G2KQ and 2SJ who are civilian W/T operators with the navy, have been moving in remote places. G2KQ's first assignment was at a "hot spot" on the south coast, his second was almost equally "hot" so in despair he "parked" his family on G5UM in the safer climes of Hertfordshire and travelled about 40 miles a day to and from work. Many local amateurs are still on civilian work of national importance but G5ZJ and 5UM are now F./Lts. in the R.A.F., the former somewhere in the Midlands, and the latter not 25 miles from his old QRA, which he has had to close down owing to continued moves. G2FB has also been commissioned into the R.A.F. but nothing has been heard from him for many months. 2AIQ is awaiting his call up, probably into the Tank Corps. G5FA.

DISTRICT 13 (London South)

The meeting held at G8TN on December 22, was attended by G2DP, 2VB, 3DF, 3ST, 4KV, and 5AW. The latter was warmly welcomed back to the District from N.W. London. Conversation was not entirely confined to radio, many matters were discussed and plans for the future formulated. Those present send 73 to G2JB, 3CI, 3CU, 5OX, 2FQQ and all other members from South London now on active service.

The next meeting will be held at G3ST, 62 Dumbarton Road, Brixton Hill (New Park Road, bus stop) at 11 a.m. January 26, (Tele. Tulse Hill, 4663).

G8TN.

DISTRICT 14 (Eastern)

There is again very little news from civilian members resident in the District. but we record with pleasure that G8HV, who was at Narvik, has recently been promoted sub-Lt. R.N.V.R. G3LA and 3MV also from the Brentwood area are serving in the R.A.F. as W.E.M.'s G3JW now that he is regaining his health at Exminster hopes to be back home soon.

G6SG of East London has met OK2HY and many other amateurs at No. 2 Signals School, R.A.F.

Chelmsford.—A splendid meeting was held at G6LB on Sunday, December 8 when the following were present; Mr. and Mrs. G2SA and daughter, 5CA, 5RV, BRS3650, Mr. Goodchild, a new member, and Messrs. F. Varney and J. Jeffreys.

A comparative performance test was staged between 6LB's Howard 430 with DB20, 5CA's Howard 440 and 5RV's SX16 with "Hetrofil." It was finally agreed that there was little in it between the Howard 440 and the SX16 but the Hetrofil gave just that little extra something when pulling in a c.w. signal under QRM.

G8PB from the wilds of GM reports mountaineering and deer stalking. He also mentions indigestion but omits to state whether this was due to Christmas festivities or to eating large portions of venison !

No further news from G2KG, 3BS, or 2AJF to whom we send New Year greetings.

A Christmas card from VK2XC on board one of H.M. ships has been received.

The local group send 73 for 1941 to fellow hams everywhere. G6UT.

DISTRICT 15 (London West, Middlesex and Buckinghamshire)

Only three "regulars" attended the December meeting but several visitors were welcomed, including G2IM, 8AB (on leave from the R.A.F.) 2DZN, and BRS 1545. A further meeting has been arranged to take place at 2.30 p.m., January 25, at G3UQ, 70, Wormholt Road, Shepherd's Bush, W. 12.

A number of letters have been received during the past few months and these have been handed to the district members who were at the last meeting, We are sorry if we have let anyone down over these "written skeds" but we in London have not been finding it too easy to get along to meetings due to other calls on our time. We would however, assure everyone that where possible all letters will receive an answer at least from those to whom they are addressed. New letters include two from G8VM who is in a sunny clime and apparently doing nothing but play darts and deck tennis. 2KI with the R.C.O.S. seems to be having a good time and expects his first stripe, 4PA is at Duxford, but does not seem too pleased with himself although passed as A.C.1., 3XI now boasts three stripes and a crown. 4FS narrowly avoided being involved in the rail accident at

Taunton through being late with his sked for the train. 3UQ missed being a bomb casualty recently when he had his leather driving coat cut down the arm by a splinter. BRS3741 who appeals for a dry battery receiver for his hut in the R.A.F. is willing to buy one at a reasonable price (offers to the D.R. please.)

G2QY who writes in response to the September editorial, tells us he was married in June. Congratulations O.M. and a welcome to this district from No. 12.

Cigarettes were presented to G8AB at the December meeting while others are being sent to G2KI, 3XI, 4PA, 8FA, 8FB, 2FCJ and BRS.3741.

The D.R. would like to hear from *all* District members on active service, whilst G8KZ still needs addresses of service members for the cigarette distribution scheme. G6WN.

DISTRICT 18 (North and East Yorkshire)

Hull.—Recent Service visitors to G8UL include GM6SJ and G4RX. The latter, who is stationed in the area, would like to meet other members. His address can be obtained from G8UL.

G3PL has just completed a small stand-by receiver operated from batteries. No other reports are to hand. G8UL.

DISTRICT 19 (North-Eastern)

The D.R. thanks G3YK for his welcome letter written as a result of the appeal made last month for news. He says, "whatever happens we simply *must* keep the District 19 flag flying during 1941 and so this effort is sent to you in the hope that it will be followed by notes from all the other bad lads of 1940!"

G3YK was very pleased that many "hams" who were purely "over the air" aquaintances reserved Xmas cards for him—a happy reminder of good fellowship. He also sends news of several local members. 2CHQ is now a Captain in the R.A.O.C. stationed "somewhere in G." 2DMY is in the Home Guard and is busy coaching the members of his platoon in the mysteries of dot and dash. 5XT spends his spare time as an air raid warden while 3YK himself hopes to start work shortly on the construction of a Crystal Microphone from data received from SM6RF before the war. It is also known that 8CL is making improvements to his receiver, while 5QU, 2FO and 8SN continue to listen on the "ham" bands and enjoy the W's and D4's! G2FO.

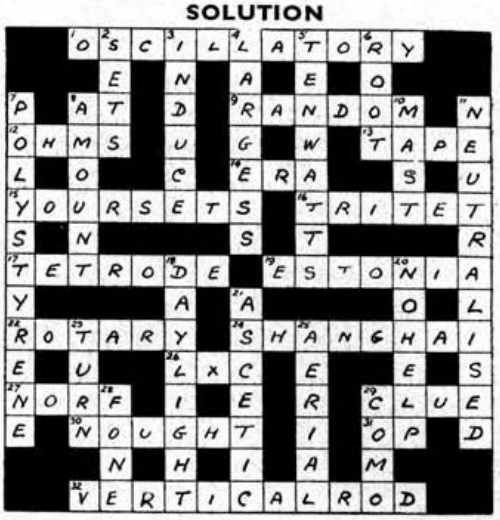
Scotland

We wish all members a very happy New Year and thank all those who sent us their greetings. It is to be regretted that at the time of writing little news had come to hand.

"A" District—At the December meeting we were glad to welcome BRS.2689, GM4JO, G6HM and G8DR, all of the R.A.F. We hope to see many more visitors at future meetings. Our best wishes go to GM6MD and GM6VH who have joined the ranks of the benedicts. The next meeting will take place on January 19, at 2.45 p.m. in the Coffee Room, Y.M.C.A. Residential Club, 100, Bothwell Street, Glasgow. It is hoped that all members who are in Glasgow on that day will come along. GM6ZV.

"HAM-RADIO" CROSSWORD No. 7

SOLUTION



No less than 35 entries were received by G5WP in connection with the above Crossword Puzzle. The first correct solution examined was submitted by Alan Bryce, BRS3761, 278 East Park Road, Leicester, who receives a copy of the Handbook as a reward for his labours. G5WP tells us that several entries were all correct and many had only one or two incorrect letters. He threatens to prepare another teaser shortly!

INDEX TO DISPLAYED ADVERTISEMENTS

HEADQUARTERS CALLING

THE NEW YEAR

SINCE with this issue we change the Honorary Editorship, it seems a suitable time for the new Honorary Editor to make a few comments.

In the first place it is with much regret that we have to lose the services of Mr. Arthur Milne, owing to his evacuation to Harrogate, and it is with some trepidation that the writer takes over his office.

Looking back over the pages of THE T. and R. BULLETIN for the last fifteen years we see a succession of names, famous in Amateur Radio circles, who have occupied the Honorary Editor's chair, each giving in turn an even higher standard for his successor to live up to.

However, with the Secretary-Editor's continued guidance, practical experience and advice, we shall endeavour at least to continue to keep our journal to the standard that G2MI and his predecessors have set, and perhaps, in some small measure, even to improve it.

But in producing a publication such as this, it is upon each member that it depends for its reading matter. If we do not receive sound technical contributions, we cannot maintain the standard. If we do not receive topical notes and news, it loses much of its personal interest.

Remember that it is your friends who are interested in your welfare, in the same way that you are interested in theirs, and unless you write to us we cannot give the "Bull." the personal interest it should have, especially to those who are away from Home.

So resolve this New Year, to continue to send us material, and we on our part will resolve to make the best use of it and give you the best issues possible under war conditions.

We feel that in these strenuous times a link, such as this journal provides, with the days of peace and international friendship, will do much towards keeping the Spirit of Amateur Radio alive. To that end every endeavour will be made to maintain publication, however exacting and difficult the conditions may become, so that when the day of Victory dawns our hobby may once again become a means of uniting the Nations.

G6LL.

IT is with much pleasure we have to announce that Mr. Denis Heightman, G6DH, 234, Burrs Road, Great Clacton, has accepted Council's invitation to take office as Experimental Section Manager.

Mr. Heightman needs little introduction, for his work in connection with all phases of Experimental Section activity has been widely referred to in past issues. An acknowledged authority on V.H.F. and receiver technique, he will bring to the Section a wealth of experience acquired over a long and meritorious amateur career.

His task to-day is not an easy one, but the Council is confident that under his leadership the Section will rise, even in war time, to a position where it can be looked to as the most serious branch of Society activities.

Our new Manager has many ideas which he hopes to introduce, but without the fullest possible co-operation from all who have *genuine* Experimental work at heart, such ideas will fall short of fulfilment. We ask, on his behalf, for that co-operation.

In addition to filling the important position of Section Manager, Mr. Heightman, will, for the time being, remain Manager of the Propagation Group.

Annual Report and Annual General Meeting

Due to pressure on the space available in this issue the Annual Report of Council and the Minutes of the Annual General Meeting have been held over until next month.

American Publications

Although repeated references have been made in past issues to the terms and conditions under which Headquarters agrees to handle orders for American publications, many members still appear to be under the misapprehension that stocks are available in London.

To clarify the position we repeat—*every order for every American publication handled by the Society is sent to America for execution*, consequently a delay of several weeks is unavoidable under existing conditions.

Members on active service should always give a permanent address to which the book or periodical is to be sent. To give a Service address is to court disappointment, in view of the vagaries of Service movements.

From information received, it would seem that the December issues of *QST* and *Radio* failed to reach the majority of British Isles' subscribers. In accordance with a previous announcement, when copies of the September issue of *QST* were lost, we would explain that no stocks are held in London, therefore a direct application should be made to America for spare copies.

In regard to Handbooks ordered through the Society, we feel sure all members will appreciate that the Society cannot be held responsible for losses which may occur after shipment has been made from America. Headquarters will however, after a reasonable time has elapsed (10–12 weeks), write on behalf of any member who has failed to receive a particular publication.

A complete list of current prices for American publications which can be handled by Headquarters appears on Page 208.

American Mails Lost

Since writing the previous paragraph news has reached us that all letters and parcels posted from the U.S.A. between November 4 and 14 and between November 18 and December 6, have been lost by enemy action. This explains why December *QST* and *Radio* failed to arrive and also why numerous Handbooks ordered during late September, October and early November have not been received.

Members who have failed to receive *QST* or *Radio* should write direct to America, but those who have not received Handbooks ordered during the period named should notify Headquarters immediately so that the matter can be taken up with the A.R.R.L. and Radio Ltd.

Appreciations

The Secretary-Editor and Miss Gadsden wish to thank all members who sent them Christmas and New Year greetings by card, letter and telegram. Their good will messages were very warmly appreciated.

District 2 and 11 Representation

After nearly 10 years' service Mr. Leslie Parry, G6PY, of Barnsley, has relinquished his position as District 2 Representative for private business reasons.

The question of a successor has exercised the attention of Council, who have decided that, until a local member can be found willing and capable of taking office, Mr. A. O. Milne, G2MI, shall be appointed Acting D.R.

Mr. Milne who has had many years experience as a Southern D.R. and as a member of Council will endeavour to put No. 2 back on the map and will, with the co-operation of Messrs. Beadle, G8UO, Walker, G2LT, and others, see that District activities are regularly reported in THE BULLETIN.

Mr. Milne's present address is 1 Kent Drive, Harrogate.

* * *

As mentioned in our November issue Mr. David Mitchell, GW6AA, has found it necessary to ask Council to relieve him temporarily of his position as D.R for North Wales. On Mr. Mitchell's recommendation Mr. N. E. Read, G6US, 24 Church Street, Oswestry, has been appointed Deputy D.R.

It is hoped that under Mr. Read's guidance District 11 will again show up prominently in District activities.

* * *

The Council records its grateful thanks to Messrs. Parry and Mitchell for their past valuable services to the Society.

A Word about the Handbook

As announced last month a reprint of 5,000 copies of the second edition of *The Amateur Radio Handbook* is in hand. It is anticipated that supplies will become available towards the end of January, but due to circumstances beyond our control there may be some delay. All members who have placed orders may rest assured that copies will be despatched as soon as possible after deliveries reach Headquarters.

The co-operation of all members (especially of those on active service), in making known the Society's Handbook to instructors and signals personnel, will be greatly appreciated. Special terms will be quoted for quantities of one dozen or more.

Stickers

There has been a considerable response to the announcement made last month that windscreen or window stickers are now available free of charge to members sending a stamped and addressed envelope to Headquarters. The sticker, which measures 6" × 4½", should prove useful in affecting introductions between hams on active service.

We shall be glad to hear from members who have made a personal QSO as the result of displaying a sticker.

Members on Active Service in Northern Ireland

If you are in Northern Ireland on active service or expect to go there at a later date you are reminded that your copy of this Journal must not be redirected from your home address in England, Scotland or Wales.

As Northern Ireland is a censorable country all copies for members resident there *must* be sent from Headquarters via the Censor.

Returned Bulletins

We must apologise to those who notify us immediately of any change of address, for "wasting" valuable space on a further moan in "re the matter of returned Bulletins." Our only excuse is that every returned Bull. means a lost member, because once a particular issue has been returned we do not waste Society money on further fruitless postings.

Just *in case* YOU are contemplating a move (providing it's a permanent one) don't forget that a postcard, giving your new address, only costs 2d. to send.

We give below the names and last known addresses of some recent "culprits." Can anyone help us to locate them?

W. F. Badcock (2BAP), "Kenilworth," Somerby Road, Thurnby, Leicester.

W. W. Burrowes (2BOW), 90 St. Thomas Street, Wells, Som.

W. Scott Hay (G2FV), 54 St. Benets Road, Prittlewell, Southend-on-Sea.

D. C. Hutchinson (G8JN), 51 Pelham Avenue, Scarthoe, Grimsby.

W. F. Taylor (G8WT), 285 Heysham Road, Morecambe.

Coventry Returns Thanks

Many of our old friends in Coventry, including the Hon. Secretary of the local society, have written to return thanks for our message of greetings sent to them through the medium of the December BULLETIN.

At the time of going to press we have definite news of the safety of G2ZT, 4KC, 5GR, 5ML, 5PP, 5SK, 6CI, 6TD, 6TZ, 8FK, 8NJ, 8QJ and BRS3500, but we believe the others, including G2AV, 3AQ, 3GA, 6WX, 6XR, 6YU are fit.

Each and all of our correspondents asks to be allowed to join with us in sending greetings to our members in those other towns which have suffered the full blast of the Blitzkrieg.

To our friends on Merseyside, at Bristol, Birmingham, Cardiff Manchester, Southampton and Sheffield we send a message of good cheer.

Bombed Out

G2UM. F. E. HERZOG. New Address: "Westcar," Park Lane, Old Basing, Basingstoke, Hants.

* * *

G3SS. E. F. LAWDEN. New Address: c/o 4 Chancel Terrace, Barnwell, Peterborough, Northants.

Article Wanted

The Secretary-Editor will be pleased to consider for publication an article dealing with the construction of a reliable "bug" key.

New Members

HOME CORPORATES

R. W. STEWART (G3LS), 8 East View Terrace, Seaton Carew, West Hartlepool.
C. L. S. COOPER (G4IH), 31 Courthope Road, Greenford Middx.
R. A. MINTER (G5RM), 50 Palace Grove, Bromley, Kent.
R. A. LEDGERTON (2ABC), 22 Rayleigh Road, Woodford Green, Essex.
L. A. HENSFORD (2BHS), 30 Boston Avenue, Reading, Berks.
W. L. GRUMMITT (2CMP), 3 John Street, Greetland, nr. Halifax.
E. R. MARTIN (BRS3990), 17 Heath Road, Bracebridge Heath, Lincoln.
C. A. GARLAND (BRS3991), 130 Perrott Street, Winson Green, Birmingham, 18.
K. F. CORRY (BRS3992), Barkhall, Letterkenny, Co. Donegal Eire.
R. COLLUMBINE (BRS3993), 4 Namayo Avenue, Laurieston, Falkirk.
R. MITCHELL (BRS3994), 68 Lower Skircoat Green, Halifax.
K. J. FODEN (BRS3995), 89 Westfield Road, King's Heath, Birmingham, 14.
M. HARVEY, JNR. (BRS3996), 36 Station Street, Sittingbourne, Kent.
J. R. MASTERMAN (BRS3997), Montauban, St. John's Road, Sandown, I.O.W.
MISS J. C. MITCHELL (BRS3998), Tyrie, Station Road, Lochgelly, Fife.
A. C. BRYANT (BRS3999), 15 Lonsdale Place, Whitehaven, Cumb.
J. I. SADLER (BRS4000), R.C. of S.
A. J. TANNER (BRS4001), 66 Westdale Road, Wavertree, Liverpool, 15.
G. W. COOK (BRS4002), The Railway Hotel, Kidlington, Oxon.
A. G. HALLIGEY (BRS4003), Janet's Corner, Shore Road, Castletown, I.O.M.
R. H. DIBB (BRS4004), 12 Oaten Hill, Canterbury, Kent.
J. O. THOMAS (BRS4005), Cymie House, Waun Road, Loughor, nr. Swansea.
H. B. LINTON (BRS4006), 47 Seal Road, Brookdale Park, Bramhall, Cheshire.
C. G. H. COX (BRS4007), Pycroft, Hayes Lane, Beckenham, Kent.
C. WILSON (BRS4008), College Farm, Purton, nr. Swindon, Wilts.
B. C. TOOGOOD (BRS4009), Puriton, Bridgwater, Somerset.
K. R. WARD (BRS4010), 4 Bolingbroke Road, Mile Cross, Norwich.
B. A. WILKES (BRS 4011), 2 Cranmore Road, Shirley, Birmingham.
J. C. FIELD (BRS4012), c/o Mrs. Alder, "Merdon," Littleton, Winchester.
A. H. JOHNSON (BRS4013), 86a Sandringham Road, Willesden Green, N.W.2.
C. BINNS (BRS4014), 101 Dover Street, Crumpsall, Manchester, 8.
H. J. EVERETT (BRS4015), 70 Springfield Road, Tottenham, N. 15.
G. E. VEASEY (BRS4016), Arden, London Road, Wendover, Aylesbury, Bucks.
G. G. WELSH (BRS4017), 17 New Barnes Avenue, St. Albans, Herts.

* * *

A. ARMSTRONG (A), 3 Fir Street, Spring Bank, Ingrow, Keighley, Yorks.
OTTO FANTA (FRS50), 34 Arthur Court, Queensway, W.2.

Stamps and the Black-out

Mr. A. O. Milne (G2MI), 1 Kent Drive, Harrogate, has received several enquiries as a result of the notice in our last issue inviting stamp collectors to join the R.S.G.B. Philatelic Section.

Further enquiries are invited from beginners or advanced collectors, who will find the study of stamps a welcome break from black-out blues!

Advice Needed

G2NS, 26 Southlea Avenue, Southbourne, Bournemouth, would like to get in touch with any member who is in a position to give him advice on the construction of a 56/28 Mc. Convertor, suitable for use with a Hammarland "Super-Pro" using valves easily obtainable and if possible sharing the receiver power pack.

EXCHANGE AND MART.

2BKZ is selling out. All kinds of gear. Receivers, Power Amplifiers, Speakers, Mikes, Pick-ups, Meters, etc. Let me have your enquiries; I may have just what you want at the right price.—HI to 416 Sarehole Road, Hall Green, Birmingham.

ALL KINDS of PRINT. Send your enquiries to G6MN, Worksop.

FOR SALE.—Cossor Oscilloscope, model 3332. Little used. Owner closing down. £16.—G. B HUNT, 190 White Road, Quinton, Birmingham.

NATIONAL 81X in perfect condition, what offers?—G2DK, 55 Honiton Road, Wyken, Coventry.

PETO-SCOTT Trophy 8 with specified speaker. Ten months old, little used £6.—2CZM, 25 Germain Street, Chesham, Bucks.

WANTED.—Universal Avometer, Oscillator and Valve Tester for British, American and European side contact valves.—Offers to A. S. CONTOPOULOS, Barakat, Sudan.

WANTED.—RME69 Instruction Book on Technical Data.—Box TR.121, Kingsway, London, W.C.2.

WANTED.—Hallicrafter SX24 or similar secondhand A.C. Communication Receiver. State full details, also age and price.—HART, "June Hill," Rectory Avenue, High Wycombe.

WANTED.—R.C.A. 913 Cathode Ray Tube. State use and price to G. B. HUNT, 190 White Road, Quinton, Birmingham.

WANTED.—Mac-Elroy Bug Key. Will exchange Telephone Selector Relay. 400 contacts; electric counter and auto dial; also 500–0–500 200 mA. Transformer with 3 filament windings.—G8RY, 315 Stafford Road, Oxley, Wolverhampton.

WANTED.—Communication Receiver, must be O.K. State specification and price to W. LIMB (2TDD), "Moelfre," Wymondley Road, Hitchin, Herts.

WANTED. — Good Communication Receiver, secondhand. Must be in perfect condition. Please state price. Sale.—Hallicrafter Sky Buddy S-19. Good condition. What offers?—BRS3831, Thorntree House, Newhall, near Burton-on-Trent.

PATENTS AND TRADE MARKS

KING'S Patent Agency Ltd. (B. T. King, G5TA, Mem. R.S.G.B., Reg. Pat. Agent), 146a Queen Victoria Street, London, E.C.4. Handbook and Advice on Patents and Trade Marks free. Phone: City 6161. 50 years' refs.

RADIO MAP AND GLOBE

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