THE T. & R.

BULLETIN

THE INC. RADIO SOCIETY OF GT. BRITAIN

AND THE BRITISH EMPIRE RADIO UNION

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THE INCORPORATED

RADIO SOCIETY OF GREAT BRITAIN

AND THE

BRITISH EMPIRE RADIO UNION

53, *VICTORIA STREET, LONDON, S.W.I.* (*'PHONE: VICTORIA* 4412)

PATRON: H.R.H. THE PRINCE OF WALES, K.G.

CONVENTION 1933.

FRIDAY, AUGUST 18th.

5.30 *p.m.* *Conversazione at Maison Lyons, Shaftesbury Avenue, W.C.*1. *Running Buffet available throughout the evening*—1/- *head.*

6.30 *p.m.* *Short Talks on Amateur Radio Subjects. Informal discussions.*

SATURDAY, AUGUST 19th.

10 *a.m.* *Delegates' meeting at I.E.E., Savoy Place, S.W.*1.

10.30 *a.m.* *Visit to Messrs. High-Vacuum Valve Co. Party meets outside I.E.E. at* 10.15 *a.m.*

12.45 *p.m.* *Delegates Lunch at Tricity Restaurant, Strand.*

1.45 *p.m.* *Convention Photograph outside I.E.E.*

2 *p.m.* *Presidential Greetings. Presentation of Trophies. Business Meeting.*

4 *p.m.* *Informal Tea.*

6.30 *p.m.* *Convention Dinner, Florence Restaurant, Rupert Street, W.C.*1. *Tickets* 5/-.

SUNDAY, AUGUST 20th.

Station visits; further details will appear in the August issue.

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All correspondence should be addressed to The Secretary (or other officer concerned), The Radio Society of Great Britain, 53, Victoria Street, London, S.W.1. Insufficiently addressed letters may be considerably delayed.

THE T. & R. BULLETIN

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Hon. Editor :—
H. Bevan Swift (G2TI)

Advertising Manager :—
H. Freeman

Vol. 9 No. 1

CO-OPERATION ON 56 MC.

IT is seldom that we are able to present in one issue so much interesting information on all phases of our work as was possible last month, and whilst it may be somewhat unusual to comment Editorially upon matters that have now passed into history, we feel there is one which demands consideration.

We refer particularly to the tremendous interest which has recently been shown towards work on the 56 megacycle band.

Our last issue contained personal narratives written by Mr. L. H. Thomas, G6QB,and Mr. P. D. Walters, G5CV, who were the prime movers in making 56 mc. history on May 21 last, when the former operated a transmitter at the top of the Crystal Palace, and the latter was successful in receiving his signals in an aeroplane 130 miles away.

These and subsequent tests have led the British public to believe that 56 megacycle operation is fast becoming a practical and commercial proposition, but we assert that, as amateurs, there are still many difficulties to be overcome.

We should do well to remember that over four years have elapsed since Mr. J. Noden, G6TW, in collaboration with Mr. Somerset (late G2DT) and others proved that 56 megacycle signals could be heard at distances outside the optical range. We agree that the recent tests have demonstrated many new features, including the possibilities of aircraft communication, but we are not at all certain that we have achieved anything recently which can be acclaimed as a real advance in the art of ultra short-wave communication.

During recent visits into the Provinces, we have been impressed with the portable gear built by several well-known members of our Contact Bureau section. This gear has shown that they have a good appreciation of the difficulties surrounding work on these frequencies, and we believe that in one or two instances some definite conclusions of scientific value have been achieved. It is, however, to the large majority of members who are working " solo " on this band, that we feel a word of advice is due. At the moment probably half of our active members are taking an interest in this band, but with very few exceptions little effort is being made by them to correlate their results. As a case in point, we are aware that in one part of the country a small group of members are concentrating on what is undoubtedly the greatest problem surrounding transmissions on this frequency, *i.e.*, the stabilisation of wave. By means of " double tripling " from a 6.2 megacycle crystal-controlled transmitter, they hope to achieve success. In another case we hear vague rumours that fundamental 56 mc. crystals have been manufactured, whether of quartz or tourmaline, we are unaware ; but these two cases are but

(*Continued on page* 16.)

MODULATION

By F. R. Canning (G6YJ).

PROVIDED one had sufficient theoretical knowledge and practical experience, it would be possible to write a virtually endless treatise on this most absorbing subject—Modulation. It is, in fact, a phase of radio transmission which is best treated experimentally at one's own station. Therefore, it is obviously impossible to deal with the subject fully in such an article as this; yet, an effort will be made, to outline the principle of Modulation, together with the systems most commonly adopted.

It is naturally best to commence with a clear explanation of the term modulation. The oscillatory circuits at the transmitting station produce a continuous sinusoidal wave of constant amplitude.

For C.W. transmission a good adjustment of these aforesaid circuits will produce a very passable signal, and any minor defects will not readily show themselves. On the other hand, for telephony transmission the adjustment of these circuits must be perfect, as such minor defects will most certainly ruin an otherwise excellent telephony outfit. In order to transmit any sound which is of a low frequency it is necessary to cause the amplitude of the continuous wave emitted from the station to vary in accordance with this audio frequency; that is, it is necessary for the wave to be moulded in direct proportion to this sound wave. This amounts to superimposing a wave of low periodicity upon one of high periodicity. This process of superimposition is termed modulation, and in its perfect form is known as "linear" modulation.

The degree to which the amplitude of the carrier is altered is termed the depth of modulation, and, naturally, there is a limit to the depth obtainable. In perfectly constructed and adjusted telephony outfits it is possible to vary the amplitude of the carrier wave from zero to a value equal to twice its unmodulated amplitude, and still get "linear" modulation. When this is achieved the depth of modulation is said to be 100 per cent. If this 100 per cent. is exceeded the carrier wave breaks on peak and zero amplitudes of modulation, so causing a "cut-off," resulting in violent distortion. Since the range of a telephony transmitter is considerably increased by a small increase in the depth of modulation, it is obvious that the maximum depth is aimed at consistent with "linear" modulation. To obtain unity modulation factor with "linear" characteristics is no small achievement, and more often than not the depth obtained is in the region of 70 per cent. to 80 per cent. It has been found in practice that the carrier power required for a given range is roughly inversely proportional to the modulation factor squared.

Several rough methods are suggested for determining the modulation factor of a given transmitter, but all these are rather inaccurate and for the greater part depend upon personal opinion. Hence such methods do not find a place in this article. A method worthy of mention, however, is by means of the modulation meter, commonly called a modulometer. A complete description of this instrument is hardly necessary, as full details can be obtained from an excellent article by G5CD, in the T. & R. Bulletin for July, 1932, and also from the Seventh Edition of the *Radio Amateur's Handbook*. It is sufficient to say that this instrument measures the peak voltages of the carrier wave, with and without modulation. Then, by inserting these values in a suitable formula, the correct percentage depth of modulation can be obtained.

Perhaps the greatest drawback that the unity modulation factor enthusiast encounters is termed frequency modulation, and the higher the modulation factor the more prominent is this trouble. As has already been stated, modulation consists in altering the amplitude of the carrier wave to conform to audio frequencies, but unfortunately, with high percentage of modulation, the frequency of the wave tends to be modulated, so causing instability, widespread interference, and distortion of a most objectionable nature. The best modulation systems, which give maximum depth, invariably require big input variations, and it is only natural, unless very special precautions are taken, that the characteristics of the tuned circuits will be altered.

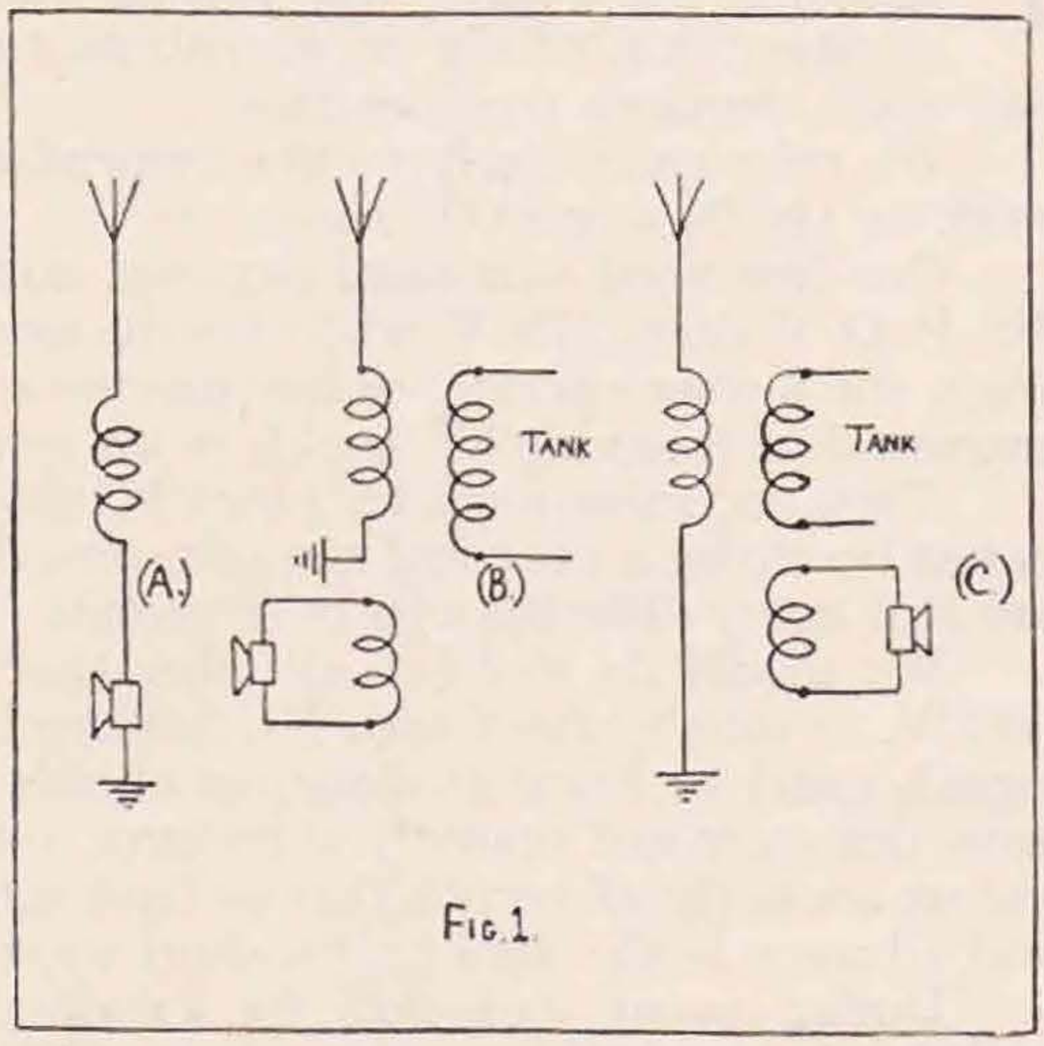


Fig. 1.

This causes frequency variations which are roughly proportional to the voltage changes. Even if the transmitter's frequency is controlled by a quartz crystal, this trouble will show itself in the form of unpleasant distortion. The methods of overcoming this serious trouble are manifold, but all amount to the common end of improving the stability of every stage of the transmitter, by keeping the radio frequency energy away from the audio frequency circuits. Further reference will be made to frequency modulation during the course of this article as the need arises.

It is not intended to give a dissertation on the microphone, but at the same time, a description of the action of the most commonly used type—the

carbon granule solid back, will enable the reader to understand more fully the complete process of modulation, described during the course of this article. When the diaphragm is impinged upon by a sound wave, the pressure on the carbon granules is altered; consequently the resultant resistance of the microphone undergoes a proportional variation. While there is no sound wave influencing the diaphragm of the microphone, the resistance is constant, and therefore a steady current flows through the microphone circuit. Immediately the diaphragm is set in vibration, variations in the value of this current are produced.

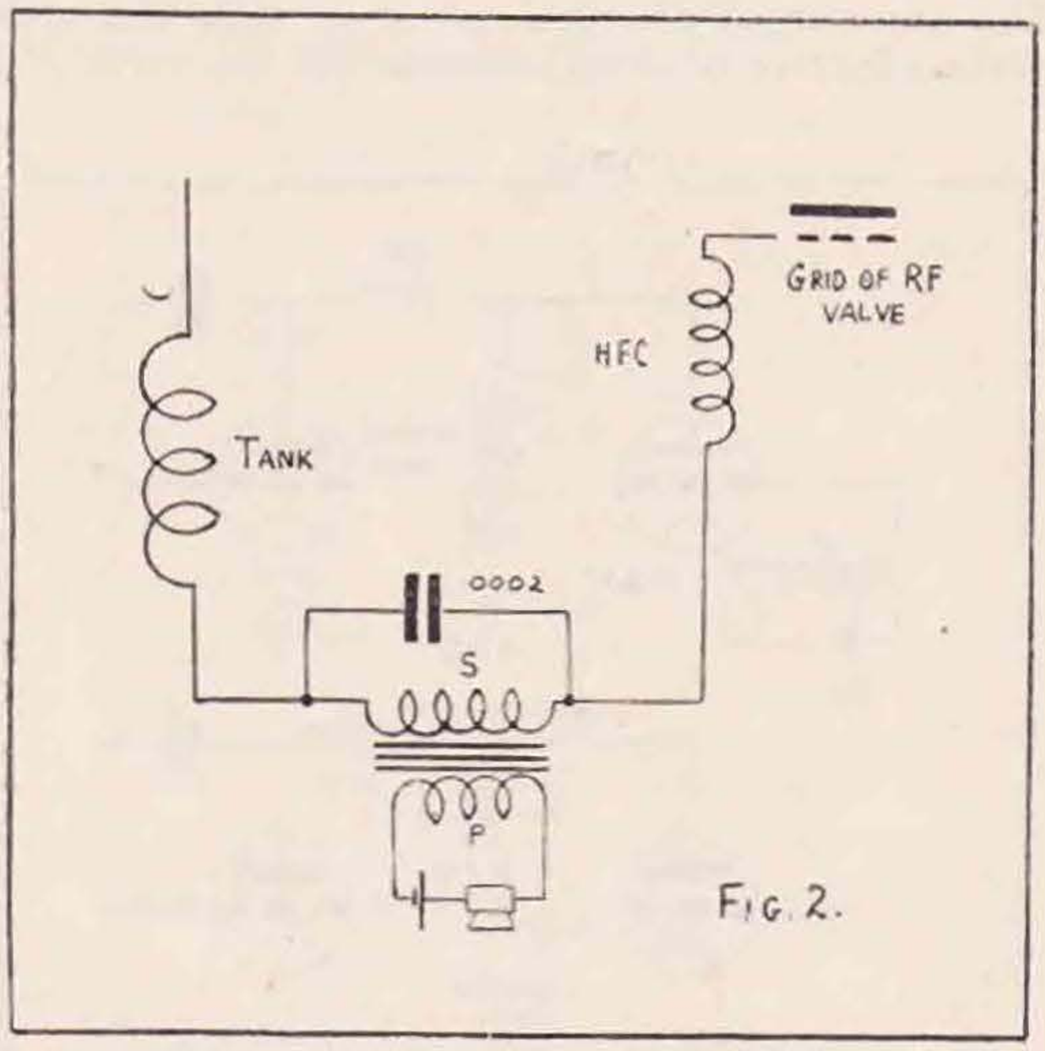


FIG. 2.

The values of the currents, so produced, are indirectly proportionate to the fluctuations of the resistance of the microphone; hence, it is obvious, that if a microphone is included in a suitable current-carrying circuit of a transmitter, it is possible to produce the same variations in the current which will cause similar alterations in the amplitude of the carrier wave. In addition, since these current variations are directly proportional to the amount of sound falling on the diaphragm, it follows that with "linear" modulation, the alterations of carrier amplitude will also be proportional to the sound waves produced.

Some practical systems for the modulation of transmitters will now be discussed. There are two main methods of accomplishing this: (*a*) modulating the H.F. output of the transmitter, (*b*) modulating the D.C. input of the transmitter. Naturally, there are several systems connected with these two methods, and those falling into the former category will be dealt with first. They mostly entail direct modulation of the oscillator output, and modulation of the oscillator by any method is not considered good practice let alone applying it to the H.F. output of this stage. Yet, it is surprising what degree of excellency can be obtained regardless of this fact. Even if some of these systems are most crude, and often give rise to illegal interference, they are most instructive, and help in a complete understanding of the principle of modulation.

The first method which suggests itself would be to alter the resistance of the aerial system in accordance with the audio frequencies, thereby causing alterations in the aerial current and consequently causing proportionate changes in the amplitude of the emitted carrier wave. Therefore, if a microphone is connected in series with the aerial coil and on its low potential end, as in Diagram 1a, such variations in carrier amplitude can be obtained resulting in modulation of the carrier wave. This can only be accomplished when there are small antenna currents, as the microphone cannot carry heavy amperages. A slight improvement on this system is to connect the microphone in series with a coil of a few turns and inductively couple the arrangement to the aerial coil, as in Fig 1b, with the result that the interference caused is not quite so bad. This system is termed aerial resistance modulation.

Next, by inductively coupling the microphone circuit of Fig. 1b with the grid end of the plate tank coil of the oscillator, what is known as grid absorption modulation can be obtained—Fig. 1c. In practice, very good quality local telephony can be obtained with this system, but there is always that tendency to general instability and frequency modulation. As a rule a three-turn absorbing coil is suitable. The theory attached to the working of this absorbing circuit is as follows. Magnetic lines of force, set up by the oscillator, link with this coil, causing an E.M.F. to be induced in it. This absorbs energy from the oscillator and the greater the absorption, the greater the degree to which the carrier wave will be damped. When the microphone is spoken into, the resistance of the absorbing circuit is altered, so causing varying

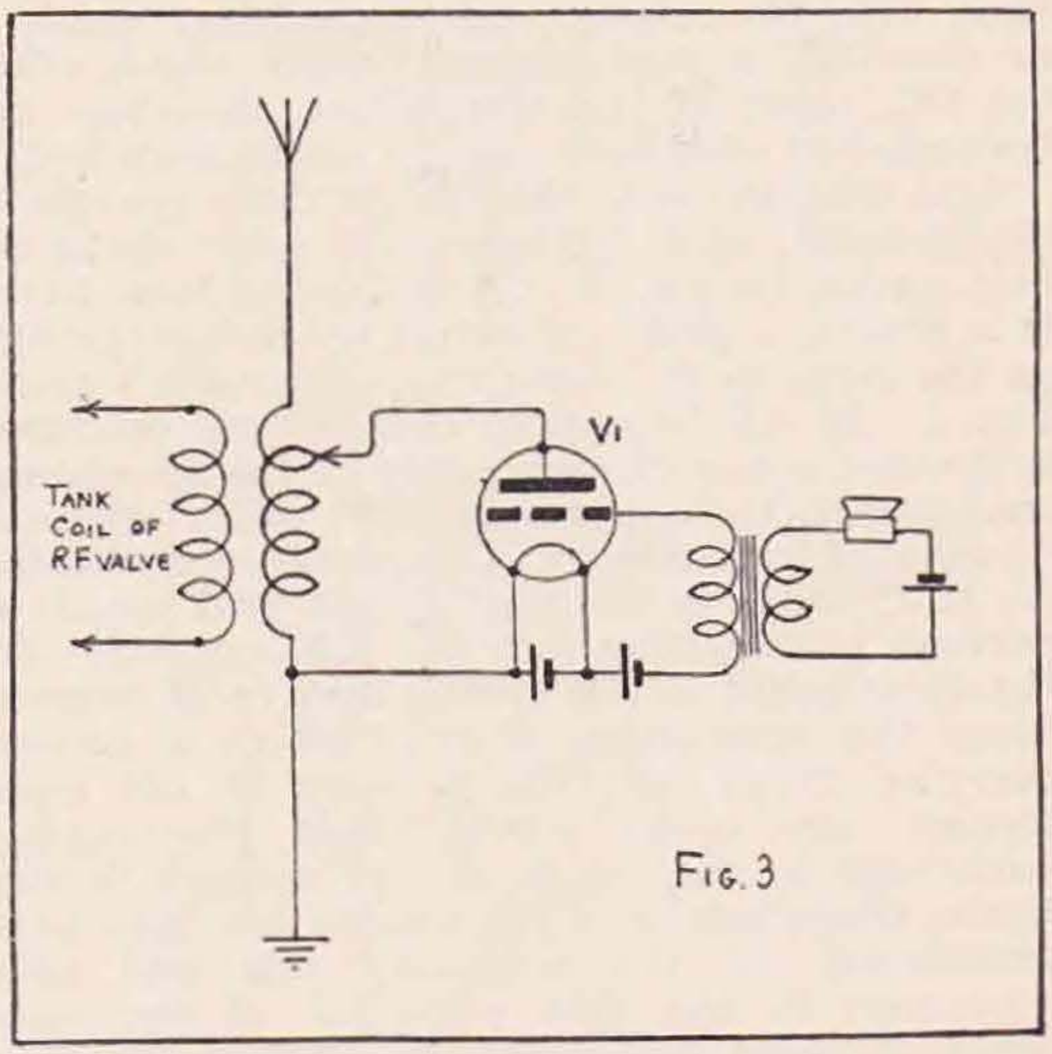


FIG. 3

degrees of absorption. Hence, this will result in modulation due to the amount of damping of the carrier wave altering in direct proportion to the sound waves. The systems so far described suffer from the same drawbacks; the microphone circuit is "alive" with H.F. energy, thus aiding instability and frequency modulation. Fairly good depths

of modulation can be obtained with fairly readable local 'phone, but there is always a great tendency for the wave to get cut about and broken up.

The systems of modulation now about to be described depend mainly upon modulating the D.C. input to the transmitter, and invariably include the use of a special microphone transformer. A few words, therefore, on this component may be of interest and utility to the " ham " who is just embarking on telephony transmission. This transformer is of the audio frequency type, but the ratio of secondary to primary turns is relatively high, and may be anything from 15 : 1 to 100 : 1. When aiming at superior quality, the ratio should be reasonably low, and the amplification gain per stage in the amplifiers should also be kept within reasonable limits. In addition, the primary winding should be capable of carrying current in the region of half an ampere—the current usually being supplied from a secondary cell of a voltage between 2 and 16 volts, depending upon the resistance of the microphone circuit. The primary impedance naturally matches the average resistance of the microphone, and hence the importance of choosing these two pieces of apparatus to operate together. On the secondary side the impedance is from 1,000 ohms upwards, and of necessity being a compromise, the ohmic resistance is nothing like so critical. The writer recently converted an ordinary audio transformer, of high quality, which had its primary winding burnt out, into a microphone transformer by rewinding the primary in a suitable manner—the details may be of interest. Gauge No. 33 enamelled wire was used in the rewinding, and 300 turns (100 on each of three primary bobbins) were wound on. Comparison with a commercially made transformer of 100 : 1 ratio showed the latter to be inferior. Having dealt with the microphone transformer, which is so essential in modulation systems which affect the DC. input of the transmitter, the stage has been reached when such systems can be described.

Grid modulation is the first of these systems to be discussed, as it fundamentally leads up to the best system known, i.e., Choke Control Modulation. It is known as grid modulation because it operates on the input to the radio frequency valve's grid—Fig. 2. It will be noticed that a fixed condenser is shunted across the secondary of the microphone transformer, to by-pass any H.F. which otherwise would lead to instability of the outfit. In addition, an H.F. choke is included in the grid circuit to prevent H.F. getting into the L.F. circuits. The theory attached to this system may be of interest : Since the microphone is included in a current-carrying circuit and the primary of the transformer, any sound waves cause proportionate variations in the value of the current flowing. These alterations in current value are inductively transferred to the secondary side and cause variations in the grid potential of the valve which is being modulated, so altering the mean grid bias. This in turn causes larger, yet proportional variations in the value of the plate current, so modulating the H.F. output. This is one of the two systems most commonly adopted. It has many disadvantages, of which the most prominent are :—

(*a*) Low modulation factor — distortionless modulation is limited to about 20 per cent., owing to the fact that the relation between grid potential variations and H.F. output is " linear " over a relatively small range of the modulated valve's characteristics.

(*b*) Great liability of getting H.F. energy in the L.F. circuits.

(*c*) Difficulty encountered in applying it to circuits which are crystal-controlled.

Another form of grid modulation is by the Marconi Absorbing Valve system (Fig. 3). It will be noticed that the circuit of V_1 is inductively coupled to the tank coil of the oscillator, and absorbs a certain amount of the radiated energy. The amount of absorption varies with the value of the effective internal resistance of the valve (V_1).

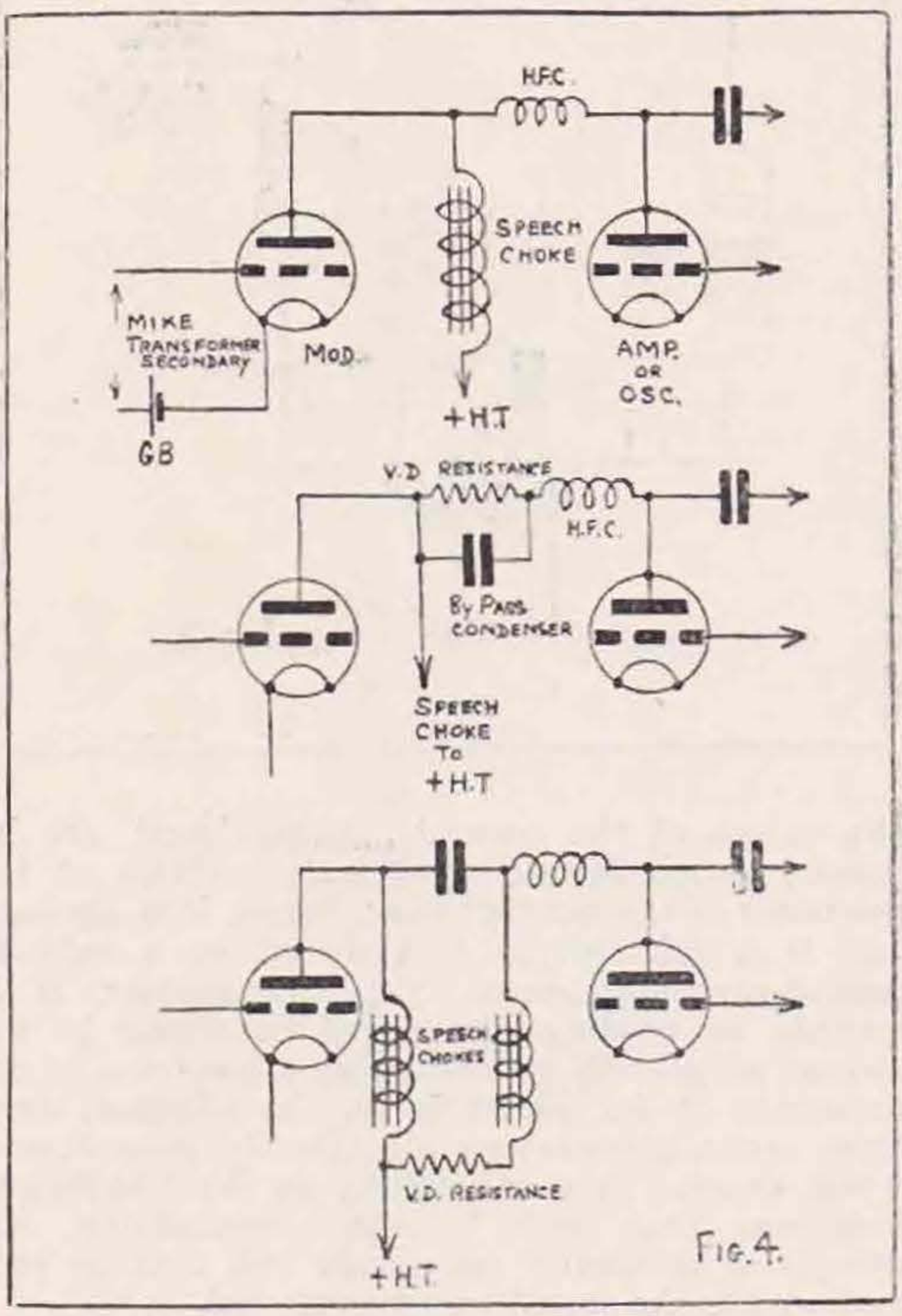


FIG. 4.

Again, the sound waves cause variations in the plate current of the valve, so virtually changing its internal resistance, and consequently the amount of absorption from the oscillator, which in turn results in modulation of the carrier wave. A rather interesting system of modulation was described in the T. & R. Bulletin for August, 1931, by G5VL. It was termed the Aberdonian system, because it effected quite a saving in the amount of gear required for good modulation. The modulation factor claimed was 80 per cent. without speech amplifiers. Complete details can be obtained by consulting the issue in question. Primarily it is a low-power system which can be applied to any low power stage of the transmitter, and the depth of modulation obtained in that stage will automatically be conveyed to the higher power

stages, finally modulating the carrier wave. As in grid modulation, the audio frequencies are made to alter the effective internal resistance of a valve, which is used as a H.F. leak in the grid circuit of the valve undergoing modulation.

Another interesting system is Variable-Mu Modulation, which depends for its action on the fact that the mutual conductance of a 4-electrode valve can be altered by changing the potential of the auxiliary grid. Therefore, if the varying potentials due to the audio frequencies are applied to this auxiliary grid, as in Grid Modulation, the output of this valve is modulated in turn. If this valve is used as an intermediate amplifier in a M.O.P.A. outfit, the carrier wave can be modulated. To obtain depths of modulation approaching 100 per cent., it is necessary to use two of these valves in push-pull.

Lastly, Plate Modulation, both series and parallel, will be discussed. In Series-Plate Modulation, the modulator valve's plate circuit is in series with the D.C. Anode supply to the valve being modulated. As in previous systems, the effective internal resistance of the modulating valve is altered by the variations in the grid potential due to the audio frequencies. This causes proportionate variations in the current flowing in the R.F. valve, so effecting modulation. The great disadvantage of this arrangement lies in the fact that the filament of the modulator valve has to be at the same D.C. potential as the anode of the radio frequency valve. Also owing to the "non-linear" characteristics of the valves on the market, full and distortionless modulation is unobtainable.

On the other hand, Parallel-Plate Modulation is undoubtedly the most efficient and most popular system in use to-day. It claims, therefore, more complete treatment than the other systems. Firstly, Fig. 4 shows the three main arrangements of the circuit. (Incidentally, this system of modulation is also known as Choke Control, Constant Current, or Heising Modulation.) Primarily, it consists of an audio frequency power amplifier as a modulator valve coupled by a L.F. choke to the anode circuit of the valve being modulated. A common H.T. tap feeds the plates of both valves, but usually a voltage dropping resistance is inserted in the plate circuit of the R.F. valve in order to obtain the correct ratio of modulator plate volts to R.F. amplifier plate volts necessary for full modulation. A condenser of between 2-8 mfds. is shunted across this resistance, or any other resistance between the plates of the modulator and R.F. valve, in order to provide a low reactance for modulation frequencies. This condenser should be capable of withstanding the peak voltages of modulation. For normal 'phone work, a value of 2 mfd. is sufficient, but for high quality transmission, involving the upper range of audio frequencies, a value of 8 mfd. is necessary.

The modulator valve is biased to operate on the "linear" portion of its characteristic curve, as an L.F. amplifier, while the R.F. valve is so adjusted that its H.F. output varies as its plate power input, that is, the aerial current varies directly as the anode voltage. It is essential that the plate output variations of the modulator should be proportionate to the variations in excitation voltage which are applied to the grid. Whilst having as low a D.C. resistance as possible, the speech choke must have an extremely high impedance at audio frequencies (100-3,000 cycles), so that the audio frequency plate voltage variations will be entirely applied to the R.F. valve's anode. If the choke has a high impedance any tendency for the H.T. supply voltage to be modulated will be overcome; high modulation voltages will be set up across the choke and these will be applied to the anode of the R.F. valve, thus effecting a good depth of modulation. From this it is clear that a good speech choke is essential for complete "linear" modulation. Having dealt with the main essentials, a summary of the working of the system may be helpful. The speech frequencies cause varying grid potentials on the modulator valve, which in turn cause a varying anode output and these latter variations through the agency of the speech choke are applied to the anode of the R.F. valve, so causing similar variations in the power input to this valve. This latter valve is so adjusted that its power output varies as its plate input power, thus "linear" modulation of the carrier wave will take place. For high modulation factors there is a definite ratio of modulator plate voltage to the plate voltage of the valve being modulated. This ratio is about 5 : 3, while the anode current in each valve is roughly the same. If the plate voltage on the R.F. valve is too high, this will lower the effective internal resistance of the valve, making full and distortionless modulation an impossibility, as the modulator must have a load of suitable ohmic resistance for "linear" modulation. In the case of partial modulation the plate voltages can be the same, as such huge voltage swings have not to be dealt with. The current in the modulator should be a little higher than in the R.F. valve. The circuit shown in Fig. 4a is a suitable one to use in such circumstances. The other two circuits of Fig. 4 are for use when unity modulation factor is aimed at. Note the voltage dropping resistance and the double-wound modulation choke in Fig. 4c. As a rule a valve which is a good audio output valve in power amplifiers will usually make a good modulator. If one valve is insufficient as a modulator to produce full depth of modulation, two similar valves may be used in push-pull, but a grid stopping resistance of a value in the region of 100 ohms should be placed in the grid circuit of each valve to aid stability.

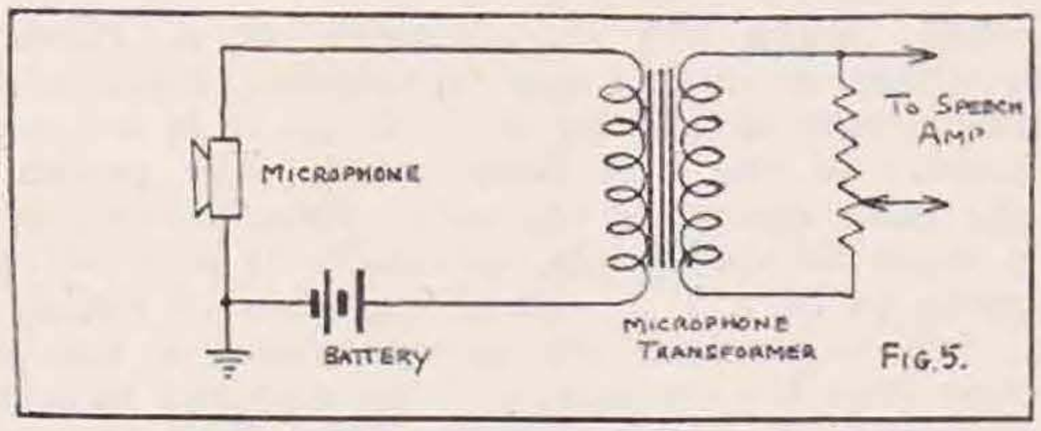


FIG. 5.

The correct adjustment of bias on the modulator and the R.F. valve being modulated is essential. This latter valve is most commonly a R.F. amplifier, although a F.D., Buffer and even oscillator stage is often modulated with remarkable success, but in high quality 'phone work modulation of the oscillator is never taken into consideration. Usually the modulated stage is separated from the oscillator by a Buffer Amplifier or similar intermediate stage.

At all events, it is very necessary that the grid excitation of the valve being modulated should be of the correct value for "linear" modulation. If this R.F stage is a P.A., then the bias should be twice the value which will reduce the plate current to zero when there is no grid excitation. A simple method of arriving at the correct value of G.B. for a R.F. amplifier of the 3-electrode type is by means of this formula :—

$$\text{Grid bias volts required} = \frac{\text{Plate volts} \times 2}{\text{Amp. factor}}$$

All the terms in this formula naturally refer to the P.A. valve being used.

In practice it is found that the value of the grid bias so calculated is slightly under that required, so that a slight increase in this value is necessary. Self-adjusting bias can be arranged by placing a resistance of about 10,000 ohms in series with the final value of G.B. calculated by the above method. As previously stated, the bias of the modulator should be adjusted to work on the "linear" portion of the characteristic curve.

If the output from the microphone circuit is incapable of providing sufficient grid excitation for the modulator, then the interposition of speech amplifiers may be necessary, the number depending on the deficiency of grid excitation. These amplifiers are of the ordinary audio type, but great care must be taken to see that they are kept free from H.F. and coupling effects. A few suggestions to prevent these latter evils may be useful :—

1.—Use H.F. chokes wherever possible and necessary. Also use grid stopping resistances.

2.—Earth the transformer cores and cases, if metal. Also earth the low potential side of the microphone and amplifier circuits.

3.—Use shielded microphone leads and earth the covering.

4.—Keep L.F. circuits well away from R.F. circuits and if necessary completely shield the former in an earthed screening box.

If such interference is allowed to persist it will lead to distortion. Each stage of the amplifier must be capable of giving the following stage the requisite grid excitation and the valves must be biased on the "linear" portion of their characteristic curves. The output of the microphone circuit must be variable in order that the input to the amplifier can be regulated. A suggestion for such a circuit is shown in Fig. 5.

When tuning the R.F. circuits of a 'phone transmitter, or in fact any transmitter, maximum aerial current should be avoided, as it is not an indication of the best adjustment. The current in the plate circuit of the valve being modulated is a more reliable guide, especially if this valve happens to be a P.A. If all methods of tuning, etc., fail to produce the correct value of anode current then the excitation of the amplifier should be increased, giving it a bigger drive from the oscillator by increasing the output of the oscillator. Should the valve being modulated be a self-excited oscillator, then the grid excitation can be varied by altering the value of the grid leak. The higher the value of the grid leak the greater is the grid excitation, denoted by minimum plate current. Should the aerial current vary in direct proportion to any change in the value of plate voltage of the P.A., then the grid excitation is sufficient. The plate milliammeters in the modulator and R.F. valves circuits should not show any deflections even with full modulation. If this happens it means distortion in the modulator and frequency modulation of the R.F. valve. On the other hand, the aerial meter can vary to the extent of 25 per cent. with full modulation, this 25 per cent. being a positive quantity. If the aerial current should decrease on modulation, then either the grid bias is incorrect on the modulator, the valve faulty, or overloading is present. A poor quality modulation choke will also give a similar effect. The blocking condenser in the anode circuit of the R.F. valve being modulated, should not exceed a value of .002 mfd.; in fact, circuits dispensing with this component are more suitable especially in dealing with musical frequencies. If another P.A. follows that being modulated, then its adjustment is roughly similar, and if being badly tuned or biased, will give rise to the same ill-effects.

The power supply for telephony transmission must be pure D.C., if good quality is desired, otherwise any extraneous noises will be modulated. In addition the voltage regulation must be good. It is advisable, where possible, to use a separate H.T. supply for the oscillator and buffer amplifier than for the modulator, P.A, etc., because modulation is bound to cause some fluctuation in supply voltage and this would result in frequency modulation. Dry batteries or secondary cells are eminently suitable for grid bias except in ultra-high power sets, when bias is obtained from high-voltage generators. Self-adjusting bias is sometimes used, but is not recommended.

Both a crystal and heterodyne monitor will be found indispensable for checking telephony tests. These instruments will give a true indication of the quality. Frequency modulation can readily be detected by getting a zero beat on the transmission with the Heterodyne Monitor. The Crystal Monitor is useful for listening to the signal, and also for tracing H.F. pickup in the L.F. circuits.

When adjusting the transmitter, especially for 'phone work, it is only fair to our neighbours to use some sort of a dummy aerial, as the process scatters spurious frequencies over a large range of wavelengths, and creates further interference in our already much-afflicted bands. To use such an aerial is demonstrating not only the true amateur spirit, but also one's consideration for others.

A few words on telephony aerials may prove useful. When an aerial is used for telephony it must not have too great a resistance. if the resistance is too high, then the oscillations will not build up or die away quickly enough to follow the variations in the carrier amplitude necessary for modulation. This will result in distortion. A good illustration of this is to put a resistance in the aerial of a C.W. transmitter and notice how a "chirp" is introduced into the note, due to the "time-lag" caused by the resistance. On the other hand, the resistance must be adequate for faithful transmission and resistance is sometimes purposely introduced for this purpose. For local 'phone work the aerial should be, as far as possible, horizontal. The tuning of the aerial circuit should be flat over 10 kc. on either side of the carrier wave, otherwise sidebands will be eliminated with consequent distortion.

THE 3·5 MC. CONTESTS.

IT is our pleasant duty to record the results of one of the best supported R.S.G.B. Contests yet arranged. Last year we felt that interest in 3.5 mc. work was confined to a small group of old members who had sought refuge there from the crowded higher frequency bands, but these tests and the results obtained by Mr. Leslie Hill, and his assistants, during the Band Occupancy Tests, have amply demonstrated that more and more use is being made of these frequencies.

Transmitting Entries.

For the third time this season we have to offer our congratulations to a Scottish member upon leading the field in a Society contest, and no more popular winner could have been found than our Scottish Manager, Mr. Jack Wyllie (G5YG), of Newlands, Glasgow.

It will be remembered that Mr. French (G6FN), of Edinburgh, and Mr. Stove (G5ZX), of Glasgow, were the leaders in the 1.7 mc. and Low-power Contests respectively.

This triple success is no mere fluke, but is an example of determined effort to show that the Scottish amateurs have at heart the will to win.

It is many years since we had the task of judging so many entries for one of our own contests, and although Mr. Wyllie's success was clean cut and his total far in excess of his nearest rivals, the task of accurately placing the second, third, and fourth stations required careful examination of their entries. After due consideration the Awards Committee have placed Mr. Clarke (G5FV), of Keyingham, near Hull, second with 163 points; Mr. Bartlett (G6RB), of Bristol, third with 161 points; and Mr. French (G6FN), of Edinburgh, fourth with 160 points.

The final scores and input powers used by all competing stations are shown in the table.

Some outstanding DX work was accomplished by the leading stations. Mr. Wyllie was the only entrant successful in establishing contact with the U.S.A. when he connected with W8UV at 06.04 G.M.T., April 2. His signals were reported QSA3 R4. G5YG also worked YI6WG QSA5 R8, and had altogether 52 QSO's with British stations and 65 QSO's with Europe. A total of 62 hours were given up to the contest. All transmissions were made on a frequency of 3,552 kc. Two small neutralised sub-amplifiers were used in order to minimise the risk of broadcast interference, and were, Mr. Wyllie believes, successful.

Mr. Clarke (G5FV), who was runner-up, used an L.S.5D. as CO, followed by two L.S.5's and two D.E.T.1's in push-pull, giving an input of 100 watts. A 65-ft. antenna and 65-ft. counterpoise were employed, whilst the receiver used four valves, battery driven. His best contact was with SU6HL, QSA5 R6, but he apparently missed a QSO with YI6WG, who reported hearing his signals on several occasions. In this connection, Mr. Clarke states that " YI6WG was pounding in here from 21.00 to 01.30 G.M.T. during the second week-end, but all attempts to raise him failed." Mr. Clarke also considered that the rules favoured the Scottish entrants " as their hundred miles radius shielded very few stations, whereas in the Eastern Counties of England, we were deprived of about 20 or 30 British stations." A total of 90 contacts in 17 countries were made by G5FV.

Mr. Bartlett (G6RB), one of the pioneer workers on 3.5 mc., used an input of 40 watts from a locked oscillator. His best contact was with YI6WG, QSA5 R8, and altogether 97 stations were worked in most European countries. Mr. Bartlett suggests that future tests should be arranged during the month of December, as he believes DX conditions to be better during that period. His suggestion will be kept in mind by the Awards Committee.

Mr. French (G6FN), who finished only one point behind Mr. Bartlett, gave no details of his transmitter or power used, but it is believed his input did not exceed 50 watts. He had 96 contacts with YI6WG as best DX, QSA5 R8.

Another Scottish station, G6IZ, Mr. Ingram, of Aberdeen, takes fifth place with 150 points, and he also established contact with YI6WG, QSA4 R7. A total of 93 contacts were worked with an input of only 10 watts, which was the lowest power employed by any of the leading stations. A CO PA working on 3,575 kc. was coupled to a half-wave aerial 136 ft. long.

Mr. Collins (G2DQ), who was sixth, has an outstanding achievement to his credit. He states: " I had a QSO with ZL4AO at 06.35 G.M.T., April 9, by pre-arrangement, and he reported my 3.5 mc. signals R1 to R2, but unfortunately QRM was bad. ZL4AO was working on 7 mc." Mr. Collins also reports that OK1LB and SM7HI were using an input of only 1 watt when contact was established with his station.

Mention should here be made of the excellent support given by Mr. W. H. Cragg (YI6WG). For many years Mr. Cragg has been interested in 3.5 mc. work, and this contest gave him an opportunity of again establishing contacts with many British stations. As will be seen from the calls heard list published in our last issue, Mr. Cragg logged signals from many of our stations, including several who were using low power. We take this opportunity of thanking YI6WG for his help. Unfortunately he was unable to work during the first week-end of the contest, owing to severe thunderstorms, but during the second week-end G5YG, G6FN and G5FV were the loudest of the many G stations heard. Mr. Cragg's input was 110 watts working into a 66-ft. zeppelin aerial, with 29-ft. feeder. Parallel tuning by means of a .0003 mfd. condenser was used to obtain resonance.

Col. Dennis (EI2B) forwarded a list of 17 British stations worked and commented on the high quality signals transmitted by our stations. A similar check list was received from Mr. Soten (G6SO), who had contacts with 18 British stations.

General Comments.

Some confusion seems to have existed amongst

certain members regarding the number of times an individual station could be worked during the contest. This point was explained quite clearly in the revised general rules published in our February issue, wherein it was stated that only one contact with a specific station would count for points.

The change-over to summer time during the second week-end produced some queries, but here again the rules should have made matters clear. The contest was open from 12.00 G.M.T. on the Saturdays until 24.00 G.M.T. on the Sundays. Many members failed to head their log sheets with a column showing G.M.T., but the Awards Committee have presumed in all such cases that the rules were adhered to. Actually, the contest closed officially at 01.00 B.S.T., April 10.

Thanks are again extended to Mr. J. Wyllie for preparing the special entry forms used by the Scottish entrants, but we regret that many of the entries sent in by English participants were far from legible.

Receiving Entries.

Small, but good, would be an appropriate way of describing the interest taken by our non-transmitting members in this contest, for those who entered have shown that much useful data can be obtained by listening to signals on this band.

Too much praise cannot be given to the two Burton-on-Trent members who have been placed first and second in the reception contest. Both of them effected outstanding work, particularly in connection with the logging of U.S.A. amateurs.

(*Continued on page* 15.)

Position.	Name.	Call.	Town.	Input.	Watts.	Points.
1 ...	J. Wyllie ...	G5YG	Glasgow	80/100	... ...	202
2 ...	W. A. Clarke ...	G5FV	Keyingham ...	100	... ...	163
3 ...	R. A. Bartlett ...	G6RB	Bristol	40	... ...	161
4 ...	S. A. French ...	G6FN	Edinburgh ...	—	... ...	160
5 ...	E. G. Ingram ...	G6IZ	Aberdeen ...	10	... ...	150
6 ...	H. G. Collin ...	G2DQ	Wickford ...	10	... ...	138
7 ...	J. B. Hum ...	G5UM	London, N. ...	10	... ...	122
8 ...	B. Mainprise ...	G5MP	Hythe	25	... ...	121
9 ...	A. le Cheminant...	G6AC	Salisbury ...	10	... ...	118
10 ...	C. S. Brown ...	G5QU	Redcar	10	... ...	94
11 ...	R. Millar ...	G6ND	Denny	—	... ...	94
12 ...	Miss Dunn ...	G6YL	Felton	10	... ...	93
13 ...	R. D. Dutton ...	G6QQ	Oxford	9.6	... ...	89
14 ...	R. W. Bailey ...	G2QB	Widnes	40/100	... ...	82
15 ...	J. C. Adams ...	G5XQ	Greenock ...	—	... ...	60 *
16 ...	E. R. Martin ...	G6MN	Worksop ...	28	... ...	47
17 ...	L. A. Moxon ...	G6XN	London, W. ...	20/45	... ...	37
18 ...	I. D. Auchterlonie	G6OM	Heswall	60/80	... ...	35
19 ...	H. K. Bourne ...	G2KB	Rugby	10	... ...	33
20 ...	J. Walker ...	G5JU	Bristol	7	... ...	27
21 ...	G. Wigglesworth	G2BH	Barnsley	60	...	23
22 ...	B. Scudamore ...	G6BS	Cambridge ...	12	... ...	22
23 ...	J. Clarricoats ...	G6CL	London, N. ...	25	... ...	17 *
24 ...	J. Tovell ...	G5LQ	Brigg	10	... ...	12 *
25 ...	R. Barnes ...	G5DS	Nottingham ...	8	... ...	9 *
26 ...	R. E. Griffin ...	G5UH	Bristol	5	... ...	7

*Active one week-end only.

Position.	Name.	Call.	Town.	Points.
1 ...	C. E. Jefferies	BRS 589...	Burton-on-Trent ...	824
2 ...	C. A. Bradbury ...	,, 1066	,, ,, ...	802
3 ...	C. J. Greenaway ...	,, 1011	Leigh-on-Sea	786
4 ...	P. Seymour	,, 475	Amesbury	732
5 ...	A. A. Hammond ...	,, 918	Seven Kings	488
6 ...	A. H. Brown	,, 865	Westcliff-on-Sea ...	445
7 ...	G. W. Wilson	2ACA	Dalkeith	400
8 ...	K. T. Harvey	2AAU	Bristol	357
9 ...	J. Haigh...	BRS 948	Leeds	256
10 ...	H. J. Houlding ...	,, 720	Bristol	250
11 ...	R. M. Flavill	,, 884	Leicester	230
12 ...	T. W. B. Ellis	,, 465	Rochester	210
13 ...	R. C. Stott	,, 552	London, S.W.	203
14 ...	E. H. Jones	,, 770	Bolton	185
15 ...	R. M. Hardy	2BCH	Nelson	180

STATION DESCRIPTION No. 34.

G5YG

By Scrutator.

WINNING STATION IN THE 3.5 MC. CONTEST

FAR too many years ago, a schoolboy with a passion for "communication" devised by means of a weird code a system of communication among the members of his class by desk tapping. It was very satisfactory and all very thrilling to the users, but frequently led to a warming up of the seat of the pants when detected by a keen-eared master.

That inventive little imp was G5YG in the embryo stage, and from that primitive beginning to his career of infamy, he has never looked back—except to observe if he were being pursued.

At a later date a wonderful telephony system was devised, for which the apparatus consisted of two tobacco tins and a length of taut waxed string. This was quite good up to about 70 or 80 yards, but it was the very devil to get the voice to go round corners, which damped the resonance of the cord. Following upon this, anything which buzzed, sparked, rang, or made fearsome electrical noises, was the order of the day until, in his early 'twenties, the war put an end to all such experiments and the chrysalistic radio amateur was swallowed up in the army.

Little scope for electrical enquiry presented itself for the next four years, although a buckshee trench telephone set, of which he became the custodian for a little, afforded some little entertainment.

With the end of the war, the urge was still present, but nothing of interest was attempted until the War Office removed the ban from the purchase of radio apparatus. It was a very qualified removal, however, as would-be purchasers of any sort of radio apparatus from a coherer to a 2BA terminal had to procure a licence to purchase, and declare the name of the dealer from whom the purchase was to be made.

The first purchase made was a variable condenser, which, incidentally, was a piece of perfect rubbish, but which cost, nevertheless, about four pounds. Valves followed, and if one excludes possibly L.F. transformers, that was just about all one could purchase, and everything else had to be home-made. Nevertheless, in a very few days the reception of "FL's" time signal was accomplished, also a start was made at the acquisition of the Morse code.

For some little time after this, various weird and wonderful instruments were created, and nothing was funnier than a 2-V-2 receiver employing a periodic H.F. with a range from 1,000 to 30,000 metres. The thing was contained in a box 10 by 3 by 8, which did not make use of more than a square inch of ebonite and the miracle was that *it did work*. The grid leak was of slate pencil, and it required frequent applications of a safety razor, as it grew fur through polarisation. Then followed a MARK III trench receiver from Leslie McMichael, and with this, thoughts turned to transmission. Unfortunately the G.P.O.'s thoughts would not turn with those of the aspirant to the "dah-dit-dah-dit-dah" fraternity, and it was many weary months before he attained the doubtful dignity of 2BJM, with a QSL card almost a foot square. However, it was the first step, and the restless spirit would not rest there.

G5YG.

Eventually, in early 1923, after the passing of shoals of correspondence, the G.P.O. decided that the fellow was not such an ass as he had been a few months previously, and G5YG was born. Oh! that first QSO (Yes! You "A.A." wallahs, it really WAS the first) accomplished on 99 metres by keying the plate supply of an O-V-1 receiver!!! DX—1 mile QSA3 R5 in a contact with GI6WG (then G6WG). All hot under the collar and thoroughly bothered, but nevertheless flushed with triumph in a new accomplishment. Such was the etheric beginning of G5YG.

The station first took the air from a converted cellar built like the radio cabin of a ship. This room was so damp that the receiver had always to be put in the oven for a little before use. In those days the input was about four watts from rectified and smoothed (?) 25 cycle A.C. and there may still be some who remember the old "trilling" note on 99 metres. Along came what were then known

as the ultra short waves (45 metres). With much trepidation the ascent in frequency was made and 4½ watts pumped into an L.S.5 in a T.P.T.G. circuit produced a wonderful (in those days) contact with Brazil, which was maintained for over an hour.

About this time a new QRA was decided upon, and as "YG," now a rabid amateur, was beginning to suffer in health from confinement in his dungeon, it was agreed to do the thing properly and have a special place built for radio. A conservatory seemed to fill the bill, and a concrete floor was put down, with access at frequent intervals to low resistance earths by means of 1¼ in. copper tubes. These earths were specially prepared, and it would take too much space to describe them. To this concrete floor, 28 ft. by 10 ft. was affixed a special rubber flooring guaranteed to withstand 17,000 volts. (Note: It has not so far been tested to this voltage, but anyone who wishes to do so can have "YG's" permission and blessing).

Unfortunately the supply remained the same as at the old QRA, i.e., 25 cycle A.C., and as very little success had been achieved in smoothing this mess, "YG" purchased a 1,500 volt .175 amp Newton generator. This was coupled by means of fibre gears to a 1 H.P. 3-phase induction motor, which obviated the necessity for special starting gear. This combination, even if noisy, provided an excellent D.C. supply.

Although experiments with C.C. had been carried out in the early C.C. days, quartz control did not find favour, and it was not until the advent, about three years ago, of 50 cycle A.C. that it was decided to go over entirely to C.C. This meant the complete rebuilding of the station, and as 50 cycle A.C. was available, the scrapping of the old Newton generator. This last was done with a good deal of regret, as the generator was a fine machine and had given a most reliable supply. However, a complete change over was made to C.C. with neutralised amplifiers, and has never been regretted.

The station possesses two 50 foot masts spaced 70 feet, and the regular aerial is a Zepp., having a flat top of 66 feet, the free end of which points almost S.E. The R.F. lines are 48 feet long and can be series or parallel-tuned at will. This aerial seems to be good in most directions, if one excludes U.S.A., which only yields a good QRK from the Pacific States. Various systems have been experimented with, but that just described has given best all-round results.

Several aerials were used during the recent 3.5 mc. contest, but for the most part it was an A.O.G. affair used in conjunction with an earth. A separate aerial is used for reception.

While on the subject of the 3.5 mc. contest, "YG" wishes comment made on the sporting spirit exhibited by the various contestants, which he states made the whole business a very great pleasure indeed, and in this connection also he particularly wishes to mention the Dutch stations, who appeared to enter into the spirit of the thing and gave of their best.

Now as to the apparatus in use in the station itself. There are three permanent transmitters, one each for 7, 14 and 3.5 mc. The 3.5 mc. transmitter which operated during the contest on 3,552 kc. comprises a C.O. oscillating on the fundamental frequency, a sub. PA, a further sub. PA and a penultimate PA. All PA's are neutralised. The same circuit arrangement operates in the 7 mc. TX, while the 14 mc. TX has an oscillator on the 7 mc. band, a frequency doubler, a sub. PA, and a penultimate PA. Comment may be made on the number of power amplifiers as being unusual. Their object, however, is to facilitate the removal of QRO key click interference in local unselective B.C. receivers. The PA's with one exception are all small valves, and the keying is usually accomplished at least two stages from the penultimate PA. It is certainly rather an extravagant method of combating the evil, but "YG" states that what one loses in pocket, one saves in peace of mind.

There are three separate power supplies: (1) a 2,000-v-2,000 Bayliss ¼ kw. transformer, the output of which is rectified by two Deforest 566 tubes and subsequently smoothed and "bled"; (2) a Parmeeko 550-0-550 120/ma. transformer which has its output rectified by a Mullard DW30 and smoothed; (3) a 600 volt supply used for experimental transmitters which has in its smoothing circuit a choke of variable inductance.

The valves used in the station are various (and many!), but for the most part the penultimate PA's use either Mullard SW1 or SW9.

The receiver is a perfectly orthodox SG-SG-PEN and all-mains at that. It is, together with its power supply, housed in an aluminium case. It has one novel point of construction which should be of interest. Acting on the assumption that the average "background" consists of vibratory waves of comparatively high audio frequency, tone control by resistance is incorporated. This has proved very successful indeed, as it removes the usual background almost completely and renders an R2 signal perfectly easy to copy. The signal strength falls, of course, with the background, but in nothing like the same ratio. The arrangement is certainly to be recommended.

In conclusion, and with respect to the 3.5 mc. contest, "YG" desires me to convey his best thanks to the organisers and to his fellow contestants, who combined to produce two very enjoyable, if exhausting, week-ends. He wishes me to say also that visitors are always welcome.

Empire Calls Heard.

BRS822, Small Heath, Birmingham. March 26. *May* 20.

14 mc.: ve2ah, 2cx, 2cq, 2ee, 2ew, 3jz, 4bq, vq4kta.

VU2FP (Kailana Hill Depot, U.P. India) during May.

14 mc.: g2du, 2hx, 2vz, 2yl, 5bo, 5ku, 5lt, 5ol, 6gc, 6gy, 6ih, 6ki.

G6YL (Felton, Northumberland) during April and May.

14 mc.: ve3no, 3si, 3wa, vp4tb, 5bd, 5gm, 5nh, vu2al, 2cs, 2lx, zs4f, 4u.

2AGR (Leeds), between May 12 *and* 29.

14 mc.: ve2ee, 2ew, 3jv, 3wa, 4mv, vu2al, 2cs.

THE LOYAL RELAY, 1933

FOR the fourth year in succession loyal messages were transmitted from all parts of the Empire to H.R.H. The Prince of Wales, Patron of the Society, on the occasion of his birthday—June 23.

On previous occasions competition to handle these messages has been keen, but we believe this year more interest than ever was shown.

The organisation of the relay was again undertaken by Mr. Arthur Watts (G6UN), who laid his plans well in advance. As a result, the arrangements were carried out without a hitch.

June has never been a good month for long-distance working, and June this year was in no wise better than its predecessors from a radio point of view. In spite of this, messages were received from every important part of the Empire with the exception of Hong Kong, and we have no doubts that valiant efforts were made by our members in that outpost to send their greetings.

It would be futile to describe the many difficulties encountered by our home stations, who received the messages, but we feel justly pleased that every message was completely copied. In many instances several members received the same message or accepted it by alternative routes, and in order to show how each arrived, the accompanying table has been prepared.

The text of all messages are set out below, together with the President's telegram sent on behalf of the home membership of the Society.

President, Radio Society of Great Britain

Please convey to Radio Society of Great Britain and all members Empire Radio Union Overseas my sincere thanks for their birthday congratulations.

Signed: Edward, P.

To H.R.H. THE PRINCE OF WALES.

The President, Council and Members of the Incorporated Radio Society of Great Britain again wish to convey to your Royal Highness their loyal greetings on the occasion of your birthday, and trust that you may long be spared to continue your gracious patronage of the Society.

(Signed) H. BEVAN SWIFT,
President.

Johannesburg, South Africa, B.E.R.U. message from President, S.A.R.R.L., via ZU6W, G5PL and G5YG. June 17, 1933.

To H.R.H. THE PRINCE OF WALES,
c/o The British Empire Radio Union,
London.

The Officers and Members of the South African Radio Relay League join on this occasion in sending cordial and loyal greetings.

(Signed) PRESIDENT, S.A.R.R.L.

St. Anne de Bellevue, Quebec, B.E.R.U. message from VE2BB, via VE1BV and G5BJ. June 16, 1933.

To H.R.H. THE PRINCE OF WALES,
c/o The British Empire Radio Union,
London.

Birthday Greetings and best wishes to your Royal Highness for long and happy life.

(Signed) DAWES (VE2BB).

Halifax, Nova Scotia, B.E.R.U. message from VE1BV, via G6LI. June 21, 1933.

To H.R.H. THE PRINCE OF WALES,
c/o The British Empire Radio Union,
London.

On behalf of residents in Nova Scotia, I extend to your Royal Highness heartiest congratulations on your birthday.

We in Nova Scotia with the rest of Canada, are deeply appreciative of the efforts of your Royal Highness to keep closely knit the bond between our Dominion and the Motherland, and on this occasion desire to express our deep sense of gratitude to you.

(Signed) G. S. HARRINGTON,
Premier of Nova Scotia.

Stewiacke, Nova Scotia, Canada, B.E.R.U. message from VE1BV, via G6VP. June 16, 1933.

To H.R.H. THE PRINCE OF WALES,
c/o The British Empire Radio Union,
London.

The Nova Scotia Amateurs send loyal greetings and wish His Royal Highness a very happy birthday.

(Signed) TAYLOR (VE1BV).

Montreal, Canada, B.E.R.U. message from VE2BE, via G5HB and G5VL. June 17, 1933.

To H.R.H. THE PRINCE OF WALES,
c/o The British Empire Radio Union,
London.

On behalf of the Canadian amateurs and by amateur radio I send you heartiest Birthday greetings.

(Signed) REID (VE2BE),
Canadian General Manager, A.R.R.L.

Quebec, B.E.R.U. message from VE2BG, via G5YH. June 22, 1933.

To THE BRITISH EMPIRE RADIO UNION,
London.

Please convey loyal birthday greetings to H.R.H. The Prince of Wales.

(Signed) LETTS (VE2BG).

Longueuil, Quebec.

St. Lambert, Quebec, B.E.R.U. message from VE2BE, via G6LI. June 21, 1933.

To H.R.H. THE PRINCE OF WALES,
c/o The British Empire Radio Union,
London.

By radio we send you heartiest birthday greetings.

(Signed) SOUTH SHORE RADIO CLUB.

St. Lambert.

New Haven, Connecticut, R.S.G.B. message, from W1BHM, via G5BJ. June 16, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The Radio Society of Great Britain, London.

Birthday Greetings and Good Wishes from all American Members of the Radio Society of Great Britain.

(Signed) WEED (W1BHM).

Christchurch, New Zealand, B.E.R.U. message, from ZL3AS, via ZL4AO and G2ZQ. June 17, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

The radio amateurs of New Zealand join in sending to your Royal Highness best wishes for a happy birthday and in affirming the loyal affection of this Dominion.

(Signed) LAUGESEN (ZL3AS), President, The New Zealand Association of Radio Transmitters.

Kingston, Jamaica, B.E.R.U. message, from VP5GM, via G6VP. No. 11. June 17, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

The Radio Amateurs of Jamaica, a link in the British Empire, take this medium of extending to your Royal Highness our heartiest greetings and every good wish on this anniversary of your Birthday.

(Signed) THE PRESIDING OFFICER AND MEMBERS OF THE RADIO SOCIETY OF JAMAICA.

Barbados, British West Indies, B.E.R.U. message, from VP2YB, via G2ZQ. June 17, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

Members in this section (Bahamas, Bermuda and the rest of the Eastern part of West Indies) of the British Empire Radio Union send loyal birthday greetings to their royal patron and sincere wishes for many more years of health and happiness.

(Signed) ARCHER (VP2YB).

Barbados, British West Indies, B.E.R.U. message from VP2MR, via G5ML. June 16, 1933.

To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

Very many happy returns of the day and may you live in good health to see many such days in future. Best of luck and wishes from British West Indies and from Barbados in particular.

(Signed) ELLIOT (VP2MR).

Horta Fayal, Azores, B.E.R.U., message, from CT2AA, via G5YG. June 17, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

The Radio Society of Great Britain Membership of Horta Fayal, Azores, again join in wishing your Royal Highness a very happy birthday.

(Signed) KILLEN (CT2AA).

Cairo, Egypt, B.E.R.U. message, from SU6HL, via G6WN. June 17, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

Loyal birthday greetings to your Royal Highness from members of the Egypt and Sudan groups of the British Empire Radio Union.

(Signed) HILL (SU6HL).

Muscat, Arabia and Iraq, B.E.R.U. message from XYI2DS, via G6VP and G2UX. No. 45. June 16, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

All members of the Radio Society of Great Britain and the British Empire Radio Union in Iraq and Muscat send sincerest greetings to H.R.H. The Prince of Wales, wishing him a very happy birthday and they hope to be able to accord to him their greetings for many more years.

(Signed) RANCE (XYI2DS).

Nairobi, Kenya, Uganda and Tanganyika, B.E.R.U. message, from VQ4CRH, via G2HX. June 16, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

The British Empire Radio Union in Kenya, Uganda and Tanganyika send their loyal birthday greetings to His Royal Highness The Prince of Wales.

(Signed) LANE (VQ4CRH).

Hr. Ramleh, Palestine and Transjordania B.E.R.U. message, from ZC6KR, via ZC6CN, SU6HL and G2OA. No. 2. June 16. 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

Empire Stations here wish to convey their loyal birthday greetings to His Royal Highness, Edward Prince of Wales.

(Signed) RANCOMBE (ZC6KR).

Zaria, Nigeria, B.E.R.U. message, from ZD2A, via G5YG and G5BJ. June 16, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

Members of the British Empire Radio Union in Nigeria send their sincere and loyal greetings to His Royal Highness The Prince of Wales on the occasion of his birthday.

(Signed) WILMOT (ZD2A).

Assam, Northern India, B.E.R.U. message, from VU2LJ, via ON5NG and G5BJ. No. 1. June 19, 1933.
To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

The British Empire Radio Union members of Northern India unite in sending your Royal Highness their sincere and loyal birthday greetings.

(Signed) McINTOSH (VU2LJ).

Ceylon and South India, B.E.R.U. message, from VS7GT, via G2ZQ. No. 2. June 10, 1933.

To THE BRITISH EMPIRE RADIO UNION, London.

The Radio Club of Ceylon and South India and local members of the British Empire Radio Union send loyal greetings and best wishes to His Royal Highness The Prince of Wales.

(Signed) TODD (VS7GT).

Quirindi, Australia, B.E.R.U. message, from VK2HC, via ZL4AO, VE4BT and G2ZQ. No. 38B. June 3, 1933.

To G6UN, HIGHGATE, ENGLAND.

Please convey loyal greetings and best wishes to His Royal Highness The Prince of Wales on the occasion of his birthday from the Wireless Institute of Australia and Australian members of the British Empire Radio Union.

(Signed) CARTER (VK2HC).

Carbonear, Newfoundland, B.E.R.U. message, from VO8AW, via G6XB. June 20, 1933.

To H.R.H. THE PRINCE OF WALES, c/o The British Empire Radio Union, London.

The Newfoundland Amateurs send loyal greetings and heartiest congratulations on the occasion of your birthday.

(Signed) J. MOORE (VO8AW).

The messages were personally delivered to St. James' Palace on the morning of June 23 by Mr. Watts and later on the same day the President received a telegram of thanks from His Royal Highness, which is reproduced above.

We take this opportunity of thanking all who assisted in making this relay in every way a success.

Loyal Relay, 1933.

Part of Empire.	Sent by	Received *via*
Canada	VE2BB	VE1BV, G5BJ
	VE1BV	G6VP, G6LI
	VE2BE	G5VL, G5HB and G6LI
	VE2BG	G5YH
Newfoundland	VO8AW	G6XB
Jamaica	VP5GM	G6VP, G5VL
Barbados, B.W.I.	VP2MR	G5ML
	VP2YB	G2ZQ, G5BJ, and G6WN
South Africa	ZU6W	G5YG, G5PL
Kenya, Uganda and Tanganyika	VQ4CRH	G2HX, G5BJ
	VQ4CRN	G5YG
Egypt and Sudan	SU6HL	G6WN
Nigeria	ZD2A	G5YG, G5BJ
Iraq	XYI2DS	G6VP, G2UX
North India and Burma	VU2LJ	ON5NG, G5BJ
South India and Ceylon.	VS7GT	G2ZQ
New Zealand	ZL3AS	ZL4AO, G2ZQ
Australia	VK2HC	VK6FO, VS7GT, VE4BT, G6LI, VK3WL, ZL4AO, G2ZQ
Palestine and Transjordania	ZC6KR	G2OA
Horta Fayal, Azores	CT2AA	G5YG
New Haven, Conn, U.S.A.	W1BHM	G5BJ

THE OXFORD UNIVERSITY ARCTIC EXPEDITION, 1933.

FOLLOWING the practice of recent expeditions to the Arctic regions, wireless will play an important part in the present conquest.

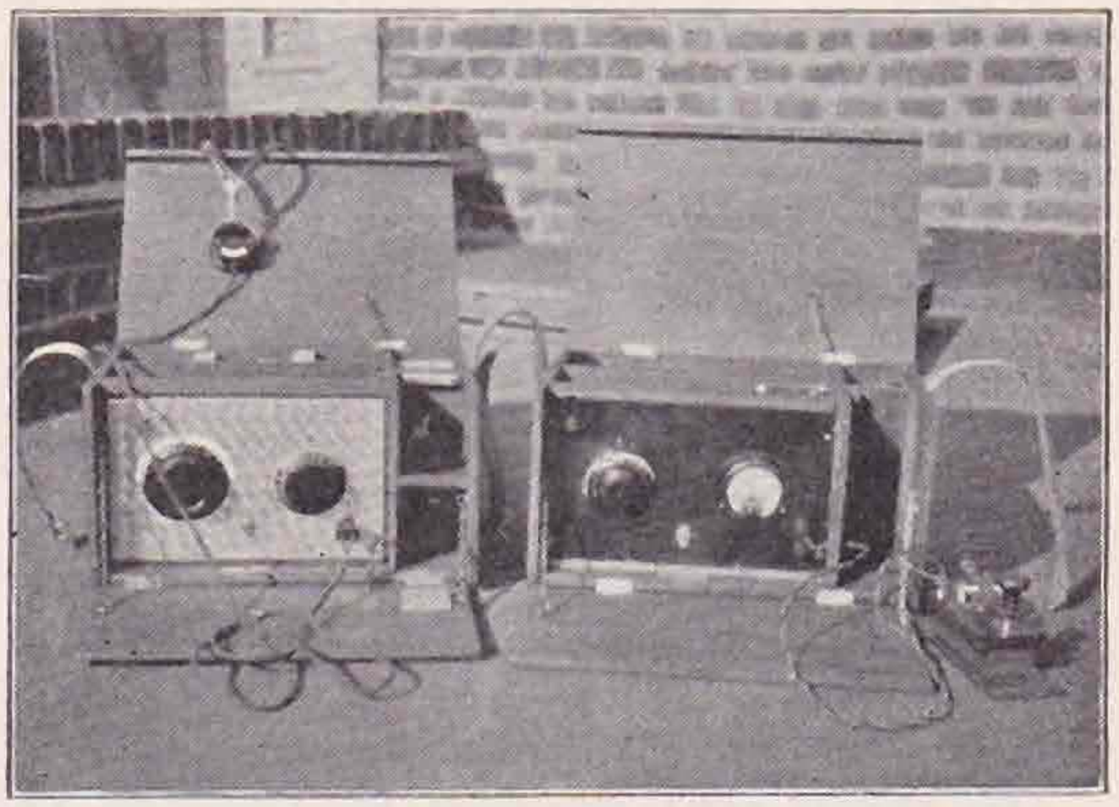
Two complete battery-operated transmitters and receivers will be used for communication between the survey parties. The base station will be equipped with a 20-watt crystal-controlled transmitter operated entirely from dry batteries and a McMichael four-valve Supersonic receiver. Two crystals (one for 3.5 mc. and one for 7 mc.) connected to a switch will enable operation on both frequencies with only two stages and a minimum of coils.

Both transmitters and receivers for the field are housed in oiled teak cases fitted with carrying straps. They are fitted with divisions for batteries, key, phones and spare coils and valves, as will be seen from the photograph.

The cases are 15½in. by 10½in. by 9in., and of this space the actual transmitter or receiver only occupies 11in. by 4½in. by 7½in. The transmitters weigh 30lb. total, while the receivers are 25lb. each.

Provision has been made for transmission and reception on both 3.5 and 7 mc. It is intended that the aerial shall be a half-wave 3.5 mc. end-on voltage-fed, tapped direct to the plate coil.

The transmitters are T.P. fixed grid with high C circuit, and an output of 3 watts. Power is supplied by 150 volts of Hellesens Tiger dry batteries and, together with the filament battery, will operate one Osram P.2 for 150 hours.



Only the most reliable makes of components were used in the construction, and Messrs. Loomes Radio (G6RL and G6US), the manufacturers, are to be congratulated on their effort to cut down weight without sacrificing efficiency.

PLANE TO PLANE AND PLANE TO GROUND.

Experiments on 56 MC.

By Douglas Walters (G5CV).

FOLLOWING upon the recent successful reception of G6QB's 56 mc. transmissions from the Crystal Palace whilst flying over the North Sea, it was decided to attempt further experiments with aircraft.

Accordingly, on Sunday, June 18, two De Haviland Dragon-Moth aeroplanes were fitted with 56 mc. transmission and reception apparatus, one 'plane being chartered by the *Daily Herald* and the other by *Popular Wireless*, who were co-operating with us.

My own apparatus (G5CV) was installed in one 'plane, and G6JP fitted his gear into the *Popular Wireless* 'plane. The Dragon-Moth type of aeroplane was chosen on account of its large cabin, which normally holds six passengers.

Several of the seats were removed in order to provide space for the transmitter and power supply.

Before giving an account of the highly successful results obtained, I will say a few words about the transmitters, for these used extremely simple apparatus.

Both G5CV and G6JP used the same type, consisting of the conventional push-pull circuit with untuned grid coil. Ordinary 2-volt receiving valves were used as oscillators and modulators; the former were Osram P2's, and the latter were two PT'2s in parallel. The microphone was connected via the Microphone transformer direct to the grids of the pentodes without any extra stages of amplification, and it was possible to increase the depth of modulation until the carrier was almost entirely suppressed.

The power supply consisted of 200 volts from Hellesen super-capacity batteries, specially supplied for the occasion. Maximum power used was 7 watts and this fell to about 4-5 watts towards the end of the two hour flight.

No attempts were made to shield the microphones from the noise of the twin engines, although I had a spare fitted in a padded box in case it should have been required.

The aerials were half-wave current-fed type, twisted flex being used for the ¼-wave feeders. The horizontal portion was slung *inside* the cabin about 6 ins. from the roof, and the receivers were of the conventional 3-valve super-regenerative type with one L.F. stage.

Our 'plane took off first, and immediately the other had left the ground we established duplex fone communication.

Although each 'plane was fitted with Marconi radio equipment, the ignition leads and plugs were not screened, and as a result of this we had to endure tremendous QRM. In spite of this, however, we chatted from one plane to the other for some time.

The trailing aerial was used by G6JP for his receiver, but I found this to be impractical, for the QRM from the engine was too intense, and therefore reception was carried out with no aerial!

Owing to thick mist and torrential rain we soon lost sight of the other 'plane, but picked it up again when over Harrow. I heard G6JP working duplex fone with G2JV, of Harrow, but at first I was unsuccessful in raising G2JV. Air pockets were numerous and flying was very "bumpy" indeed, but after slightly lowering my wavelength, G2JV replied. We then had a 100 per cent. R9 fone QSO—his QRK was amazing—it easily overloaded the pentode in the receiver.

Between 15.00 and 16.00 B.S.T., whilst flying around the Harrow district, we worked G6YK and G6NF with perfect ease. Only fone was used in the 'plane, and it is interesting to note that these stations reported the noise of the two engines was not very bad and our signals 100 per cent. readable. G6YK and G6NF used I.C.W. and fone, both being received R8-9 in the 'plane.

["Daily Herald" Photograph

G5CV with the portable transmitter and receiver used during the Aeroplane Tests.

G6CJ was also heard calling us, but as he was using C.W. I could not receive his signals on the super regenerative receiver.

G6JP's 'plane was out of sight, and we did not see it again until we landed at Romford Aerodrome.

An interesting fact was noted at the end of the flight. Whilst the 'plane was landing I gave a "running commentary," describing the country we were passing over and mentioning the altitude

at frequent periods. Subsequently we learned that both G6YK and G6NF had heard the transmission until we practically touched the ground, although our power had dropped to only 4 watts as the dry batteries were partially exhausted.

Even when the 'plane was bumping on the ground and taxi-ing across the field, listeners in the other 'plane, which had landed before us, heard every word.

Fading was not very noticeable, although once I was rather surprised to hear G6YK's signals

["Daily Herald" Photograph.

G5CV (on left) and G6JP (on right) loading up before the commencement of the flight.

increase at one time from R7-R9 as the distance between us increased. G6JP, on the other hand, noticed more fading. Ground stations reported that the aerial in the 'planes was rather directional, and signal strength varied considerably as we circled around.

Both G6JP and myself noticed that the addition of an aerial to the receivers made little difference to the strength of signals, but greatly increased ignition interference.

The results of these tests, which were probably the first of their kind to be conducted in this country, were distinctly encouraging, for they clearly demonstrated the advantages of 56 mc. working for reliable fone communication between planes and from plane to ground with ridicuously small and inexpensive 56 mc. apparatus, using standard 2-volt valves in transmitter and receiver and employing only some 4-7 watts.

The 3.5 M.C. Contests—(*continued from page* 8)

Mr. C. E. Jefferies (BRS589), the winner, with 824 points, heard no less than 102 North American stations in W1, 2, 3, 4, 5, 8, and 9, whilst Mr. C. A. Bradbury (BRS1066), with 802 points, heard 80 such stations in a similar number of districts. Their DX was W5SI, heard at R3 QSA2 at 02.50 G.M.T., April 2, by BRS1066, and QSA3 R3 at 05.21 G.M.T. the same morning by BRS589. Mr. Jefferies logged the A.R.R.L. headquarters station W1MK at R4 as early as 23.44 G.M.T. on April 1, but for some inexplicable reason YI6WG was not heard at any time, although Mr. Bradbury logged both YI6WG and SU6HL during the evening of April 8.

The winner employed a screen grid, detector, and pentode, whilst the runner-up favoured a detector and two stages of audio-frequency amplification. Mr. Jefferies used a 30-ft. by 30-ft. bent Hertz, and Mr. Bradbury a 40-ft. by 25-ft. indoor antenna.

Mr. C. J. Greenaway (BRS1011), of Leigh-on-Sea, who was placed third, is, like Mr. Bradbury, a very new member, but his score of 786 points is an excellent example of the work which can be done if a BRS is keen. Mr. Greenaway had the distinction of being one of the few BRS's to log Canadian amateurs, VE1DC and VE1ER both being heard between 03.00 and 03.25 G.M.T. on April 2. Sixty-seven American stations in the 1st, 2nd, 3rd, 4th and 8th district, as well as YI6WG, were logged, using an 0-V-2 receiver and an inverted L aerial 35 ft. high and 60 ft. long.

Mr. Percy Seymour (BRS475), who was well known some years ago as BERS25, of Aden, finished fourth with 732 points. Nearly 90 U.S.A. stations were heard by him in W1, 2, 3, 4, 8, besides VE1DC and VE2CX, using either a B.C.L. aerial, 66-ft. top and 35-ft. down lead, or a 33-ft. indoor aerial.

The positions and scores of all entrants are set out in the table.

General Comments.

The Awards Committee were impressed with the excellence of the log sheets submitted by non-transmitting members. In practically every case the entries were made clearly and neatly. Two members, Messrs. Jones and Hardy, appeared to have misread the rules regarding the number of points which could be claimed for contacts outside England. Their entries were corrected by the Awards Committee to the figures shown in the above table.

In concluding this report, Council desire to thank all those who contributed in any way to its success.

WHY ?

There are fuses in the phone leads,
There's a cut-out in the plate ;
The grid coil's looking fine in beads
And the batts don't fear their fate.

The paper on the walls is strong,
The floor's been double braced,
We've had the builder's men along
And all the weak points traced.

The neighbours have been told to flee,
The dog has long been tied,
The family's said good-bye to me,
I'll be called a suicide.

I've strengthened every bit of tackle,
My phones would sneer at thunder,
So, Uncle Tom, please cut the cackle
And give us the one-valve wonder.

WILIT KUTLUGOFF
(Circa N.F.D.).

HIC ET UBIQUE.

Society Notes—Convention—Madrid Conference—Calibration—QRA and QSL Sections

Co-operation on 56 MC.—(*continued from p.* 1).

two examples of the work which is being done without the general knowledge of amateurs interested in this work.

As far as we know, no commercial aspect is involved in these instances, and therefore we are being driven to the conclusion that certain members are loath to give others the benefit of their experience. This, if true, is a pity, and hardly in accordance with the true spirit of amateur radio co-operation.

We have in our own Society the means of making co-operation possible—our Contact Bureau Section, which was established essentially for such a purpose. Surely our 56 mc. enthusiasts can get together through this medium for a free exchange of views for the good of all.

CONVENTION, 1933.

Arrangements are now almost completed for our Eighth Annual Convention, which will take place in London on August 18 and 19.

Members will gather at Maison Lyons, Shaftesbury Avenue (near Piccadilly Circus) at 5.30 p.m. on Friday, 18th, where a running buffet will be available throughout the evening. The charge for this will be the nominal one of 1s. per head, the Society paying the balance of the full cost, viz., 3s.

During the evening the President will welcome the members present, and from about 6.30 p.m. onwards short talks or papers on every phase of amateur work will be given by well-known London, provincial and overseas members.

After each talk open discussion will be permitted.

It is hoped also to show the film taken by Mr. A. E. Watts during his visit to Madrid, and also Dr. Marston's film of Mr. Miles winning the B.E.R.U. Trophy last year.

The Conversazione will conclude officially at about 11 p.m., but members may remain at Maison Lyons until a later hour if they wish.

On Saturday morning, 19th, a party of Provincials will be shown over the works of Messrs. High-Vacuum Valve Co., Ltd., 113-117, Farringdon Road, London, E.C.1. Reservations should be made at once, as the party will be limited. At 10 a.m. all D.R.'s and C.R.'s will meet for their annual meeting at the Institution of Electrical Engineers. They will lunch at the Tricity Restaurant, Strand.

The Convention photograph will be taken at 1.45 p.m. outside the Institution of Electrical Engineers.

Immediately afterwards the President will present the Society Trophies and Awards, and open the business meeting. Tea will be served free of charge during the afternoon.

The Convention dinner will follow in the evening at the Florence Restaurant, Rupert Street. This will be the main social function of the Convention, and it is hoped that every member will do his best to attend.

Tickets are now available, and may be obtained from Headquarters at a price of 5s. each. Members and friends of members only will be admitted. It is essential that application for tickets be made AT ONCE, even if payment is not made at the time of application. Last year disappointment was caused to many members who arrived late. This year we hope to have overcome this trouble by booking a larger room, but the need for reservation is more acute than ever.

During the dinner a surprise feature on novel lines will be staged; furthermore, a high-grade entertainment is guaranteed; so BOOK YOUR TICKET TO-DAY.

Tentative arrangements have been made for Provincial members to visit Miss Corry's station (G2YL), at Walton-on-the-Hill, Surrey, during Sunday afternoon, August 20.

Members wishing to avail themselves of this invitation must communicate with H.Q.'s *not later* than *August* 15.

Visit to High Vacuum Valve Co.

With reference to the visit to the above works which is mentioned in the Convention arrangements, we have been asked to guarantee that no person taking part in the visit is in any way connected with the valve industry.

Members wishing to attend must, therefore, apply in writing, giving the necessary guarantee. The visit is limited to 25; application should, therefore, be made promptly and in no case later than August 12.

R.S.G.B. Stand at Olympia.

The Society's stand (No. 201) will be located in the Grand Hall Gallery near the B.B.C. exhibit, and will contain many items of interest, including the 56 mcs. gear used during the Crystal Palace tests.

Members desirous of obtaining a free admission ticket are requested to forward a stamped and addressed envelope to Headquarters not later than August 12. *Applications cannot be accepted* after that date.

THE MADRID CONVENTION.

Those who have more than a passing interest in the international aspect of Amateur Radio, are recommended to obtain the newly-issued Madrid Convention and the General Regulations covering radio communication.

The later book is of particular interest, because it gives in detail every international regulation effecting our work, besides containing a revised list of call signs and Q signals. It is noticed that the call signs allocated to Roumania, Uruguay, Saar, Panama, Luxemburg, Austria, Dutch East Indies and Jugo-Slavia are different to the Washington allocations, so that a crop of new intermediates seems imminent. Amateurs in Russia and Lithuania have already altered their call signs to conform with the new list.

Article 7 which defines the allocation of frequencies makes mention of the European 1.7 mcs. agreement, but this does not in any way affect British amateurs.

Article 8 gives amateur stations for the first time a recognised place in the sun, defining clearly the things they may and may not do internationally.

Many important changes in the Q code are noted. Whereas QRH is defined in the Washington Regulations as an enquiry for wavelength, Madrid define this signal as "*Does my frequency (wavelength) vary?* QRI is also changed; previously when sent as a question, it meant "*Is my note bad?*" By Madrid it becomes "*Is my note good?*" and the reply now becomes "*Your note varies.*"

The pre-Washington amateur will be glad to learn that the old favourite "QRV" once again means "*Are you ready?*" The previous interpretation reads "*Shall I send a series of V's?*"

QSC and QSE are now deleted, whilst QSD reads "*Is my keying correct; are my signals distinct?*" The answer becomes "*Your keying is incorrect; your signals are bad.*" QSD will probably become a useful signal!

QSK now reads "*Shall I continue with the transmission of all my traffic? I can hear you through my signals.*" The reply reads "*Continue; I will interrupt you, if necessary.*" QSK73 will hardly do after January next.

QSM should prove a useful amateur signal. When sent as a query, it reads "*Shall I repeat the telegram I sent you?*" The reply is affirmative. The R.C.C. and others must find a new abbreviation to replace QSQ, which has disappeared.

QSV replaces QRV; QSX? now means "*Will you listen for —— on —— kcs.?*"

QTO? by a stretch of imagination might be useful on Field Days; its official meaning is "*Have you left dock (or port)?*" The reply is affirmative.

QUA could also be used as a portable station signal and means "*Have you news of —— (call of —— mobile station)?*"

QUA to QUJ are a new series designed for aircraft use. The abbreviation NIL has been added to mean "*I have nothing for you*" (to be used after an abbreviation of the Q code to mean that the answer to the question put is negative).

'Phone operators will find that most of their call sign nomenclature has been revised. Casablanca and Upsala are samples of what we may shortly expect to hear, although we are somewhat disappointed to see that Xanthippe has not been relegated to the land of X's!

With so many changes of minor importance, we have no hesitation in recommending members to obtain these books, and to that end arrangements have been made for copies to be available at Headquarters.

The Convention proper will be sold at 1s. 6d. (postage 3d.) and the Regulations at 4s. (postage 5d.).

We regret that owing to calls upon space Uncle Tom's contribution has been unavoidably held over. This will appear in our next issue.

SOCIETY TROPHIES.

Council at the June meeting awarded the following Trophies for the year 1933-1934:—

Rotab, to Mr. J. Hunter, G2ZQ, in recognition of the excellent long distance work carried out by him during the past year, with particular reference to the Empire.

Wortley Talbot, to Mr. L. Hill, 2AGM, in recognition of the excellent work carried out under his control in connection with the band occupancy checks.

Courteney-Price, to Mr. A. J. E. Forsyth, G6FO, in recognition of his work on the 1.7 mc. band, and for his many contributions to the Contact Bureau Section of the Society.

1930 *Committee*, to Mr. J. Wyllie, G5YG, winner of the 1933 3.5 mc. transmitting contest.

Somerset, to Mr. S. A. French, G6FN, winner of the 1933 1.7 mc. transmitting contest.

Somerset Goblet, to Mr. J. P. Stove, G5ZX, winner of the 1933 low power contest.

No awards have been made in connection with the *Powditch Transmitting and Receiving Trophies.*

Appointment of Capt. G. C. Price to Council.

Capt. G. C. Price, G2OP, D.R. No. 5 District, was co-opted to Council at the June meeting, in succession to Mr. H. B. Old, G2VQ, who has resigned, owing to excessive calls on his time in connection with assistance to the Nottingham Police Force. A vote of thanks to Mr. Old was recorded in recognition of the excellent work he has carried out on our behalf in the past.

R.S.G.B. Reception Tests.

At the conclusion of Series 19, Reception Tests will be discontinued during the summer months, as it is felt that the call of the outdoor life will predominate. The Tests will be resumed in the autumn and an announcement made in the September issue of the BULLETIN, giving dates and periods of Series 20, when it is hoped that many of the past participants will again join up—together with new ones, and enable the interestin gcomparisons of reception in different localities to be made.

Stray.

Mr. Brian Jackson (G2BJ) asks us to state that he is only able to answer QSL cards when home on leave as he is a marine operator on s.s. *Oxfordshire*.

* * *

Mr. E. G. Foulkes (G5FU) points out that the name of his house is Katherie, 19, Kinard Drive, Rhyl, and not Kathene, as published in our last issue. He is also licensed now to use the call G2KD for 28 and 56 mcs. portable work.

* * *

Mr. R. Brown (W8GHR) complains that many G stations he has worked recently have failed to QSL.

QRA Section.

Manager: M. W. Pilpel (G6PP).

NEW QRA's.

G2AZ.—L. Grech, 1, Mountjoy Terrace, Musselburgh, Edinburgh.
G2FC.—S. Clark, 47, Logan Road, Bristol 7, Somerset.
G2FD.—F. W. Davies, 67, Willowdale Road, Walton, Liverpool 9.
G2IN.—W. Johnson, 28, Denmark Road, Southport, Lancs.
G2JB.—J. H. Payton, 39, Penton Place, London, S.E.17.
G2JN.—J. G. Stonestreet, Pilot's Lodge, Lower Hardres, near Canterbury, Kent.
G2JR.—R. E. Janus, 55, Orston Drive, Wollaton Park, Nottingham.
G2JS.—C. J. Bayes, 6, Tower Street, King's Lynn, Norfolk.
G2KI.—G. A. Spencer, 47, Newry Road, St. Margarets-on-Thames, Middlesex.
G2KV.—J. K. Todd, Orchard Place, Wannock, Polegate, Sussex.
G2MN.—M. Nicholson, 114, Thorpe Road, Norwich, Norfolk.
G2UG.—W. H. Burton, 23, Cochrane Street, Falkirk, Scotland.
G2WJ.—R. L. Royle, Haydens End, Great Canfield, Dunmow, Essex.
G5MG.—Dr. G. F. Bloomfield, 34, Morton Way, Arnos Grove, London, N.14.
G5UY.—D. B. Fry, 8, Albert Road, Bexhill-on-Sea, Sussex.
G5WM.—W. L. Millar, 3, Parker Street, Dundee, Scotland.
G6AI.—F. Holmes, 39, Swinburne Avenue, Broadstairs, Kent.
G6GG.—G. Golding, Bell House, c/o Eastwoods, Ltd., Shoeburyness, Essex.
G6GQ.—D. Robertson, Temperance Hotel, The Square, Portsoy, Banffshire.
G6YT.—W. S. Turpin, 8, Carlton Close, Edgware, Middlesex.
2AAA.—P. Pennell, Litchet House, Gilbert Road, Cambridge.
2AJT.—A. P. Kerford-Byrnes, "Kenya," Holland-on-Sea, Essex.
2AMY.—D. M. J. Tyre, 9, St. Andrew's Drive, Glasgow, S.1.
2AOJ.—L. R. Sherman, 33, Stanley Road, South Harrow, Middlesex.
2APS.—W. A. L. Smith, 55, Cadogan Terrace, Victoria Park, London, E.9.
2APU.—E. W. Morris, 28, Blackburn Avenue, Bridlington, E. Yorks.
2AQB.—C. J. Garner, 180, Bedford Road, Kempston.
2ATK.—G. A. H. Eckles, 57, Sutton Road, Beverley High Road, Hull, Yorks.
2AWV.—R. W. Wright, 37, Cedar Road, Aintree, Liverpool.

The following are cancelled:—G5TR, G5WK, G6AA, 2AAK, 2AHZ, 2AJC, 2BJC, 2BKR, 2BLX, 2BUW.

STRAY.

Mr. H. V. Booth, G2AS, will be pleased to meet the person using his call sign. He prefers gloves!

Calibration Section.

Manager: A. D. Gay (G6NF).

A most useful check on the accuracy of 100 kc. bars is provided by the Scottish National transmitter on 1,040 kc., which transmits on a common frequency with Bournemouth. We are informed that the accuracy of this frequency is within 10 parts in a million and our observations by comparison with the N.P.L. transmission on 1,785 kc. certainly confirm this assertion. The constancy of frequency of the Scottish National and the Bournemouth transmitters is provided by tuning forks which are accurately thermostatically controlled, and they are kept in almost perfect synchronism by this means.

It may be of interest to indicate briefly how this comparison was carried out. The crystal-controlled low-frequency oscillator described in the January, 1933, Bulletin was tuned to 40 kc., and the 1,040 kc. harmonic was picked up on a broadcast receiver and the beats between it and the Scottish National observed.

A further harmonic on 7,140 kc. was then located and compared with the harmonic from a local oscillator or frequency meter, which was tuned to zero beat with the transmission from the N.P.L. on 1,785 kc. This harmonic ($4 \times 1{,}785$) will also be on 7,140 kc. Actually, the harmonic of the writer's frequency sub-standard can be adjusted to within one cycle per second of 1,040 kc., so that the difference between the 7,140 kc. harmonic and the harmonic of the oscillator synchronised with G5HW is the measure of the difference between both this sub-standard, the Scottish National frequency and the standard frequency transmission.

The usefulness of having a transmission available during normal broadcasting hours which can be utilised at any time for checking purposes cannot be over-estimated. It is obvious that two stations such as those described cannot vary more than the merest fraction without producing erratic beats, and, as anticipated, our observations are such as to confirm the absence of any variation.

QSL Section.

Referring to last month's statement concerning non-members' cards, we regret to announce that owing to an extremely long agenda, it was not possible at last Council meeting to arrive at a decision on this point, and as it was felt that whatever conclusion is reached should be the result of deep consideration and full agreement between Council members, it was thought best to postpone further discussion until the July meeting of Council.

We have been in communication with A.R.R.L. headquarters over the question of listeners' report cards, and have asked them for a statement as to the present situation. Their reply will be noted in these columns next month.

J. D. C.

STRAY.

G5YH claims first British contact with Niger Colony FF2CA (Agades), who he worked at 09.45 G.M.T., June 27, 1933, on 14 mcs.

CONTACT BUREAU NOTES.

By H. C. Page (G6PA).

THIS month I must begin with an apology. Owing to holidays and a subsequent rush of work, both radio and otherwise, I may have omitted to reply to some letters. If this is the case, will members please remind me ?

Now for some good news. From reports received it appears that 28 mc. is taking on a new lease of useful life, and those who have remained faithful to the band will now reap their reward.

Full details will be found in the 28 mc. Group report, but I would like to take this opportunity of thanking SM6WL for his message via G5YH, in which he records hearing G6VB at 17.10 G.M.T. on June 21. G6VB was being received QSA 5 R7. G2FN was also heard at 18.35 G.M.T., working HAF1G QSA 5 R6, as was F8GQ, at 20.25 G.M.T. QSA 4 R5. Harmonics of F8EO and G2HX were also audible at R4.

I have also received a very nice log from SM6WL, showing the stations heard by him on June 17 and 18. They are as follows : (17th) G2FN, HAF1G, OK1AW, G5PJ, D4UBW, OK1AW (worked), OK2VA. (18th) OK2VA, OK1AW, G6WN, and F8CT.

On the 17th all the stations were heard between 15.10 and 18.15 G.M.T., while on the 18th, OK2VA and OK1AW were heard round about 10.50 G.M.T., G6WN at 13.30 and F8CT at 18.00 G.M.T.

SM6WL is surprised that the skip is not greater, because in 1930 only SU, FM8, EAR and CT stations were heard and contacted.

G2GD asks me to call the attention of the mathematically-minded to the work of the Atmosphere Groups, as he feels they could find plenty of scope there to test their knowledge. Perhaps some of the members of the Theory Groups would like to get into touch with G2GD.

That concludes the odd items of news for this month, and I am now going to take the unprecedented step of talking about my own work for a few moments. I am earnestly in need of some keen 56 mc. men in this district. After many suggestions from others I have at last taken up 56 mc. work. The RX was finished during June ; and by hard labour, the TX was also finished. A couple of useless hours were spent listening for G6SM in his 'plane.

G2IG was heard calling test at about R5, with a very nice I.C.W. note. Nothing else was heard, although several test calls were put out. Later in the day the TX was switched on and a trip in the car with RX on board was made to the nearest high ground. The signals did not disappear for a good four miles (as the crow flies) but on the homeward trip, which was under the brow of hills, not a sound was heard until within half-a-mile of home. The aerial on the RX was only eight feet long and about six feet high.

Now, if I can hear G2IG at 16 miles. and my own transmissions at four miles with a very low aerial, why should not anyone within, say, 20 miles of my QRA be able to hear me, with luck ? In other words, how about some help from the BRS men in this part of the world ? I will now return to my proper sphere, *i.e.*, a purveyor of news, and not a creator ! !

28 M.C. Group.

G6VP, (Manager).

At last my predictions seem to be fulfilled, and wonderful work all round has been done on 28 mc., as will be seen from the details of the Group work. It also shows, that although reports had been scarce recently, interest had not actually died ; seemingly an ear had been kept on the band, and the opportunity of useful work not missed.

It is also encouraging to note that stations of considerable experience are either joining or rejoining their groups.

An idea had been mooted to run a Test on the lines of the recent one on 56 mc., but recent conditions would seem to point to the futility of this, as much greater ground wave distance can be covered, with certainty than on 56 mc., and as to DX—well, under normal conditions of the cycle, we may find that 28 mc. will cover greater distances and at certainly greater strength than either 14 mc. or, of course, 7 mc.

Let us pass on to the reports.

Group 1A.—Centre G5MP is cencentrating on field work, and is using kite aerials. He wants schedules, during daylight hours. G5FV worked OK1AW, PA0PX, OK2VA, and F8CT on the evening of June 14. He heard the harmonics of EAR227, EAR185, EAR121, D4UAC, and HB9X together with ten commercials. On the 17th he. worked D4TEN and F8GQ, and was called by HAF1G at 16.15 GMT on the 17th, but lightning broke the contact. On the 18th he was QSO OK1AW and OK2VA. A very fine log !

Group 1B.—Centre G5SY has been re-designing his station with a view to obtaining greater flexibility and accessibility. He is using the shelf principle—withdrawing a unit automatically breaks all contacts, which are made again on insertion. G5QA is in the turmoil of a change of QRA, with most of his gear packed, but has kept his 28 mc. receiver out and in use. G6RP is still active, but has nothing of note to report. (It seems as if the West of England has not been favoured with such good conditions as the Northern and Eastern counties.—G6VP.)

G5SY heard EAR6, EAR227 and French Commercials on June 25, also OK1AW calling G5VB and F8HS calling G5FV on the following day. None of these stations sent "CQ" during the time he was listening.

Group 1C.—Centre G6VP was only on the band during the first half of the month on account of the B.E.R.U. Loyal Relay. Some few hours were, however possible, during which local G signals, together with many Continental harmonics, were heard. During the recent Spanish Tests the band was alive with EAR harmonics, up to R7 in strength. A rather remarkable fact was noted one evening, when harmonics were audible on 28 mc., but no fundamentals on 14 mc.

G5VB has come to life and sends a remarkable log, which is reproduced.

June 8.—Heard F8HO, OK2VA, I1RA.

June 12.—Heard HB9B, EAR233.

June 13.—Heard OK1WF, OK1WX, EAR227, F8QA, F8PK. Worked OK1AW.

June 14.—Heard SU6HL, FM8CR, SP1DC, OK2VA, F8CT, OK1AW, HB9X.

June 16.—Heard FM8CR, GI6WL, GI6VM.

June 17.—Heard OK2MH, HAF1G. Worked OK1AW, OK2VA.

June 18.—Heard SU6HL, SM6WL, OK1AW, OK2VA. Worked D4TEN, F8HS, F8CT.

June 20.—Worked OK1AW.

June 21.—Worked F8PK, F8HS, F8CT. Heard and called by F3OA. Heard F8PY, OK1AW, G2FN.

G5VB is using a self-excited T.P.T.G. with a 66 ft. end on Hertz. He states that he has come back to 28 mc. for "keeps," and will be working regularly again as of yore.

G6WN was unable to devote much time to 28 mc. on account of Field Day preparations, and activities on other bands. Nevertheless they have an excellent log of stations heard.

May 22.—EAR227, EAR18, Rome, Sardinia, EAR185, EAR13, and five commercials.

May 24.—CT1BG, EAR18, Rome, Sardinia, and three commercials.

May 27.—Rome, Sardinia, F8IR, D4UAY, EAM.

June 18.—SM6WL, OK2VA.

They heard the following G stations during the month :—

G6LL, 2BM, 2DL, 5SR, 6VP, 5LA, 2GF, 6HP, 6NK, 5GQ, 2QZ, 5DP, 2XA, 6US, 5VB, 5ND, 5NV, 2UV, and worked G6VP, D4TEN, OK1AW, SM6WL.

On June 17, OK1AW was heard on fone R4, and was subsequently worked. HAF1G was next heard several times, and also OK2MA (QSO G6WU (N) ?)

On June 20, OK1AW was worked.

G5QY heard SU6HL on June 5, and G2BM, G6CL, and G6YL on the 9th. He forwards the following report from SU6HL, dated June 10:

"28 mc. conditions appear improving during last few days. Following result of various skeds. Nil heard G5PJ daily sked. Nil heard from G2FN. Heard harmonics of IRR June 4. Reported R2 at OK1AW on 5th. Heard D4TEN 5th. Reported R5/6 by YI6HT, and by G5QY 5th and 6th. Suggest arrange QSY and QRU 28 mc. at 16.30 to 18.30 G.M.T. daily."

Since this message I have heard that contacts have been made with G5PJ.

G5PJ joins group 1C. He is QRO and testing almost daily, although no details are to hand. I understand he has contacted with many European stations.

G5YK also rejoined the group, which should be one of the strongest now.

Group 1F.—BRS25 complains of scarcity of reports. Is this group fading out ? He has been on the receiver a good deal and heard EAR's at good strength. He also heard G6LL, 6WN, 6VP, and 6HP during the month, besides various commercial harmonics and the Italian Broadcast.

G2OA is now using a crystal-driven circuit and finds it better than either self-excited or locked amplifier. On June 18 he heard SM6WL, OK1AW, D4TEN, F8CT and worked OK2VA, OK1AW, and OK1AB.

BRS1066 (Burton-on-Trent) heard on June 14 :—OK2VA, FM8CR, PAOAPX, F8CT, SU6HL, and F8PK.

Fading, Blindspotting and Skip Group.

G6MB (Manager).

These notes were contributed by G5JH in the absence of G6MB on vacation.

There is little to report from the various groups, activity no doubt being lessened owing to the holiday season.

Group 2A.—Has little of interest to report, as their time has been chiefly spent on 7 mc's routine observations. It is noted from the result of these tests that anticyclonic conditions are not favourable to good reception conditions.

Group 2B has nothing to report, but is in the process of re-forming. One more member is required.

Group 2C is still confining its activities to the H.L. and has hopes of either proving or disproving the theory. Sunspot report nil. The effects of clouds have been debated and it can be said that low-lying clouds, especially those of the thundery type, may cause a temporary cessation of signals. A resumé of the past 12 months is under way.

Ultra High Frequency Group.

G6XN (Manager).

Recent activities centred around the Crystal Palace Tests reported upon in the last issue, and in which most members of the group participated. G6XN found signals strong and easy to read in a moving car at 20 miles' distance. G5MG, using only 1½ watts input, was heard by G6QB. The latter's change of direction of aerial made a difference of R8 to R4-5 at G5MG, and R8 to R0 at G5VY (Tottenham). At G6XN (Ealing) no difference was observed.

G2KB and BRS77 recently arranged a field day at Southend, and good contacts were obtained with G2IG at Gillingham and G2IC at Allhallows.

G2KB also took advantage of National Field Day for further 5 metre tests. Using only 5 watts input, R8 I.C.W. signals were heard over 17 miles. This is of particular interest since Birmingham lies between the two stations and might have been expected to absorb a good deal of power.

G2IG and G6XO continue to experiment on rather different lines to the majority, their work being done on foot, using portable outfits as described in previous reports, with powers of about 0.5 watt, and small aerials. Under these conditions distances of a mile have been covered. Like most of us, they are bothered by queer directional effects, blind spots, and so forth. Whilst on this subject, may I repeat my appeal to those who are in a position to do so, to come forward with data ?

(It is hoped that as a result of our Editorial, many members who are keenly interested in 56 mc. work will pool their ideas and support Contact Bureau.—Ed.)

Atmospheric Group.

G2GD (Manager).

The month's work has consisted of collecting observations. Again there is some corroboration of the Isobar theory, but it is still too early to say whether any definite result is emerging. It does, however, appear that on good DX days, atmospheric pressure has been mostly uniform in the region of the receiver. Watch on the 14 mc. band has been kept by 2AGR, BRS960, 943, 1077, whilst BRS1043 has been studying the American broadcasters.

G2IC is hoping to tap the world with his 14 mc. TX, and co-operation with members in all parts of the world would be welcome. We believe that an enormous amount of useful work might be done by overseas amateurs comparing notes with us. If any are so minded, please write to G2GD. Also, as 2AGR remarks, what about Scotland and Ireland ? Any BRS men or TX men working on 14 mc. in these parts would be welcome. My next remarks are addressed to the mathematical people. If any of them would care to give a helping hand in this direction, we should appreciate it very much. What is the effect upon a short-wave entering air at atmospheric pressures under the influence of light ? Is there any material ionisation and if so, what would be the effect on a wave passing from one pressure to another ?

3.5 M.C. Group.

G6OM (Manager).

This report will cover the results of two letter budgets. As regards the 3.5 mc. Test : Firstly, there seems to to be a concensus of opinion that in future contests all contacts under 500 miles should be excluded. Although this is scarcely C.B. news, I should like to obtain other views.

Now as to aerials for 3.5 mc. work. G6LI has carried out, as promised, a test, using a V 66 ft. by 66 ft., but he states it did not come up to expecrations. He fears that the length of his feeders was wrong as the current in them was low, and furthermore, the actual current in each half of the aerial was only about half of what he had hoped for. As to actual results, owing to no DX being worked he is unable to say what the results of 4000/5,000, miles are, but local reports up to 1,000 miles have the same results as with his 66 ft. Zepp with 48 ft. feeders.

G6WY raises a point *re* the vagaries of skip on 3.5 mc. ; during the N.F.D. I noticed that PA stations were very weak during daylight, but exactly a week later, they were strong, and very few G's heard during daylight. Furthermore, during the night of June 17-18, G's as near as Worksop were R8-9, Usually after dark, G's can only be heard over 150 miles away ; furthermore, this was not a freak case of skip varying from hour to hour, because the conditions existed for twelve hours at least.

BRS207 reports good reception of W4's, and asks if G high power 3.5 mc. men will please QSO. I would suggest that some of us might lose a little sleep, say on Sunday mornings from October onwards, this coming winter, and try for contacts. I will arrange with BRS207 to write W4WS and suggest something of this nature.

Starting at 01.00 G.M.T., G6WY, G6LI, G5YG would call test W4 on 3.5 mc. for, say, ten minutes, then listen for W4 replies for ten minutes, and then call again, this continuing until 02.00 each Sunday morning from October onwards.

G6OM has completed tests on a 66 ft. end-fed Hertz aerial, and is now using a 66 ft. aerial 66 ft. counterpoise, which will be under test for some time. Results will then be tabulated, giving data on 133ft. AOG, 66 ft. AOG, 66 ft. aerial and 66 ft. counterpoise.

2 M.C. Group.

G6FO (Manager).

Very little has come to hand this month, G5RX, of 10A, alone reporting out of a total of 17 stations in the three Groups.

In response to last month's note on the subject, I have had further offers of co-operation in the Group 10A WX Tests, from 2AGK (Reading), 2AGR (Leeds), BRS689 (Bristol), BRS958 (Exmouth), BRS860 (Westcliff-on-Sea), and BRS1066 (Burton-on-Trent), who, with BRS967 (Hull), make up our total strength to date. Many more BRS and AA observers are required, scattered over the whole country, particularly in the West and North. Those who can spare the time for two quarter-hour periods each week, one in the early morning before 08.00 and the other in the evening after 23.00, consistently for from three to six months, are asked to write me direct at 18, Gold Tops, Newport, Mon. When a sufficient number is forthcoming, all stations will be circularised with details.

Will all group members please report to their respective GC's by the 15th of the month, whether active or not ? Group reports should reach me by the 20th at the latest.

National Field Day.

Some Things District No. 5 Want to Know.

Exactly what G2OP said when he found a bowler hat in G5HC's tent, and what use he threatened to put it to ?

If six sevens really make 42, or if that was the number of pups which we hoped to find in the car park next morning ?

If G2BL played with monkeys up sticks when he was small ?

If better results might have been obtained if the QRA had been a little further away from the "Adam and Eve," and if trade would have been better if G2CJ had been with us ?

If anyone has ever heard of 150 ft. masts being portable ?

If it is true that a sweet little dickey bird greeted G2OP when he came off duty at 4 a.m. ?

Why he woke up the whole camp by announcing the nightingale and if it isn't about time he knew the difference between a cuckoo and a nightingale ?

If the photo of G5JH praying for ZD2A to answer our call is not worthy of the National Gallery ?

What the Y.L.'s thought of Ham language ?

What G2BI would have thought of the antenna system and why he didn't visit us ?

NOTES and NEWS from the BRITISH ISLES

DISTRICT REPRESENTATIVES.

DISTRICT 1 (North-Western).
(Cumberland, Westmorland, Cheshire, Lancashire.)
MR. S. HIGSON (G2RV), "Hebblecroft," Egremont Promenade, Wallasey, Cheshire.

DISTRICT 2 (North-Eastern).
West Riding, Durham, Northumberland).
MR. L. W. PARRY (G6PY), 13, Huddersfield Road, Barnsley, Yorks.

DISTRICT 3 (West Midlands).
(Warwick, Worcester, Staffordshire, Shropshire.)
MR. V. M. DESMOND (G5VM), 199, Russell Road, Moseley, Birmingham.

DISTRICT 4 (East Midlands).
(Derby, Leicester, Northants, Notts.)
Mr. W. E. G. Brigden (G6WU), "Aberfoyle," Westleigh Avenue, Leicester.

DISTRICT 5 (Western).
(Hereford, Oxford, Wiltshire, Gloucester.)
CAPT. G. C. PRICE (G2OP), 2, St. Anne's Villas, Hewlett Road, Cheltenham, Glos.

DISTRICT 6 (South-Western).
(Cornwall, Devon, Dorset, Somerset.)
MR. H. A. BARTLETT (G5QA), "Lendoric," Birchy Barton Hill, Heavitree, Exeter.

DISTRICT 7 (Southern).
(Berkshire, Hampshire, Surrey.)
Mr. E. A. DEDMAN (G2NH), 63a, Kingston Rd., New Malden, Surrey.

DISTRICT 8 (Eastern).
(Cambridge, Huntingdon, Norfolk, Suffolk).

DISTRICT 9 (Home Counties).
(Bedfordshire, Hertfordshire, Essex, Buckinghamshire.
MR. F. L. STOLLERY (G5QV), "Kingsmead," Lancaster Gardens East, Clacton-on-Sea, Essex.

DISTRICT 10 (South Wales and Monmouth).
(Monmouth, Glamorgan, Breconshire, Carmarthen, Cardigan, Pembroke.)
MR. A. J. E. FORSYTH (G6FO), "St. Aubyns," Gold Tops, Newport Mon.

DISTRICT 11 (North Wales).
(Anglesey, Carnarvon, Denbighshire, Flintshire, Merioneth, Montgomery, Radnorshire.)
Mr. T. Vaughan Williams (G6IW), "Malincourt," Grosvenor Ave., Rhyl, Flintshire.

DISTRICT 12 (London North).
Mr. S. BUCKINGHAM (G5QF), 19, Oakleigh Road, Whetstone, N.20.

DISTRICT 13 (London South).
MR. A. D. GAY (G6NF), 49, Thornlaw Road, West Norwood, S.E.27.

DISTRICT 14 (London East).
MR. T. A. ST. JOHNSTON (G6UT), 28, Douglas Road, Chingford, E.4.

DISTRICT 15 (London West and Middlesex).
MR. H. V. WILKINS (G6WN), 81, Studland Road, Hanwell, W.7.

DISTRICT 16 (South-Eastern).
(Kent and Sussex).
MR. H. A. M. WHYTE (G6WY), Killiney, Worsley Bridge Road Beckenham, Kent.

DISTRICT 17 (Mid-East).
(Rutland, Lincoln and E. Riding.)
MR. A. E. LIVESEY (G6LI), Stourton Hall, Horncastle, Lincs.

SCOTLAND.
MR. J. WYLLIE (G5YG), 31, Lubnaig Road, Newlands, Glasgow.

NORTHERN IRELAND.
Mr. C. MORTON, (GI5MO), 27, Bristol Avenue, Belfast.

District Notes for publication should be written as concisely as possible and should be in the Editor's hands by the 25th of the month preceding publication. They should be of a general rather than personal nature. Individual reports from County Representatives will not be accepted for publication.

DISTRICT 1 (North-Western).

OWING to the fact that my time is being taken up by other personal matters, I wish to inform all members of this district that on and after July 1, 1933, the duties of District Representative will temporarily be taken over by Mr. W. E. Corbett (G5WG), of 23, Water Street, Liverpool, until such times as I am more able to give them proper attention. I trust that all the County Representatives will take notice of his address and will give him the support they have given to me.

Activity in the two northern counties continues. G6JZ has managed to work "J" with QRP. BRS1106 is busy with the code and pays regular visits to G2YN, who keeps busy on 14 mc. He would be glad of information as to the action of supply companies on changing over from D.C. to A.C. He wants to know whether the supply company concerned pays for the alteration of the gear or whether the owner has to do so.

The report from Lancashire is very short this month. The active stations are: G2DF, 2DH, 2WQ, 2GA, 2HL, 2HM, 2OI, 2WP, 5WR, 5XF, 5VN, 5XM, 6AX, 6QA, 6ZS, 5LR, 6GV, 6ZU, 6JN, BRS1114. Cheshire appears to be still "asleep," although I know a number of stations are active; G5WG hopes to be on the air again very soon; G6OM, 2OA, 6GL and others are on the air regularly.

The M.A.T.S. has been granted the call G5MT. We shall be glad of reports on our early tests.

Although our score was very small, the social side of N.F.D. was a great success at both stations. If any member has any photographs I should be pleased to have them, to see if they are suitable for publication in the BULL.

DISTRICT 2 (North-Eastern).

No definite reports are to hand from Yorkshire, but the D.R. takes this opportunity of thanking all those who assisted in any way to make the N.F.D. a success. Especial praise is due to G5SZ and G5HB, the licensed operators of the two stations.

The Middlesbrough members went out on the moors during this event and used the call G6CV. Work on 56 mc. advances in this area. G2FO, 5QU, 5XT, 6ZT, 6CV, 2AVM, BRS922 and 1016 are active on various bands. G6YT has moved to London.

There is much activity in Northumberland. G6AY has QSO'd W1, 2 and 9 with an A.O.G. aerial only 9 ft. high and with an input of 10 watts.

G5QY and G6BC have worked OK1AW on 28 mc., and the former only requires South America and Australasia for a fone W.A.C. 2BLD is now G2KG. G6YL still requires South America for her W.A.C.

Twenty-six members were present at the last N.E.A.T.S. meeting, when Mr. R. E. Greene lectured on "Directional Short-Wave Aerials." The membership of this keen local society now numbers 39.

DISTRICT 3 (West Midlands).

The outstanding feature of the month was the N.F.D.; this was very well supported and taught us many things. It is surprising to find the best TX, that never gives any trouble in the shack, objects to having a night out and shows its disapproval by doing everything it should not do! Our worst trouble was a by-pass condenser going down at midnight and taking the H.F. choke (PA) with it. No spares!! Miles from home, pouring with rain, to say nothing of a small gale, we managed to detach the necessary parts from other stages, and with the aid of our tool-kit (a pair of pliers and a screwdriver) were on the air again in 30 minutes; the only contact on 14 mc. was ZD2A. We all enjoyed ourselves immensely and are looking forward to the next one.

In answer to my note in the last "Bull," I have had one card in favour of re-starting the Letter Budget. Will other members please advise me if they are interested.

All the usual stations are active, and the D.R. is on the air again with a QRP station.

DISTRICT 4 (East Midlands).

G6WU, in writing up these notes for the first time in his capacity as D.R., conveys his appreciation of the loyal support given by district members, and trusts this support will continue in tangible form by the rendition of individual monthly reports to the C.R.'s, which play such an essential part in making the activities of the district of interest to all.

The subsequent notes will indicate the active interest taken by Notts and Leicester in the National Field Day, although while not seeking excuses, Leicester were rather disappointed at not being able to contribute more generously to the District total.

G6MN and the Worksop Radio Club made a good score of 124 points in the N.F.D. tests. Congrats. to Bob James, who is now G2JR. The following report active from Notts:—G5DM, G5VU, G6MN, G6KX, G6KQ, G6DS, G2JR, G2GU, G2IO and 2BMR.

G5YF reports holding a meeting in Kettering of all Northants members with a view to local co-operation. The Kettering Radio Society have now 150 members and are awaiting the call sign for their own station. The following report active from Northants:—G6JL, G5YF, 2APT, 2ATV and BRS1018.

The Leicester N.F.D. score added a further 63 points to the district total, and had it not been for local skip on 7 and 14 mc. during the early hours, this figure would have been substantially increased; however, encouraging visits by G5DM and G2IO from Notts did much to provide us with the moral support we so badly needed. We are glad to welcome BERS27 ex Malta, who has returned to Leicester, also Messrs. Roberts and George, two new members. G2JW, G2CZ, G5VH, G6GF, G6WU, G6JQ, 2ADC, 2AFM, 2BHA and BRS884 are active in the county.

DISTRICT 5 (Western).

The chief event of the month has been the National Field Day. The District was represented by G6RB working on 1.7 and 3.5 mc. and G2OP working on 7 and 14 mc.

G6RB was located at Filton and the transmitters were both self-excited; a Hartley was used on 1.7 mc. and a T.P.T.G. on 3.5 mc. The operators were G6RB, G6JG, G2IP, G5UH and G5XV. Fifty-three contacts were made and most of the work was done on 3.5 mc.; 126 points were scored.

District 5 Conventionette, Bristol, May 7th, 1933.

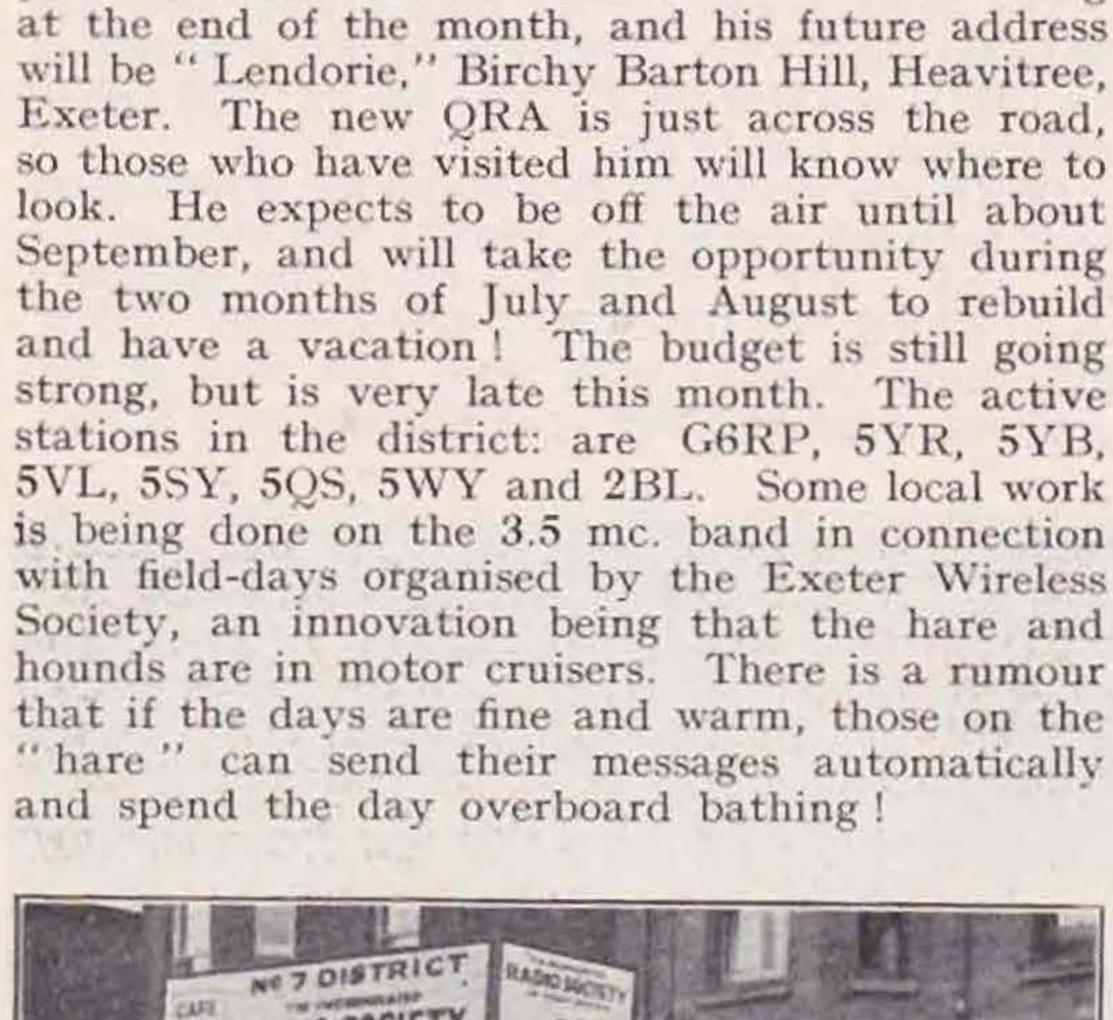
G2OP was located at a spot known as Paradise on Painswick Beacon, near Cheltenham, which is 960 ft. high. One transmitter was used and consisted of a C.O., F.D. and P.A., all of the LS5 class. The antenna was the G2BI type and the receiver was of the screened three variety. The operators were G2OP, G2HX, G5JH, G6LM, and G5HC, while the cooks and "hangers on" were G2BL, BRS475, BRS479 and BRS1032. The transport consisted of six Austin 7's. Thirty-two contacts were made earning 200 points, making a total for the two stations of 326 points.

The last number of the Wilts letter budget was the best for some time and contained much interesting 56 mc. information. Although the county of origin is Wiltshire, the budget is open to the whole District, and contributions should reach G2BI not later than the last day of each month. The D.R. will be away on holidays between August 9 and 27.

DISTRICT 6 (South-Western).

The annual Conventionette for this district was held on Whit-Sunday last, at the Globe Hotel, Exeter, and although numbers were small, enthusiasm was very great indeed. Starting with lunch at 1.30 p.m., the conventionette resolved into what was voted one of the best parties ever held. We were very pleased to have G6LL with us, and only wish G6CL could have come along as well. Regarding activities in the district for the month, the summer weather appears to be

exerting its usual influence, and activity is falling off somewhat. G5SY has completed his rebuild, and has worked ZL (of all places) at 23.10 G.M.T. This was on June 20, a most unusual time of the year for a ZL contact. The D.R. will be moving at the end of the month, and his future address will be "Lendorie," Birchy Barton Hill, Heavitree, Exeter. The new QRA is just across the road, so those who have visited him will know where to look. He expects to be off the air until about September, and will take the opportunity during the two months of July and August to rebuild and have a vacation! The budget is still going strong, but is very late this month. The active stations in the district: are G6RP, 5YR, 5YB, 5VL, 5SY, 5QS, 5WY and 2BL. Some local work is being done on the 3.5 mc. band in connection with field-days organised by the Exeter Wireless Society, an innovation being that the hare and hounds are in motor cruisers. There is a rumour that if the days are fine and warm, those on the "hare" can send their messages automatically and spend the day overboard bathing!



The Publicity effort staged by Mr. Spooner, 2AJA, at the District 7 Conventionette.

DISTRICT 7 Southern).

The chief activities this month have naturally centred round National Field Day and the Southsea Conventionette. The N.F.D. stations were run as arranged at Street Farm, Walton-on-the-Hill, by the kind permission of Mr. Jones, the owner, who was, incidentally, a great help to us in getting the aerials erected. Farmers can apparently throw stones over higher tree branches than radio amateurs! The event was greatly enjoyed by all who took part, and in spite of the fact that we had everything under canvas and the weather at times was very, very inclement, we put up quite a good score, especially considering the fact that there was no time available to get our transmitter going on the 1.7 mc. band. The sight of G6CW working DX on 3.5 mc. when he was actually sitting in a stream of water left behind by the aforesaid inclement weather, was worth coming miles to see. The catering department was very ably looked after by G2YL and her sister, assisted by Mrs. Alliston, and only an all night watch can possibly realise what a godsend hot coffee can be at 3ack emma.

We are all looking forward to a similar day next year, which should be even more successful, in view of the experience gained this year.

The Conventionette was held at Southsea on the 25th, and considering all things, the attendance of 44 was highly satisfactory. We were especially pleased to see so many members of Council, our Secretary, and G6RB, who broke into his holiday to visit us. The whole party took a siesta on the beach after lunch in glorious sunshine, and a running match on the Corporation's lawns between the Secretary and two members of Council was greatly appreciated by all. The D.R. thinks that athletic sports will have to be included in next year's programme. This interlude was followed by the business meeting, and a very concise report of the district's activities was given by G6GZ, C.R. for Berks and Hants. The need for greater co-operation, and more actual research work on our 56 mc. field days was especially stressed, and that this view was entirely endorsed by headquarters was made quite clear in our Secretary's able speech. Mr. Clarricoats also touched on several other important items of interest to us all. Tea followed, and the meeting closed with a visit to the Portsmouth Technical College, where much of mechanical and radio interest was explained to us by Mr. Parsons. A number of the members had to be almost dragged from the key of the ½ kw. spark set, in order to enable us to close the convention by a final photograph on the College steps. Our thanks are due to G6NZ for arranging this visit, and to 2AJA for his splendid direction signs and notices.

DISTRICT 9 (Home Counties).

Our Conventionette has passed, but it will be remembered as one of the most enjoyable meetings ever held. Although the weather was rather mixed, the attendance did not suffer: 55 were present. It was extremely gratifying to welcome our friends from the opposite shore, also those who came from further afield. We were honoured with the distinguished presence of three senior officers of the R.S.G.B., viz., our President (Mr. Bevan Swift), our Secretary and our Treasurer. Lieut.-Commander W. S. Mann, R.N., and Mr. Burrows, President of the Southend Radio Society, were also with us. It was a pleasing sight to view this extremely friendly gathering happily at luncheon in the brilliant setting of the lounge on the great terrace of the Palace Hotel, Southend-on-Sea, with its broad unparalleled vista of the Kentish hills, the Medway and the estuary from Thanet to Gravesend. Our Secretary expounded at length the progress of the R.S.G.B., whilst latest details of the R.N.W.A.R. were furnished by Commander Mann. Then came the 56 mc. discussion, which brought forth a volume of humour and much interesting data. Special thanks are due to all those who took part in this, especially those who brought their gear for inspection.

The D.R. had such a busy time he entirely omitted to take the calls of those present, but it can be recorded the Essex transmitters turned up in full force, including G2AF, G2SA, G2KT, G2LZ, G2WG, G6KV, G2YI, G6OA, and G6QX. Letters of regret were received from G2HJ and BRS865. G5FB, C.R. Herts. and Beds., attended, and gave an interesting report of activities in his district.

In conclusion the D.R. would like to express his entire appreciation of the splendid support made by all to ensure such a great and spontaneous success. He extends his heartiest thanks to the local transmitters who arranged station visits, the exponents of 56 mc. work, and all those who came from neighbouring districts.

(DISTRICT 10 South Wales and Monmouth)

The two outstanding events of the month have been the Conventionette and the National Field Day, both very well supported by the District.

The Conventionette, held at Swansea on Sunday, May 28, drew 23 members and six visitors to the Mackworth Hotel, where an excellent lunch and tea was provided. This was quite an unexpected number, and as a result Headquarters were, unfortunately, not represented, as only twenty definite acceptances were received up till the last moment for notifying them. The Secretary's customary enthusiastic and inspiring address was therefore lacking, but the D.R. attempted to take his place with the aid of notes supplied for the occasion; a telegram of good wishes from the President of the R.S.G.G. was also read. Dr. H. B. Howell (BRS1007), of Tenby, R.N.W.A.R. District Lieutenant, was present and gave the meeting much information regarding the Reserve. His remarks and the discussion which followed led six or seven members of all three grades tentatively to offer their services, and it is hoped that South Wales will at last be put on the map in connection with the R.N.W.A.R. scheme.

The Business Meeting finished with a general discussion, during which several questions were raised. Several good group photographs were taken before we dispersed at 5.30 p.m., some towards home and some to visit G5PH, a well-known Swansea QRP station using Goyder-Lock CC. The excellent results he gets from a rather poor location show that much can still be done with an efficient QRP lay-out.

The Conventionette arrangements were made by 2AHN, Swansea sub-area representative, and I am also obliged to G5WU, C.R. for Glamorgan, for producing the notices all members received. I might add that it speaks well for the enthusiasm in the District when it is remembered that, according to my calculations, the average distance travelled by each of those attending was over seventy miles.

The following were present: G2PA, G2XX, G5AS, G5FI, G5PH, G5TW, G5WU, G6FO, G6PF, G6YJ, 2AFX, 2AHN, 2ALF, 2AMA, 2AQI, 2AWN, 2AWX, 2BJH, BRS727, BRS778, BRS1007, BRS1128, BRS1131, Messrs. Davis, Harries, Lovering, Kingham and Mr. Pond (Chairman, Blackwood Radio Club).

With regard to our Field Day effort, much could be written, but let it suffice to say here that everyone who went out thoroughly enjoyed it and for most of us it was certainly an experience.

At the moment of writing the effect of our claimed total score of 172 points is not known, but whatever the result we made a tremendous effort, had plenty of fun and have gained valuable experience for the next National Field Day.

The Blackwood Radio Club took out portable receiving gear on the Sunday.

DISTRICT 11 (North Wales).

N.F.D. was quite a success as far as our B station was concerned, and thanks are due to all those who assisted in any way, especially to the Prestatyn B.R.S. men who erected the tent on the top of Prestatyn Mountain. G2II (D. S. Mitchell), 2FF, 5FU, 6OK, BRS1060, 1148 and 1163 were responsible for the operation of the station.

Especial thanks are extended to Mr. F. Mortimer, of Golden Grove, Llanasa, who gave permission for his land to be used as the station site, and to Mr. D. T. Evans, as yet a non-member.

DISTRICT 12 (London North).

National Field Day was an unqualified success in every way. An attendance of 34 was recorded, and both A and B stations were manned throughout the 27 hours. The District takes this opportunity of thanking Mr. and Mrs. Vickery for their valuable help in catering for those attending. Thanks are also extended to Mr. Vickery, Sen., who kindly loaned his premises; without his assistance the event would have lost much of its pleasure.

Interest in 56 mc. work continues to increase and a field day to sponsor work on this band is contemplated. The D.R. will be glad to hear from members interested in such an event.

It is hoped that North London will be well represented at Convention this year, and also that members will endeavour to make at least one visit to the Society's stand at Olympia. Convention is the one occasion in the year when London has an opportunity of entertaining the provinces. Let No. 12 take its fair share of this responsibility.

DISTRICT 13 (London South).

I am wondering how many of the one hundred or more active stations, both transmitting and receiving, situated in south-east and south-west London ever glance at these notes. In May we appealed for assistance in the National Field Day event, but not even *one* response was received. Unfortunately, neither of the C.R.'s were able to participate, although G5GQ, G6HP and G6QB offered to assist when the matter was approached personally. Nevertheless, four people cannot run two portable stations night and day.

Is this absence of co-operative effort due to the unwieldy nature of the District? From Woolwich to Putney is a vast inhabited area, and perhaps it would be better off if it were split up into two separate districts, such as S.E. and S.W. London.

Well, it's not much good grousing, but I should like to have your views on the subject. Possibly you all wish to be left alone to pursue your own paths and just make use of your D.R. when you need an increase of power or some other similar help or facility. Whichever it is matters very little to me, but I should like to know exactly how many of you have read the district notes regularly, in order to know whether they are worth while in future. Just drop me a P.C. for once and let me know that you are alive. Even C.R.'s have omitted to write to me enclosing their notes during the last five months. Now, do not forget; I shall publish the number received in the August BULLETIN!

DISTRICT 14 (London, East).

Since the last notes were written the N.F.D. has taken place, and the District's efforts will be

included in the general write-up, which will be published in the BULLETIN. At the June meeting the Anglo-Dutch Field Day was further discussed, but at the moment nothing definite has been arranged. At the next meeting to be held at 28, Douglas Road, Chingford, on July 18, final arrangements will be fixed up, provided the Dutch Hams have made their arrangements. The tentative date for the event is July 29. Renewed interest in 56 mc. prevails, and amongst the latest recruits are BRS29 and 2APS, both of whom have built receivers.

DISTRICT 15 (London West and Middlesex).

The National Field Day is now a memory of a very fine day spent in the open. Considering it was the first field day ever held in the area, other than 56 mc., credit is due to those members who supported it and made it such a success. To those who co-operated may I offer my thanks. I had the opportunity of visiting both stations during the week-end and can safely say things were well planned by both sub-DR's.

Congratulations to 2BLX, who now holds the call sign G2KI. He has a CO.PA working from the D.C. mains. G6CO has now changed to CC, using Goyder Lock. G5PQ has found DX conditions on 14 mc. fairly good and is still studying aerials. BRS642 is now logging DX on 7 and 14 mc., and notices some peculiar skip effects.

DISTRICT 16 (South-Eastern).

Portable station G2IC was the only station operating in Kent on National Field Day. Mr. Chapman deserves great credit for getting the station together in about four days, after various other people had been approached to lend gear and help. It was operated with crystal control in a summer-house on the edge of the high Folkestone cliffs with the coast of France clearly visible. G2IC was aided by G6SY, who operated most of the night; 2ASC and G5QL also helped and there was enough apparatus to build about four transmitters in the shack. G6WY came down in the afternoon.

On July 2 G2IG and G6XO staged a 56 mc. field day, in co-operation with the South London and District Society, who were embarking on an initial 56 mc. field day. Points were scored for contacts and reception. The idea of this field day was to find a hidden transmitter, and we believe this was the first occasion that D.F. tests were carried out on this frequency.

Sussex welcomes a newly-licensed amateur, G2KV, who replaced 2BKR.

DISTRICT 17 (Mid.-Eastern).

Four B.R.S. stations have moved successfully to the next stage in the ladder of progress by collecting A.A. calls.

"Ten" is looking up considerably again, and G5FV has worked a number of good contacts. G6LI has heard signals on the 28 mc. band for the first time! G6OY is about to try his hand again. G6OO and G5VO are working a portable 3.5 mc. transmitter from time to time.

The bulk of the members are fully active, but one or two in Lincolnshire are standing by for change to A.C.

The National Field Day plan was supported with startling enthusiasm and some 30 members attended the various camps.

The Lincolnshire letter budget has not been seen since 1932, so that I feel it cannot any longer be serving a useful purpose and hereby cancel its circulation pending request from at least six members for its re-establishment.

I should be very interested to have some reports from some of the Lincolnshire stations, from time to time.

R.N.W.A.R. Notes

Considerable progress is being made in connection with this Reserve. From January last, the membership has risen from 100 to 180, of which number about 75 possess transmitters.

Owing to the number of enrolments in the 1st District (London), it became necessary to split it up and a new District No. 8 has been formed consisting of the counties of Norfolk, Suffolk, Essex, Cambridge and Huntingdon.

Thirty-six members have been granted call-signs, and several of these have applied for the special licence, which is issued free of charge to those who guarantee to use their transmitter for R.N.W.A.R. work only.

The free instructional classes at the Admiralty on Monday and Thursday evenings continue to be well attended, and great kenness is shown.

Broadcast exercises are being transmitted by qualified members in Nos. 2 and 4 Districts and schemes are being evolved for communication with H.M. ships, and for members to handle naval traffic.

There is room for many more members, particularly those possessing transmitters. This applies especially to the Western counties, the Midlands, the districts round Newcastle and Scotland, Though the wireless instructions may seem complicated it only takes a short time for a man to know sufficient to go on the air and obtain further training by W/T.

The technical committee (mostly R.S.G.B. members) have rendered invaluable service by producing a descriptive article showing how a transmitter may be built for approximately £3 10s.

R.N.W.A.R. transmissions take place in accordance with the following schedules :—

GZZ (Cleethorpes), 4486 kc.

Mondays, Wednesday and Fridays, 2145 local time.

MD9 (Whitehall), 3740 kc.

Sundays, 1000 to 12.30 local time.

The transmissions from GZZ are in the nature of Morse practices, the first transmission being sent at approximately ten words per minute, and the repetition at about 20 words per minute.

Empire Calls Heard.

*B.E.R.S.*59 (*Alexandria*), *during April.*

14 *mc.* : g2ai, dc, du, im, oi, rj, wd, xa, yx, zj, 5ai, aw, fb, fn, ib, ki, nr, pb, pm, qy, rs, ry, tl, yv, 6ba, ct, gq, kp, kq, lk, lm, nj, os, pk, pq, uf, vc, zs.

7 *mc.* : g2mi, yl, 6os, rl, vv. vo1p, zl4tn.

g2ak and g6ty heard on' phone on 14 mc.

* * *

*B.E.R.S.*74 (*Quetta*) *during March.*

14 *mc.* : g2dz, 5hb, 6uf, 6xn.

7 *mc.* : vs6ab, zu5b, zs2j.

Empire B.E.R.U. News.

B.E.R.U. REPRESENTATIVES.

Australia.—H. R. Carter (VK2HC), Yarraman North, Quirindi, N.S.W.

Bahamas, Bermuda and the Eastern Part of the West Indies.—H. B. Trasler, No. 2 Mess, Pointe à Pierre, Trinidad, B.W.I.

Burma.—W. G. F. Wedderspoon (VU2JB), Government High School, Akyab, Burma.

Canada.—C. J. Dawes (VE2BB), Main Street, St. Anne de Bellevue, Quebec; and A. E. Howard (VE4CJ), 2401, 25th St. West, Calgary, Alberta.

Ceylon and South India.—G. Todd (VS7GT), District Engineers Bungalow, Nuwara Eliya, Ceylon.

Channel Islands.—H. J. Ahier (G5OU), Lansdowne House, 45a, Colomberie, St. Helier, Jersey, C.I.

Egypt and Sudan.—E. S. Cole (SU1EC), Haking House, Abbassia, Cairo, Egypt.

Hong Kong.—P. J. O'Brien (VS6AE), 12, Kent Road, Kowloon Tong, Hong Kong.

Iraq.—S. A. Rance (YI2DS), A Bungalow, 203 Squadron, R.A.F., Basra.

Irish Free State.—Col. M. J. C. Dennis (EI2B), Fortgranite, Baltinglass, Co. Wicklow.

Jamaica, British Honduras, Turks Island and Cayman Island.—C. M. Lyons, (VP5MK), P.O. Box 36, 12, Port Royal Street, Kingston.

Kenya, Uganda and Tanganyika.—W. E. Lane (VQ4CRH), Box 570, Nairobi, Kenya Colony.

Malaya.—T. G. Laver (VS3AC), Government Electrical Power Station, Johore Bharu, Johore, Malaya.

Newfoundland.—James Moore (VO8AW), Carbonear.

New Zealand.—D. W. Buchanan (ZL3AR), 74, Willis Street, Ashburton; and C. W. Parton (ZL3CP), 69, Hackthorne Road, Cashmere Hills, Christchurch.

Nigeria.—Capt. G. C. Wilmot (ZD2A), Depot Nigeria Regt., Zaria, Nigeria.

North and South Rhodesia.—J. W. Mavis, ZE1JE, P.O. Box 160, Umtali, South Rhodesia.

North India.—T. C. Pratley (VU2AH), Aircraft Depot, Drigh Road, Sind.

South Africa.—W. H. Heathcote (ZT6X), 3, North Avenue, Bezuidenhout Valley, Johannesburg

Australia.

By VK2HC via ZL4AO and G2ZQ.

It is regretted that no satisfactory results can be reported as far as 28 and 56 mc. work is concerned. Good DX, however, has been possible on 14 mc.; W, VE and other Pacific stations being heard at good strength from 01.30 to 17.00 G.M.T. daily. The 3.5 mc. band has again proved excellent for local work. An outstanding QSO on this frequency was made recently between VK2RJ and K7; this is believed to be the first VK-K7 3.5 mc. contact. The Empire Link channels are all working well, and B.E.R.U. sub-representatives have been appointed in each State. These are VK2YC, VK3WL, VK5GR, VK6FO, VK7CH. VK4GK is acting temporarily for the Fourth District. It is hoped by this arrangement the work of the B.E.R.U. may make even more progress than previously.

Conditions during May were poor on all bands. On 14 mcs. Pacific stations provided the only DX, whilst 3.5 mc. was popular for local work.

We hope to have a reliable ELS network in active operation shortly.

Burma.

By VU2JB.

Conditions during May were poor, due to the incidence of the monsoon, but with the break of the rains an improvement will occur. VU2JB and 2LZ are still the only consistently active members in India, the latter working mostly with c.c., and the former concentrating on 7 mc. fone. In so doing 2JB has been actuated by the fact that Burma is a very young country in many ways, particularly so as far as radio is concerned. The P.M.G. informed him recently that there were only 148 persons licensed in the country, and it is thought that the best way to popularise the subject is to transmit test programmes by telephony three times a week. VU2JB's best DX recently was with V1AI.

Canada.

By VE2BB.

Conditions during May were fair in Eastern Canada; many good contacts with Europe were made, but otherwise results were erratic, fading being particularly prevalent. A big increase in the number of Canadian amateurs is reported, and in the second District over 50 new stations have come on the air. VE4CJ has now been appointed Representative for the Fourth District, and it is hoped that VE1BV and VE3HE will take over similar duties in the very near future.

Ceylon and S. India.

By VS7GT.

Conditions during May were very poor on the 7 and 14 mc. bands, due to the approaching S.W. monsoon.

VU2FY (Mr. Spindler) reports that the first half of the month was characterised by patchy conditions, the latter half being poor. The CW tests carried out by VU2FY on April 13 to 15 were most successful—confirmation of reception having been received from five continents. Mr. Spindler is experimenting with aerials of various types and hopes, in addition, to introduce a number of local enthusiasts to B.E.R.U.! In this connection he hopes to form a local group, with VU2FY as Group

Manager and link station to VS7GT at local headquarters. It is hoped that this will be accomplished by the next report.

VS7GT and VU2FY continue their experimental 'phone transmission on Sunday mornings and useful work is being done.

Egypt.

By SU6HL, via G5QY.

SU1AA returned with the Convoy during May. Excellent results were obtained. SU1AQ is occasionally working on 14 mc., as is also SU1CH (your note is very rough in G—Ed.). Before leaving for England SU1EC put R7 fone into VE1BV. SU1MM and SU8MA are both active on 7 and 14 mc., whilst SU6HL is busy on the latter band and also on 28 mc. He has had reports from G, F, YI, and OK on this band. SU6SW is at present inactive. ZC6KR and 6CN at Ramleh are operating a station in relays. ZC6FO at Maan is obtaining good reports on his 10 watt 14 mc. signal. QRM has been bad on 3.5 mc., and in Cairo interference is caused with harmonics from local broadcast stations. The 7 mc. band has been useful for East Coast work in the early mornings and for Europeans in the low regions.

Irish Free State.

By EI2B.

I have not received many reports during the past month. EI9D reports his first W contact on 7 mc., and EI8B and EI5F have both been going strong on 14 mc. EI5F now only requires a VK or ZL contact for his WAC and WBE. He is particularly anxious to get contacts with any of his ex-pupils who were trained at the Kevin Street Technical School, and no doubt any of them who may read these notes will look out for him on 14 mc. We were all glad to hear that "R. D.," of EI7C, has now obtained his G ticket, and will shortly be on the air as G6TI. I.R.T.S. will be holding a Field Day shortly, probably on July 1 and 2, using a portable on 3.5 mc., and, although these notes will not appear until a considerably later date, they would welcome reports from anyone who may have heard their transmissions on either of these dates. Judging from an article which appeared recently in *The Irish Radio News*, it appears that a good many unlicensed EI stations are still on the air, although the writer has not himself heard any of those mentioned in the article referred to.

EI7C (Mr. H. V. Scott, 53, Brighton Road, Rathgar, Dublin) is welcomed as a new station.

Jamaica.

By VP5MK.

Conditions on the 14 mc. band improved considerably during May and a good deal of DX was effected. The 7 mc. band has, however, become gradually worse. VP5PZ is awaiting the arrival of his new transmitter, when he will commence operations on the 7 and 14 mc. bands. No news has yet been received of the Valentine expedition, and VP5CC requested one of the ships working in the Pacific to call at Cocos Island in order to discover what has happened to them. Their next destination should be Marquesas Island, and then on to Tahiti.

Kenya, Uganda and Tanganyika.

By VQ4CRH.

This is my first report since taking over the BERU Representative for this Zone, and I sincerely hope that all members will co-operate with me in an endeavour to maintain regular monthly notes in these columns.

Conditions have not been extraordinarily good during the past month, but at the time of writing the cloud resting over DX seems to be lifting slowly.

On behalf of the members here, I should like to congratulate VQ4CRL on obtaining his WBE recently. It is hoped that he will tell us how to hook a VE station to enable a few more of us in this Zone to qualify for this coveted certificate!

VQ4CRL has just finished rebuilding, following a change of station location, and very shortly expects to be on with 50 watts when the necessary transformer arrives from home.

Our old friend George Ball (ex VQ4MSB, VQ5KAC) appears to be more settled down now after his travels to the hinterland, and now possesses a new call-sign—VQ4CRN. He wishes all his old friends to note this change and to keep a look-out for his signals. He hopes to be on the air by the end of June with 25 watts to a T.P.T.G.

VQ4CRE is at present inactive, but will shortly be erecting his gear.

VQ4CRK has gone on a business-cum-pleasure trip to South Africa by Imperial Airways, and expects to be away for a few months.

VQ4CRM, a recent recruit to our ranks, is gradually building up his own station, and hopes to strike out shortly on 14 mc.

VQ4CRH is troubled with very bad local mains QRM. VQ4CRH is WAC, but the non receipt of a PY and CX card prevents his application going forward for the certificate.

We extend a hearty welcome to OM Cole (BERS 175). He has been interested in amateur work for some time and should prove a very useful member to the group. He hopes to have his station in full swing by the end of July. Will then be pleased to report on members' 14 and 7 mc. signals.

VQ3 and other BERS reports are not to hand.

VQ3MSN, VQ4CRL and VQ4CRHwere the only active stations in the BERU Contests, but it is anticipated that the entries from this Zone for the 1934 Contests will be considerably increased.

Nigeria.

By ZD2A via G6XQ.

Thunderstorms have been occurring almost daily and interfering with regular work.

Conditions have been poor on the whole, though on 14 mc. it has been noticed that better results are obtained on thundery nights and at about full moon. On clear nights the band is often dead at 20.00 G.M.T.

ZD2A took out a portable during the National Field Day and worked six G portable stations, as well as other stations, in spite of being caught in two thunderstorms.

ZD2B at Lagos is starting up.

ZD2A is on 28 mc. and would be grateful for the co-operation of any G stations.

Northern India.

By VU2LJ.

As anticipated, the 14 mc. band improved considerably during May. Although medium DX

has been subject to fade-out, Europeans have been consistently received round about the early evening hours. A few W6's were heard towards the end of the month. Work on the 7 mc. band has now become impossible owing to excessive QRM. BERS74 has again been refused a transmitting licence; apparently the authorities will not grant; facilities in Baluchistan. The emergency change scheme put forward by VU2CS and 2FX seems to have been abandoned, due probably to the fact that most of the people who would have been interested knew nothing at all about it until it was all over. VU2AL, 2CS, 2JB and 2LJ are active on 14 mc.

Around Europe.

Mr. R. R. Sawell, our representative in Portugal, advises us that the Portuguese Government have recently revised the legislation governing radio communication. The system of licensing amateurs will be similar to that adopted in Great Britain. An examination in the principles of transmission and a test of morse ability will be conducted A maximum input of 300 watts will be permitted. Accurate instruments for measuring frequency and power must be installed. An interesting article in the decree states that all electrical apparatus must be so arranged as to prevent interference. Fines will be imposed for failure to prevent "man-made static." Mr. Sawell has not yet been advised whether existing amateur calls will be changed.

Mr. Eckstein (OH2PP), reports that conditions in Finland during May were poor on all bands; OH1NS is working on 28 mc., and during April he heard an harmonic of SU1CC (? SU1EC). He will be glad to co-operate with British amateurs interested in work on this frequency. Mr. Eckstein ,in common with the majority of other level-headed European amateurs, laments the prevalence of badly modulated fone transmissions, which completely spoils all work on the 7 mc. band.

W.B.E. Certificates.

The following W.B.E. Certificates have been awarded :—

Name.	*Call Sign.*	*Date (1933).*
F. A. Holmes	G6AI	April 28
W. A. Mead	G5YY	May 10
W. M. Richards	VK5WR	,, 10
K. R. Rankin	VK3KR	,, 18
L. R. Seal	G2OC	,, 22
H. M. Voss	W6DE	,, 29
N. E. Huggett	G2PF	,, 30
Lieut. E. S. Cole ...	SU1EC	June 7
O. G. Chapman	VK2OC	,, 20
J. B. Scott	VK2NR	,, 21

Stray.

Lt. Cole (SU1EC) draws attention to a mistake that crept into his Egyptian notes as published in our last issue. Referring to the G2BI aerial, we stated he found improved results with a "lengthened feeder and shorter top." This should have read, "lengthened feeder and higher top."

Components Received.

We have received for inspection and test a new range of components made by *Messrs. Wright and Weaire*, 740, *High Road, Tottenham, London, N.*17. These include Transformers, L.F. Chokes, Short Wave Chokes, Driver transformers and Matching chokes. Beyond mentioning that these components present a good appearance, we are unable at this stage to make further comment, but we hope to provide detailed information regarding this apparatus in an early issue.

The High Vacuum Valve Co., 113-117, *Farringdon Road, London, E.C.*1, have also supplied for test a range of their new receiving valves which are marketed at very low prices. A review will shortly be given on these valves, which during preliminary tests appeared to be very suitable for 56 mcs. work.

Stray.

VE5HJ will be glad to arrange schedules with any G station and will also appreciate reports from B.R.S. His address is: 1465, 17th Avenue, New Westminster, B.C.

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Rates 1d. per word, minimum 1/6. First line in capitals if desired. 2d. per word where all capitals are required. Minimum 3/-.

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TELESCOPIC ALL-STEEL MAST, height on base 34 ft., with stay wires complete. Winding drum in base for lowering top section. Price £5 free on rail; worth £12 10s.—G2NV, c/o R.S.G.B.

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WANTED.—Small Hand Generator to give about 25 watts; good condition.—Write G6FU.

FOR SALE.—£8 8s., Model Avometer, M.L. Gen. 32 v. input, 1,000 v. 50 Ma. output. Offers.—J. E. CORY (G5CY), Sutton-on-Sea, Lincs.

MORTLEY SPRAGUE MOTOR GENERATOR, 230 v. 50 c. input, 2,000 v. 100/120 M.A.s. and 12 v. 8/10 amps. output; self excited. Type SC2-CF314, on bed plate. Cost £52 10s., very little used, accept £25 or nearest offer.—G6PY, Barnsley.

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Here's Uncle Bill of Birmingham,
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He changed the "tank" with the key pressed down,
And wondered what was burning 'im!

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