MERCURY

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CONTENTS

EDITORIAL - G3EJF

Are Amateur Operating Standards as bad as many people would have us believe? Granted there are a lot of clots on the bands but it would be far from the truth to assume from this that the general standard was so low.

The RSGB 21/28Mc/s Phone Contest moved our correspondent "Jimmy" to write "The way in which most stations were operated restored one's faith ...." and now our own contests produced favourable comments on members' operating. Contest operating, slick though it should be, does not need to be brusque. How many seconds does it take to address the other station by name if you happen to know the operator?

Surely here is a field in which Royal Signals Amateur Radio Society can set an example for others to follow. Most would - be amateurs spend an apprenticeship as Short Wave Listeners and what they hear on the bands will mould their own behaviour when they get their tickets. Let us ensure that when they listen to a RSARS station they learn deft, but at the same time, courteous operating.

At least three Radio Amateurs associated with the Corps were honoured in the New Year's Honours List. WOII (Yeoman of Signals) J. D. Francis (VS1CW) received the MBE, Staff Sgt R. Briggs (5N2RSB) and Reg Gilding (G3FQN) late of 404 Squadron AER) received the BEM. Members of the Society will wish to congratulate them all.

Now for this issue. We make no apologies for devoting nearly half our space to an article on Rhombic Aerials by Bob Titterington of 3/343 Squadron TA. Not only is this of great interest to the Amateur, the professional long-distance communicator will find it a most useful source of information. This is certainly one of the best articles it has been our pleasure to publish.

This issue also sees the departure for sunnier climes of Leslie Beaumont G3RUS, our Treasurer for the last two years. Nobody knows better than your Editor the amount of work that Leslie has done for the Society with the able assistance of his office staff. Stapling and addressing "Mercury", begging discount from manufacturers for our Purchase Scheme, keeping membership records and looking after Society funds have been his lot and all members will wish to join in saying VY TNX OM ES GUD LUCK.

73
ECHO JULIET FOXTROT

CAMEROONS DX'PEDITION

by 5N2RSB (S/Sgt R. BRIGGS, BEM., R SIGS)

I have been a licenced Ham for quite some years, and it has been my ambition to go on a DX'pedition. This opportunity presented itself during Dec. 63 and Jan 64. This later trip was undertaken due to the poor response during the first one.

I chose the Cameroons because it is easy to get there, and also because there has been no operation from this part of Africa since W0MLY a couple of years ago.

The trip was further helped by the kind loan of an SR-150 and SX-117 from Hallicrafters. This is a first class combination, and I can recommend it to all. Throughout the whole operation I did not have a single break-down with this equipment.

The first weekend was a failure due a serious vehicle fault, but I'm glad to say the second sortie was a complete success. This is a brief summary of the second week-end.

I left Kaduna on Friday 10th Jan 64 at 1200 hrs in a L/Rover, accompanied by a driver. Journey to be covered was approx. 400 miles. Most roads here are laterlte, and at this time of year are very dusty. However, I had been this way before, and consequently made good time.

Makurdi, the half-way stage, was reached at 1640 hrs, and here I spent a well deserved rest, having tea and a general check on the vehicle and equipment. Left at 1715 hrs, and arrived at SUSU, just inside the border, at 20 minutes after midnight. The portable generator was unloaded, to provide the light by which the driver and I set up camp. This part of the country is more fertile than the north of Nigeria, and we were continually pestered by flying insects. The vegetation had to be cleared, and this was quickly done by the driver with the aid of his "langa-langa".

The following morning at 0730 hrs, the aerial was erected, and operation commenced from 5N2RSB/TJ8 at 0915 hrs. First QSO was F2MO at 5 and 9 on 14 Mc/s. Then the fun really started. From the time I opened up to the time of closing the station, QSO's were at the rate of one a minute, and sometimes two a minute! This was really going, since during my first time here, several CQ's went unanswered, and only a total of 131 contacts were made, in 30 countries. My driver was quite amused at this. With contacts being made so fast, I was fairly jumping in my seat, trying to write the log, give signal reports, and cussing at bad manners by a minority of eager types.

At the same time as my DX'pedition, ZS6BBB was at ZS9, and we occasionally contacted each other to see how things were. I think I was doing more business than he was.

I was delighted to work 5 new countries. These were 9K2, SV0 (Rhodes), SV0 (Crete), ZS9 AND ZS3. Now I shall have to work these from my home QTH! VK9XI was putting in such a strong signal that I packed the gear into the vehicle, nipped over the border into Nigeria, and using the whip aerial of 16', got a 5 by 5 report. This was simply because I needed Zone 29 and the new country! Then drove back and carried on the operation from TJ8! I suppose this seems weird, and I could have cheated and worked him from the Cameroons and only used my 5N2RSB call, but it was no trouble! At least it was legitimate!

From 1700 - 2325 hrs, the W/K's were at a premium, and the station was closed for the day with a final QSO with OA4KY.

Sunday 12 Jan. Opened up on the Nigeria net on 40 mtrs, and gave some of the boys a new country. Called by and worked 9G1EO. Conditions on this day were not so good, and the station was finally closed down at 2100 hrs.

This has been a wonderful experience, and I am looking forward to my trip to (Dahomey (TY2). Unfortunately G3CIO was not worked!!

I can fully recommend to those of you who want to get a real look into Amateur Radio, go on a DX'pedition if you can. You will enjoy every minute!

Equipment used:- Hallicrafters SR-150 Transceiver.
" SX-117 Receiver.
Aerials. 15 and 20 mtr dipoles.
Inverted V for 40.

All times stated are local and 1 hr ahead of GMT.

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CONTEST RESULTS

The results of the CW and Phone contests held on the 3·5 Mc/s band in January 1964 are as follows:-

	CW PHONE
G3RCJ	132
G5HZ	154
G5HZ	121
G3SAE	143
G3EMO	91
G3OFV	133
G3PMZ/A	81
G3SPQ	130
G3LWQ	70
G3PMZ	110
GI2DZG	61
DL2HO	102
G3NVK	60
G4JT	90
GI3ALT	60
G5YN	82
EI3AH	52
GI3PUE	71
G3DWW	30
GI3ALT	71
G4JT	30
G3EMO	70

Check logs from GW2OP are gratefully acknowledged.

In addition to the above the following stations were known to be on the air but did not submit logs before the closing date.

CW G3MEF, G3PGM, GM3KLA, G3DOJ, DL2DD, GI3HXV, G5YN, G3LOV.

PHONE GM3NXM, G3RCJ, G3NVK, G3RAQ, G3MEF, G3SJB, DL2DJ, DL3BL, G3PGM/A, DL2DD.

Scrutineers' Report

Logs were checked by Members Nos. 169, 120 & 4. A surprisingly high number of logging errors were found, where discrepancies occurred neither station gained points from the contact. During the Phone contest a station operated by a non-member but with an unlicensed member of the Society in the shack was contacted by a number of entrants. After careful consideration the scrutineers decided that such contacts should not count for points. In any case the order of leading stations was not affected by these contacts.

Leading Station

Staff Sgt Terry Quinn, a PSI with 57 Signal Regt TA at Bristol, who won the CW contest used a DX40 transmitter with a VFI-U VFO. The receiver was an AR88 and the antenna a 133 feet end fed only 8ft high.

Lt Col N.I. Bower of Henley on Thames who won the phone contest used both AM and SSB. The TX was Viceroy followed by a home made linear at about 200 watts p.e.p., for AM the carrier was reinserted. The aerial used was a W3DZZ trap dipole about 35 feet high.

"Mercury" plaques, suitably inscribed have been sent to the winners.

Rules:- Not clear whether non members could be contacted-GI2DZG. Affiliated Societies could be confused with individual members numbers-G3SPQ. No obvious score for DL2's, we are all in North Rhine Westphalia - that's a hellava big county-DL2HO.
Time:- Suggest 1000-1230 and 1430-1700 hrs - G3LWQ. Band went out for UK about 1700 hrs, left with two hours in which further contacts were impossible (CW) - G3RCJ. Worked UK at 1428 hrs so condx were good (Phone)-DL2HO.
Band:- Would like to see a CW contest on Top Band, 80 is my unfavourite band-G3EMO. May be two bands would improve things - G3RCJ.
Support:- Poor-GI3PUE. Lack of support from GM-G3SAE. No GW stations - GI2DZG.
Where has 404 Sqdn gone? - G3JZP. Shortage of stations on CW but plenty on Phone-G3DWW. Whatever happened to you lot in UK (CW contest) nothing but SSB & FSK on the band - 5B4TX.
HQ Station:- We wish you had stated a specific frequency for G3CIO-5B4TX. Wish G3CIO had moved around more, he put my little CO/PA out of business-G3LWQ.
Operating Standards:- Good, brisk, sharp and to the point which I rather fancy shattered the 80 metre boys judging by some of the asides I heard-G4JT. Operating and courtesy very good, should help to put RSARS on the map-G3DWW.

General:- SSB is the thing for contests-G3SAE. Suspect many of the A3 boys can't tune SSB-DL2HO. At least we cleared our channels in no uncertain terms-G4JT. Check log herewith. I do not wish to enter as I don't believe in contests-GW2OP. Members enjoyed this type of club activity-GI3PUE (66 Ulster Sig Regt club). Sorry about late appearance, she who must be obeyed decreed gardening-G5YN. Non-participation in CW contest due to Exercise-GI3PUE. TVI-G3EMO.

Catterick Comments
These contests were by way of an experiment, although support was quite good a lot of members known to be active were conspicuous by their absence. Although the contests were meant mainly for UK & BAOR members it is gratifying to know that 5B4TX erected an aerial especially for the CW contest but unfortunately heard nothing of other members. The point common to all letters is that everyone enjoyed themselves, further events will certainly be organised. At G3CIO operators, Jean (120) and Johnny (004), certainly enjoyed themselves. The CW contest rather petered out after 1600 hrs, only 3 contacts being made in the last three hours. However on Phone the last hour was as exciting as any with everyone trying to work a number of latecomers, great fun!!

THE RHOMBIC AERIAL - Bob Titterington

INTRODUCTION

This article is divided into two parts. The first of these reviews the theoretical considerations, going a little further than most general text books whilst the second half describes a practical application in the form of a rhombic aerial designed, constructed and erected by the Amateur Radio Club of 3/343 Sqn 42 (L) Sig Regt (G3PMZ).

THEORY

the Rhombic is one of a group of aerials classified as "long wire antennas". As such the Rhombic is the most used of the group but it shares the same advantages and disadvantages as the remainder.

It provides good directivity in that it has a very sharp main lobe when compared to the poor vertical directivity of most Yagis. The aerial itself is very cheap and the electrical and mechanical adjustments are easy with the absence of traps or critical spacing of elements. Large aerials of this type have an advantage for reception where a space diversity effect improves performance though some receivers may be overloaded by the output from such a large array.

Unfortunately the aerial cannot be rotated which above all else is the reason for its neglect by radio amateurs. It also requires four tall masts and a considerable amount of space for erection.

When talking of "long wires" it is important to think in terms of wavelengths and a wire is not usually considered to be "long" unless it is of at least two wavelengths in length.

Reference to one of the standard text books will show that in a single long wire, the radiation pattern is the result of the combination of the radiation from the half wave sections of which it is composed. As the wire becomes longer the single lobe of' a one-half wave section breaks up into an increasing number of lobes. However, the largest lobe is always the one nearest to the wire and the approximate directive pattern of a 2 wavelength wire is shown in Fig 1. As the wire gets longer the angle made by the main lobes to the wire decrease but the gain (over a half wave dipole in free space) of these lobes increases.

The gain in dB increases almost linearly with wire length, being 3dB at 4 wavelengths and about 6dB at 8 wavelengths. From these rough figures it is clear that a long wire must be really long before it becomes very effective.

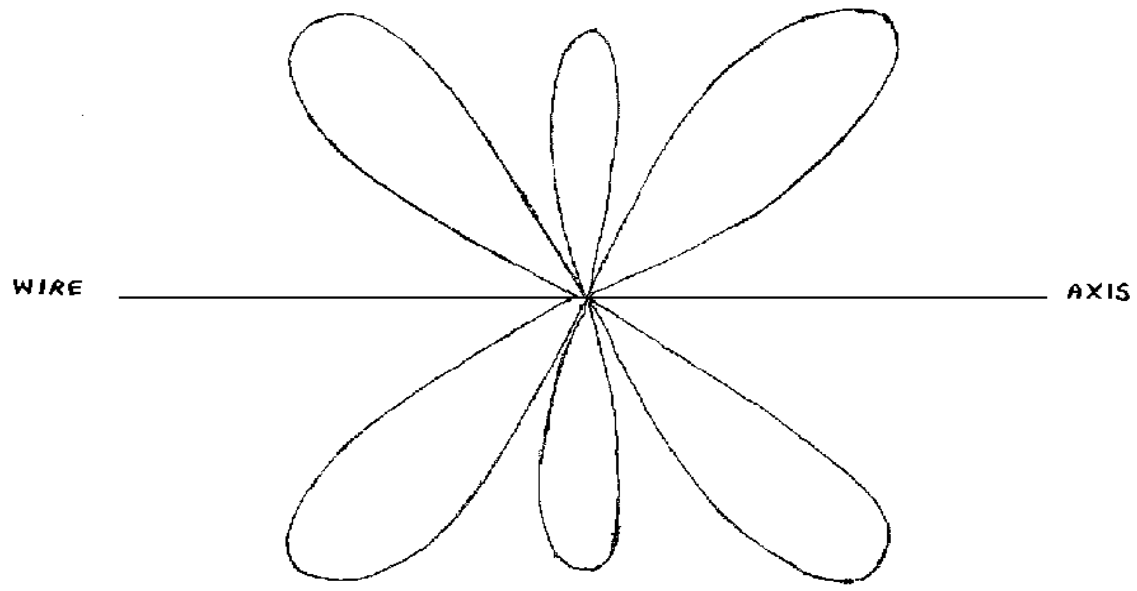

Fig 1

We can now consider one of the more cunning ways of combining long wires to produce better results. If two or more long wires are placed at the correct angle to each other then it is possible to get the main lobes to reinforce in at least one direction. Fig.2 illustrates this process (secondary lobes have been ignored).

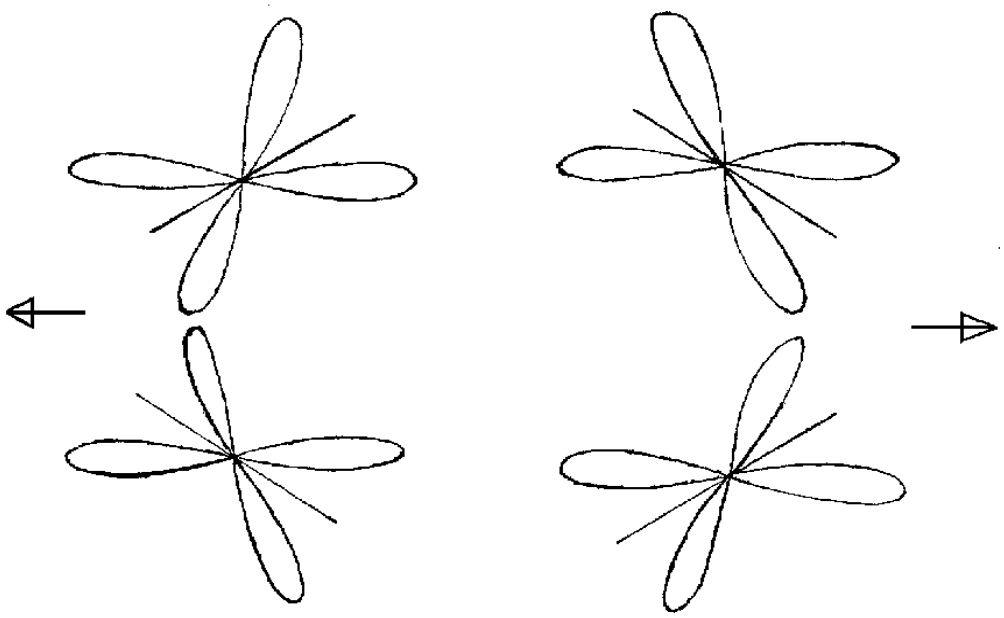

Fig 2

In practice the arrangement shown in Fig.2 is called a Rhombic and it is drawn a little more clearly in Fig.3. It should be noted that there is very little radiation in any other direction apart from the preferred ones since the other lobes cancel each other.

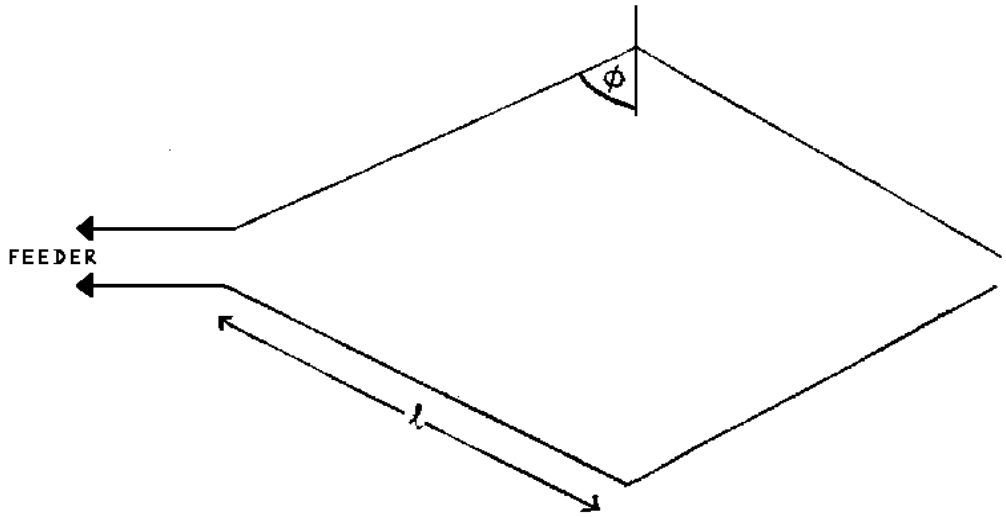

Fig 3

Before we proceed it is desirable to make three rather important definitions.

Tilt Angle:

The angle ⇑ in Fig.3 is known as the tilt angle and will be denoted by the symbol "⇑" throughout this article.

Leg Length:

This is the length of one side of a rhombic aerial and is denoted by the symbol "1".

Wave Angle:

This is the angle in the vertical plane made by the main lobe with the ground. It is denoted by the symbol "a".

At this point it is necessary to distinguish between the resonant (or unterminated) rhombic and the non-resonant (or terminated) version, which incidentally is the most widely used and will be considered later.

Resonant Rhombic:

Fig.3 is a diagram of a resonant rhombic aerial and radiation occurs in both directions along the axis of the aerial. All practical h.f. installations are horizontally polarised due to the size; but at v.h.f. it would be possible to tip the aerial on its side to give vertical polarisation. It must be emphasised that this is a resonant aerial and does require careful adjustment of leg length. It is for this reason and the fact that zero front to back ratio is rarely required that the aerial is little used and we now pass on to the non-resonant rhombic which is of much greater practical importance to the amateur.

Non-resonant Rhombic:

The conception of this antenna involves a new principle. When most people consider radiation from an aerial they think in terms of resonant operation with current and voltage standing waves on the aerial (as has been the case thus far in the article). There is, however, another way in which energy may be radiated by a wire.

If the wire is considered to be infinite then a wave travelling down it will not be reflected and so no standing waves will be set up. Continuing this "transmission line" picture we assume that the wire is well separated from the return wire (this is in fact its mirror image in the ground) and so there will be losses due to radiation. In practice we arrange for the aerial to be terminated by a resistor of its characteristic impedance (to simulate an infinite line) and in the case of the rhombic the second conductor is an identical wire some distance away. Fig.4 shows a plan view of a non-resonant rhombic.

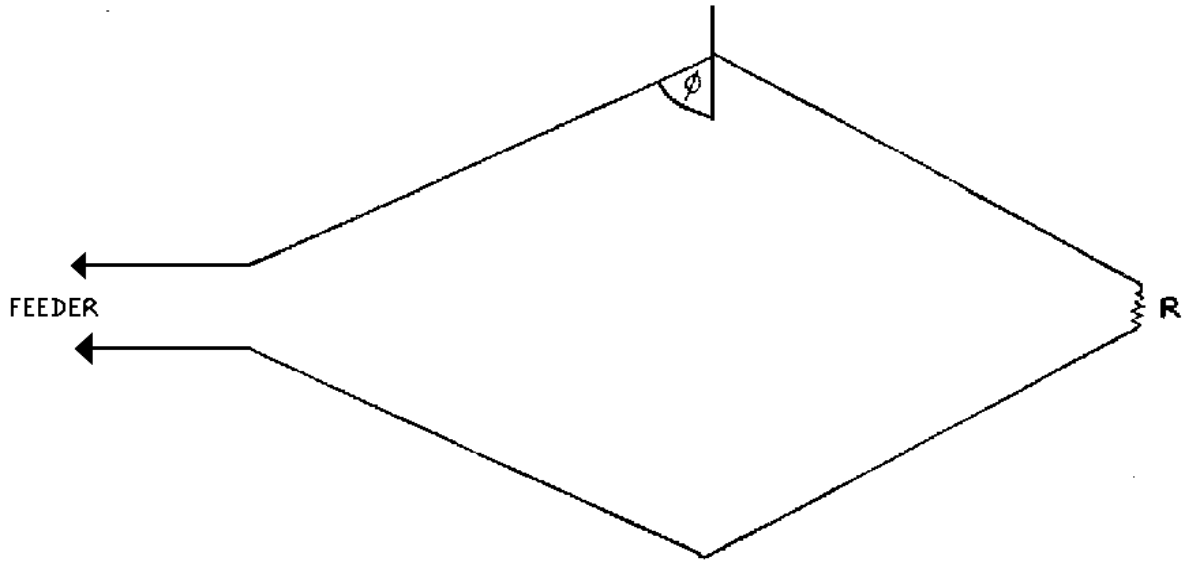

Fig. 4
R IS THE TERMINATING RESISTOR.

The aerial has the important property that the radiation is now in only one direction. The magnitude is the same as for one of the two directions of the resonant rhombic and thus only half the transmitter output power is radiated, most of the other half being dissipated in the terminating resistor.

The aerial has the advantage of very wide bandwidth, although as the frequency is lowered the wave angle increases. The frequency range over which the aerial may be operated is usually about 2 : 1. The feed to the aerial is balanced, as for the resonant version, but this will be considered in more detail later.

Turning now to some practical points, a survey of commercial installations shows 800 ohms to be a typical value of terminating resistor and thus terminated, the input impedance is a little over 700 ohms. In commercial practice great care is taken to obtain a value of terminating resistor which gives the least variation of input impedance with frequency. To this end it has been found helpful to construct the aerial of three separate wires instead of one. These are joined together at the feed point and the termination, with increasing separation towards the other two corners where the wires are three or four feet apart. This also has the effect of giving a small increase in gain and a lower input impedance nearer to 600 ohms, allowing a better match to standard transmission line.

A problem which can be quite difficult to overcome, is to provide a purely resistive termination at frequencies up to 30 mc/s and, in some cases, for very high powers when it may be necessary to dissipate many kilowatts. The amateur will not have to dissipate much more than 50 watts in the termination and can use some form of air cooled carbon rod resistor. In order to reduce capacitive effects it is desirable to split the terminating resistor into about three separate units connected in series. For larger installations a lossy transmission line (called an absorber route) is employed, usually made of iron wire and of the impedance of the desired termination. This lossy transmission line is, in its turn, terminated at a point where the voltage has fallen to a suitably low value, by a carbon type resistor of the same impedance.

Design:

The rhombic aerial produces a main lobe of radiation in the direction of its axis as shown by the two typical radiation patterns drawn in Figs 5 and 6.

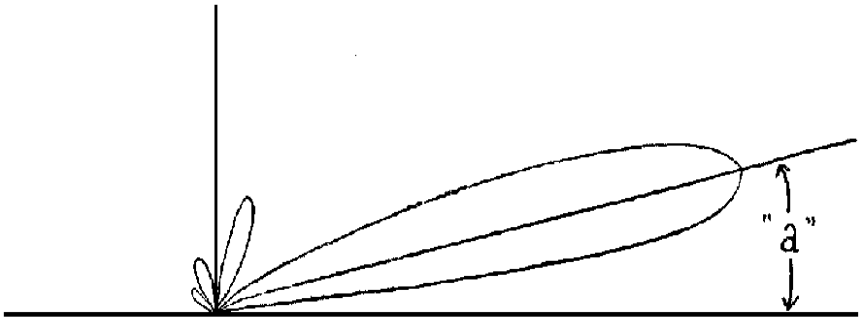

Fig5: VERTICAL CROSS SECTION

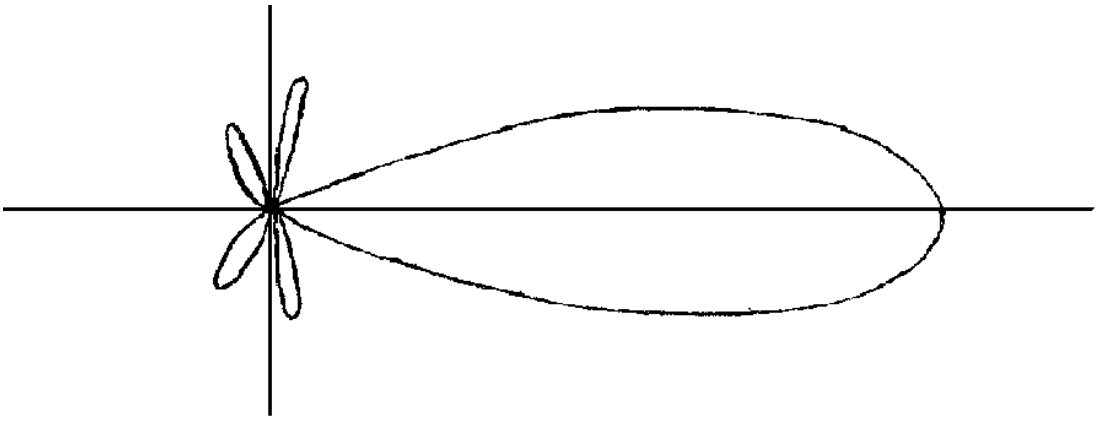

Fig.6: HORIZONTAL CROSS SECTION - PLAN

The beam is steered horizontally by the physical direction in which the aerial points. The adjustment of the wave angle is important since for very long distance communication low angles are desirable, although for single hop transmissions of less than 2,000 miles a higher angle may be needed. The wave angle is governed by three factors: height, leg length and tilt angle. Unfortunately these are closely interrelated, or in other words adjustment of one will upset the other two. This is illustrated by the formula quoted below which gives the tilt angle necessary to align the main lobe to a given wave angle for heights and leg lengths less than the optimum values (which is nearly always the case).

Solve this equation for ø.

$$\frac{h}{\sin ø \tan a \tan(2\pi h \sin a)} = \frac{1}{4\pi W} - \frac{1}{\tan(2\pi l W)}$$

where $W = \frac{1 - \sin ø \cos a}{2}$

h = height (in wavelengths)
1 = leg length (in wavelengths)
a = wave angle
ø = tilt angle

The writer of this article is unfortunately not a mathematical genius and the thought of solving the above equation even graphically was horrifying. However, a much more practical way of getting the answer is contained in B.E. Harper's book "Rhombic Antenna Design". The relative design chart is reproduced in the ARRL Antenna Book. This method ignores the effect of height in the first instance, the curves show the relation between wave angle, tilt angle and leg length, and give the tilt angle and leg length for maximum radiation at the given wave angle.

The effect of height is the same as for any other horizontal aerial and the free space radiation pattern must be multiplied by the ground reflection pattern. These are quite well known since they apply to so many aerials and Fig. 7 shows some of the ground reflection patterns as the height of the aerial is increased.

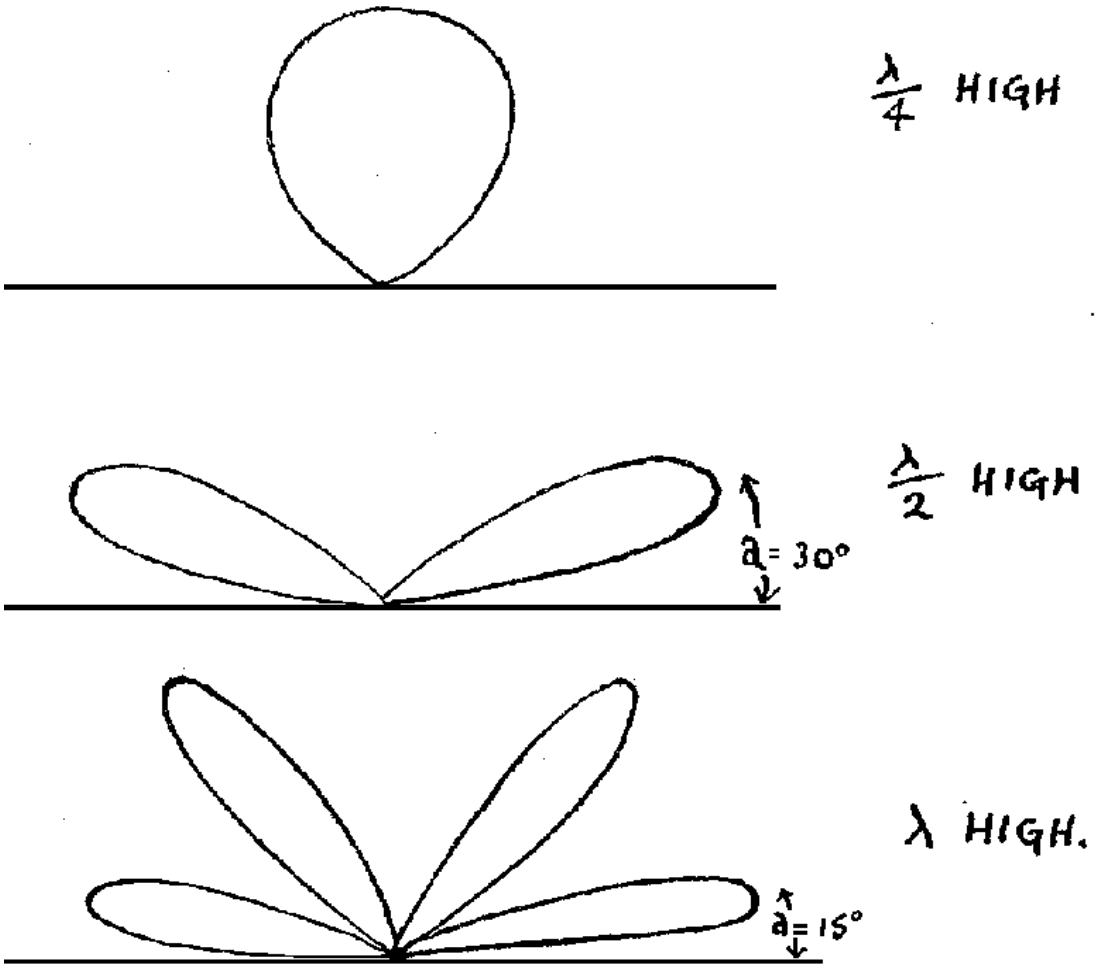

Fig. 7

Ideally the aerial should be placed at a height where the main lobe will be reinforced by a lobe of the ground reflection factor. Unfortunately this is usually a wave length at the minimum but if only half a wave length is possible then remember the rhombic is only labouring under the same disadvantages as any other horizontal aerial but it will produce more low angle radiation than simpler types due to its inherent directivity.

As we have already seen rhombics have a balanced feed and it is convenient to match the feeder directly to the aerial. However, it is also possible to use a coaxial feed and employ a wide band balun at the feed point of the aerial. This system is often used on installations designed for reception where it is important to keep spurious interference to a minimum.

Finally a word about gain, which is the criterion by which the aerial will be compared to other types. Taking a typical leg length of 5 wave lengths, the gain of such a rhombic over a dipole - both in free space - is 12db allowing for losses of 3db in the terminating resistor. By suitable alignment with the ground reflection factor a further gain of 3db may be realised giving a maximum of 15db. (This assumes a perfectly reflecting earth and is the reason for using extensive earth mats in commercial installations, especially where the wave angle is large). Higher gains may be achieved by using greater leg lengths but there comes a point where the beam width becomes too narrow for use with fluctuating ionospheric conditions, however, a leg length of 5 wavelengths is fairly typical.

PRACTICAL RHOMBIC

We now move on to details of a rhombic aerial recently erected by 3/343 Sqn 42 (L) Sig Regt (TA) G3PMZ. It was decided to undertake this rather ambitious project partly because Princess Royal Day was imminent and also to attempt to hook up with O.C. 3 Sqn, Major R.F. Little, who was away in Australia on business.

Having selected the rhombic as being the best aerial for the job we set about its design using the principles outlined above.

From measurements of the arrival angles of signals originating from stations over three thousand miles away, it has been found in the great majority of cases that the angle is less than 10°. Clearly this is also the optimum wave angle for transmission but every small reduction of wave angle produces a great increase in the distance of a single hop. Thus in order to reduce ionospheric absorption to a minimum it should be best to use a wave angle of zero. In practice this is not done for two reasons:-

(i) The ground reflection pattern is always near to zero for a = 0°.

(ii) Even in the flat countryside around Altcar (near Liverpool) where the aerial was erected, there is considerable absorption of energy by nearby objects (buildings, trees, houses etc.) for wave angles of less than about 3°. As a compromise a wave angle of 7° was chosen.

In view of the low power of the transmitter (around 50 watts) it was desirable to achieve as much gain as possible and a leg length of 5 wavelengths was chosen. Having fixed these two parameters the design chart gives a tilt angle of 67°. It should be noted that a 1° variation of tilt angle produces a change of about 5° in wave angle and so it is essential to use the correct tilt angle.

The final parameter to be fixed is height, and the optimum value for this antenna is 210 ft (for 14 mc/s operation) where a gain of about 15db should be realised. It is pretty obvious that heights such as this are pipe dreams except in the commercial world, where heights of up to 300 ft are now being advocated for rhombics. If the height is reduced to one wavelength (about 70 ft) then the gain falls by 3db. This represents some kind of optimum since a further reduction of 3db occurs when the aerial is lowered to 35 ft. It should be noted that these figures are rather rough and ready but give a general picture.

Moving on to the termination, the choice here was limited by financial rather than technical considerations. With carbon rod resistors of 25w dissipation costing a little under £5 it was decided to use a 15/- Ayrton Perry (non-inductive) wire wound resistor of 120w rating and accept the disadvantages of high self capacitance. A value of 800 ohms was chosen more by guess work than anything else.

The only remaining problem was of feeding the antenna and as we only desired to use it on one band (14 mc/s) matching was effected by transmission line methods. This allows high efficiency although the VSWR may be a little high towards the band edges. The complete system is drawn in Fig. 8.

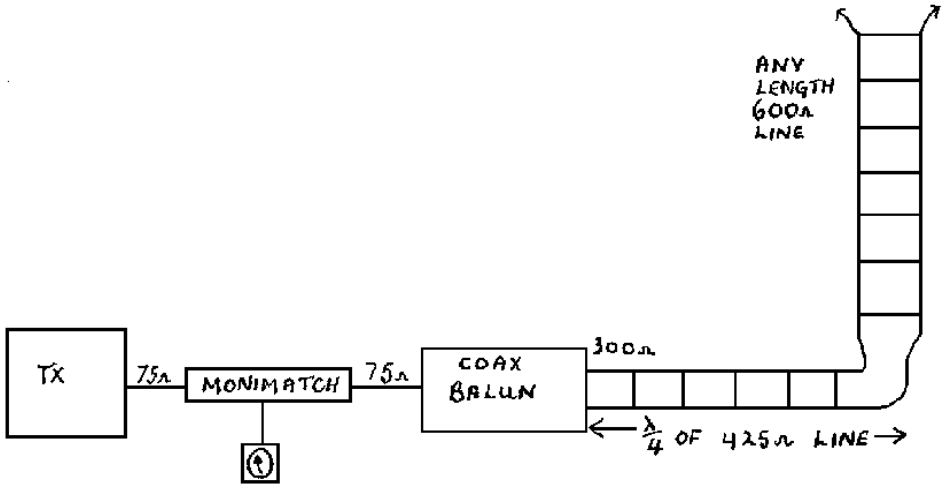

Fig. 8

The 75 ohm output from the transmitter is fed via a VSWR indicator to a coaxial balun. This provides a 4 ; 1 impedance transformation to 300 ohms and gives a balanced output. This enables a quarter wave matching section to be used to match this to an arbitrary length of 600 ohm feeder.

This quarter wave matching section has an impedance Zm given by:-

$$Zm = \sqrt{Z1 \times Z2} = \sqrt{300 \times 600} = 425 \text{ ohms}$$

It should be noted that there will, be a mismatch between the 600 ohms feeder and the input impedance of the aerial, which is around 700 ohms. Although stub matching might be employed (taper matching is a little impractical due to the long lengths of feeder required) and the physical construction of 700 ohms line is possible but awkward, it was decided to accept this small mismatch. Another alternative is to use a three-quarter wave matching section, which provides sufficient physical length of feeder to match 300 ohms to 700 ohms.

For use as a multi band aerial, which can be done over as many as three bands, then a more conventional type of aerial matching unit may be employed such as the Z-match.

When the aerial is erected, it must point in the right direction, and the wave angle must be very near to the design value with a maximum deviation of half a degree. The first of these requirements can be fulfilled with the aid of an elementary calculation of direction using the latitude and longitude of the aerial and of the distant point. The aerial is then aligned using a prismatic compass.

The second requirement is a little more difficult to fulfil but this was done by cutting two lengths of signal cable such that the ends of the cables touch the four corners of the rhombic only when the correct tilt angle is used. Fig 9 illustrates this. Although one cable would suffice, two were used in an effort to balance out errors due to irregularities in the ground.

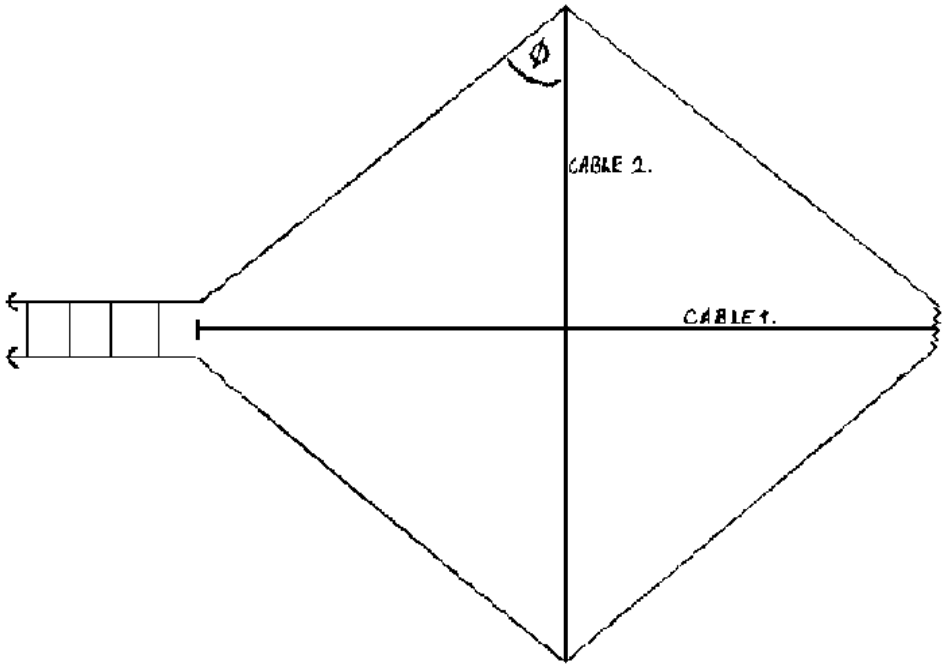

Fig 9

The aerial was laid out on the ground in this configuration and the masts placed five feet from each corner. The aerial was hoisted with halyards painted alternately white and black, one foot of each colour, at the end attached to the wire. By adjusting the halyards for an equal length between each mast and the aerial wire, the correct tilt angle was ensured.

Having erected the aerial the V.S.W.R. was checked and found to be 1 : 1·25 at 14·1Mc/s, a little surprising in view of the mismatch between the 600 ohm feeder and the aerial. If necessary, the length of the quarter wave matching section can be adjusted to resonate the system at other points in the band. However, little adjustment should be needed if the necessary design calculations have been carried out with care.

CONCLUSIONS:

The practical experience recounted above shows what can be done by a small body of enthusiasts with little outside assistance. In "comparison" to this modest effort, one can briefly describe one or two commercial installations. Most spectacular of' these is the Multiple Unit Steerable Antenna (MUSA) which is a receiving antenna steered by appropriate phasing of the output from a number of rhombic aerials in line, pointing towards the distant transmitter (the steering is in the vertical plane).

This was first developed by Bell Telephones and the first MUSA at Holmdel N.J. consisted of six rhombics and was three quarters of a mile long. Seven years later, in 1942, the British Post Office erected a MUSA consisting of sixteen rhombics at Cooling Marshes in Kent. This "ultimate" receiving antenna was two miles long.

Returning to a more practical plane, it is interesting to note that the winner of the last BERU contest (VP8GQ) used a Rhombic Antenna.

HEARD ON THE BAND

“G3.../M is on the frequency. I gather he is on the motorways and knowing the speed he travels we had better call him in straight away as I don’t think he will be with us for long” (Radial)

MEMBERS’ ADVERTS

Exchange Eddystone S840, want a low power AM/CW tx, Vanguard Panda Cub or similar. WOI Boston G3BIN, 50 (N) Signal Regt, TA Centre, DARLINGTON.

TOP BAND DX - A SPORT FOR MEN

by

Capt. Angus D. Taylor. G8PG/GW8PG

Are you fed up with poor conditions, overcrowding and "wolf pack" tactics on the h.f. bands? Then why not do as many others are doing and sample an entirely different and most interesting side of our hobby by trying out Top Band. The reaction to this suggestion is often "What - and only work G stations!" Well, there are plenty of G stations on Top Band, including some of the best operators in the business, but little oddments like 9A1, OH0, VP8, VS1, W6, ZL, etc. would cause interest on any band, let alone when they are worked by 10 watt stations working on what is virtually medium waves. The whole business becomes even more fascinating when one realises that even the most lucky operators - that is, those who can get a Top Band half wave aerial up around 70 ft in height - are only using an aerial equivalent to a 14 mc/s dipole at a height of 8 feet. And plenty of people work W, VE etc. with a quarter wave folded into a small back garden - the equivalent, say, to 16 feet of wire four feet high on 14 mc/s. It is this combination of low power, the need to achieve the highest possible aerial efficiency that makes Top Band DX so fascinating and rewarding. More and more operators, ranging from top flight DX men to newly licenced beginners are finding this out - and some of the beginners are having remarkable success.

Not all Top Band working comes in this "super DX" category, however. During daylight the band is excellent for phone and c.w. contacts at up to 150 miles, with considerably greater distances often possible on c.w. in winter. In the evenings the whole of the U.K. is workable on both modes and c.w. contacts throughout Europe become common. Numbers of stations in DL, OK, HB, OH and PA are active on the band, often putting S9 signals into the U.K. Rarer Europeans such as ZB1, CT, UB, UA and EI show up every so often, providing further variety. Middle East countries such as 5B4, 5A3 etc. are also often worked in the late evening during the winter. Late at night and in the early morning almost anything may turn up. In the last three years U.K. stations have worked EP, EL, 5N2, W, VE, VO, FP8, HC, ZL, VP7, VS1, VP8 and other DX countries at these times. Some of these contacts were made during the summer months. Considering the power and aerial systems in use, each of these contacts represents a tremendous achievement by the amateur concerned.

When starting on Top Band DX, the requirement is much the same as on other bands. One must know when and where to look for DX stations and where to call them. The remainder of this paragraph should help the newcomer to get the "feel" of the band, and help him to avoid doing the wrong thing. OK stations, of which many are active, usually work in the range 1800 to 1850 kc/s. DL and DJ stations normally use 1820 to 1835 kc/s. Again there are many active.

PA stations are only licenced for 1825 to 1835 kc/s. HB stations use 1800 to 1850 kc/s, but are most commonly found in the range 1820 to 1840 kc/s. OH stations use 1820 to 1845 kc/s. Those currently active are OH2NB, OH2YV and OH3NY. The other, more rarely heard countries in Europe usually show up in the 1820 to 1830 kc/s range. All the above stations normally operate on c.w. and generally speaking they deprecate attempts at phone to c.w. contacts. Their available frequency band is small and one phone signal can QRM 12 usable c.w. channels! Unless the station called specifies otherwise, it is usual to call him near his own frequency. Contacts with American and Canadian stations are normally carried out on an organised, highly disciplined basis which provides an eye opener for those who have only operated on the h.f. bands. Such contacts are usually made during the period 0500 to 0800 GMT during the period October to March each year. During December and January contacts are also often possible during the period 2300 to 0100 GMT, however. The beginner on the band would be well advised to start by trying for the East Coast stations during the early morning period on Sundays. W1, 2, 3, 8, VE1, 2, 3, VO and various West Indian stations are likely to be heard if conditions are good. These stations operate in the range 1800 to 1825 kc/s. European stations call them (or call "CQ DX") in the range 1825 to 1830 kc/s REPEAT 1825 to 1830 kc/s, with 1825 to 1828 kc/s as the best frequencies. The DX station IS NEVER CALLED ON HIS OWN FREQUENCY UNLESS HE SPECIFICALLY REQUESTS THIS. Normally he is not listening there, but monitoring the 1825 to 1830 kc/s segment for replies. Calling him on his own frequency is thus not only useless - when you go over you will undoubtedly find a few very strong signals making pointed remarks about your operating habits.

Middle East stations either operate around 1801 kc/s and ask for replies in 1820-1830 kc/s sector or else come up into that sector and listen for replies near their own frequency. UK stations are allowed to use 1800 to 1825 kc/s. This, is very difficult DX, but it has been worked from Europe. ZL stations are usually around 1880 kc/s and several G/ZL contacts have been made. At least one ZS station operates around 1900 kc/s and he has been worked by W1BB. A number of G stations have worked VP8GQ on 1801 kc/s, even in high summer.

Many major Dxpeditions are now either wholly or partly Top Band affairs. Recent examples are 9A1VU (San Marino) and OH2YV/0 (Aaland Islands). Both gave a new country to many G stations.

W6, 7 and 0 stations use 1976 to 2000 kc/s. A number have been worked by G stations.

From the above it can be seen that Top Band is capable of providing a tremendous amount of interest and that DX on these frequencies is a real challenge, especially where aerial space is limited. DX can be worked with small aerials, however. Using a quarter wave antenna squeezed into a suburban garden, the writer has worked 16 countries in three continents in just over a year.

Making these contacts has provided one of the most interesting and worthwhile activities in 26 years of amateur radio. If G stations can have this amount of fun, any member of the Society who is posted overseas and can get permission to operate on this band is likely to have a real ball - and to put the Society on the international DX map in no uncertain fashion.

So here's looking forward to meeting many more Members on my favourite band. 73, DX and Cu 160.

POINTS FROM YOUR LETTERS

Am now interesting myself in QRP and wonder if any other members are similarly interested. If so we might get a QRP section under 10 watts going.
(Will any member so interested please write direct to Walter GI2DZG - Ed.)

How about a Swap and Sale column in "Mercury"?

G3PGM

(Sure, why not. "Mercury" is published in January, April, July and October and items should reach us by the first of the preceding month - Ed.)

How about a "News of Old Friends" column?

G2HCM

(No sooner said than done, see elsewhere in this issue - Ed.)

"What about an annual DXpedition, surely Royal Signals can equa1 the exploits of RAFARS"- G3RCJ.
(Well you members in exotic places, any ideas?? - Ed)

Angus-Murray Stone HZ2AMS tells me that there are only three legit stations in HZ, these are HZ1ZH, HZ1SS and HZ2AMS. HZ1AB is not legit but is known of and tolerated. HZ1AT is a pirate.

Angus takes a pretty dim view of those bods on Dxpeditions signing /4W, /AC4, etc. being recognised by ARRL and in the process of operating from these rare places putting the "mockers" on the chances of legal calls being issued. There is one legal 4W call - 4W1Z complete with documentary proof, held by Angus. The recent sortie into JY1 by certain people has put paid to any chance of legit JY1 operation for some time. Angus has been in touch with CPP re. the possibility of obtaining calls in AC4, BY and C9 when up comes someone operating from AC4 without permission. Meantime Angus is in the midst of a paper war with ARRL who want Photostat copies before they will recognise his activities from the Neutral Zones, yet require no proof from the other gents.

5B4CZ

M O R E G O S P E L by G3RUS

By the time most subscribers are reading this issue I will be firmly established with a crisp clear signal on 20 beaming from VS9 land.

Major M.H. Priestley, School of Signals, is to be the new Treasurer. I hope that he finds as much pleasure in doing the job as I have done during the past two years.

The Society now has some 250 individual members and 20 Affiliated Clubs. The bank balance is fairly substantial and we have a journal worthy of the Corps.

There is now, however, a danger that we shall not advance from this level unless some positive action is taken by Regts/Estbs/Members to stimulate Ham activity within units. Particularly we do want Affiliated Clubs and activity reports from overseas units and members. One way of achieving this is by Society stations (particularly Clubs) establishing fixed schedules with G3CIO.

There must be many hundreds of serving soldiers and thousands of ex-soldiers of Royal Signals interested in amateur Radio who have not yet joined the Society. We will be happy to supply details to anyone if you drop us a line.

Only by a continuing increase in membership can we really keep down subscription rates and help Clubs (by small grants) to get started.

We look forward to bigger and better post bags.

Good hunting and 73

A Letter from Catterick

The Ham Shack

Vimy Road

Dear OM,

At the risk of bringing down the wrath of the elements on my head I'm going to say that we've dodged the winter weather very nicely up here. A slight overnight snowfall before Christmas disappeared before lunchtime and another one in mid February only lasted two or three days. At times it has been so mild that we've opened the clubroom windows. They say all Radio Techs go to hell, Paul should be OK, he's certainly stoked up too well at times.

Four active members of the gang here took RAE in December and passed, two of them have already taken their morse tests. There are now three amateurs in the HQ Officers' Mess and I understand Doug is offering a "Worked all HQ Mess" certificate printed on a mess bill (unpaid).

We acquired a 150 watt two meter transmitter recently, darn great big ex RAF job with PA heaters so bright that you don't need to put the lights on in the shack. A new converter is under construction so we should soon be really in business on the band.

As usual there have been quite a few visitors around the shack. Bob Chidley G3RZE, on a Foreman's refresher course has spent a lot of time on 80m sideband and the Officers' Communication course spent a couple of hours with us. Now that Spring has sprung we're hoping to see you one of these days when you are in this part of the world. The shack is open every Tuesday and Thursday evening and often at other times. If you like to drop us a line we'll make a point of being open when you call.

According to the Bulletin G3CIO had the highest claimed score in the multioperator section of the RSGB 21/28 Mc/s phone contest, fingers are being worn crossed until the official results come out.

Talking of contests the Short Wave Magazine Club Contest had three RSARS stations in the results. GM3SIG of 92nd Signal Regiment AER was 8th, ourselves under the call G3SJB 68th and G3PMZ of 3/343 Squadron TA was 86th out of a total of 101 entries.

With the longer evenings thoughts are turning to National Field Day on June 6th/7th. We intend to have G3CIO/P on 7, 14 and 21 Mc/s and G3JZP/P on 1·8, 3·5 and 28 Mc/s. Hope you'll come on and work us. Better still work us on each band and then QRT; you know if all our members did that we'd be well away!!

Guess the cold war must be thawing, we had a SWL card from OK the other week with a most luscious bit of homework on it, better than the pictures of the bearded gent who invented radio anyhow. Bet that SWL gets a high percentage of replies to his reports!

Some of the gang from G3CIO are hoping: to be at the North Midlands Mobile Rally at Trentham Gardens on April 19th and will be looking out for you. Might get a chance to have a natter over a pint, understand there will be a bar.

We shall be on the air as GB3RCS during Old Comrades Weekend. Learning the lessons of last year we are going to close down at nights and let the poor b....operators get some sleep.

73
Jimmy

OLD TIMERS' CORNER

The Winner of the RSARS Telephony Contest, Lt. Col. N.I. Bower, G5HZ was commissioned in 1928 and after a short spell of illegal operation, was shown the error of his ways and operated under the joint call of G2DV with the late Lt. Col. J.H. Beeton from Catterick Camp.

Other pre-war amateur activity was as VU2JT from 1929 to 1934 and as G5HZ from 1934 to 1939. In post war years he operated as VSlDZ and as GI5HZ before eventually settling at Henley on Thames as G5HZ. The station is equipped for AM, SSB and CW on all HF bands as well as 2 metres. Oxfordshire is a fairly rare Top Band county, but G5HZ operates on the band most evenings and regularly works G3CIO either on 1·8 Mc/s or 3·5 Mc/s SSB.

At Pembroke, Capt. G. Courtney-Price, GW2OP, is an ex-member of R.E. Signals. During the first world war he was a Technical Instructor at Southern Command Signal School, first at Tynemouth Castle and later at Otley. In 1917 he installed the first RT sets in aircraft for the Royal Flying Corps and has in his possession not only the Army Mark 1 Spark set but also the TWA 2, or Telephone Wireless Aircraft Mark 2. This used speech on 440 metres and was used for artillery co-operation. In the second World War GW2OP flew in Sunderlands from Pembroke Dock.

One unusual item of equipment at GW2OP is a BC610 modified for SSB, which although rather bulky gives very good results. GW2OP's son is also an amateur, he is GW3LXI.

SOCIETY NEWS AND VIEWS

PRINCESS ROYAL DAY 1964

The Headquarters Station will operate under the callsign GB3RCS from 0700 GMT on Friday June 26th to 2000 GMT on Sunday June 28th. Special permission has been obtained for the station to be operated simultaneously on a number of bands and as a result operation will be as follows:-

HF Bands Continuous operation on 14 Mc/s or 21Mc/s when the latter is open. CW, SSB and AM.

LF Bands At all suitable times whenever additional operators are available with particular emphasis on 3·5 Mc/s on Sunday.

14 Mc/s At all suitable times whenever additional operators are available.

NOTE The station will close down nightly from 2300-0700 GMT. Last year few contacts were made during the nights and closing down will allow more intensive daytime operation.

CHANGE OF SOCIETY OFFICERS

Will members please note the address of our new Treasurer given on the front inside cover of this issue. With both the Field Secretary and Treasurer now located in Catterick even closer liaison between them will be possible.

THE 4 METRE BAND

Information has been received from War Office that the 70 Mc/s amateur band is to be extended to 70.1 - 70·7 Mc/s subject to non-interference with military users .

The letter goes on to say:-

> "Royal Signals have ties with the amateurs and it is hoped that any cases of interference will be dealt with in a manner which will not jeopardise such ties. It is believed that any interference from amateur operation will provide realistic training for Army operators, rather than be detrimental."

HEARD ON THE BAND

"The baby is called Peter after his father and Nicholas so he won’t rust" (Radial - the journal of RAIBC)

CAN YOU HELP?

If you ever work any Royal Signals or ex-Royal Signals amateur who isn't a member of the Society let the Field Secretary know. A duplicated letter pointing out the advantages of joining the Society will then be sent to him.

LOCAL BOY MAKES GOOD

The Society's first Secretary and Editor of "Mercury", Capt. J.E.P. Philp now edits "Signal", a most professional newspaper published in Singapore by 18 Signal Regiment.
A recent issue showed VS1CW being congratulated on the award of the MBE by VS1LL. Another gave news of VS1RS, the club station in Singapore, where RAE and morse classes are being run.

WHO'S ON & WHEN

G3RAQ - Sundays 1100 - 1200 on 3·5 Mc/s phone.
G8PG - Top Band CW only, Wed & Thurs. evenings, early Sunday mornings for DX (VE members please note)
GW8PG - Top Band CW occasional weekends & holidays, QTH in Denbighshire.
5B4CZ - 14 Mc/s SSB 1100-1500 GMT work permitting, 7 Mc/s CW after 2300 GMT one day in four, 3·5 Mc/s SSB by sked.

MEMBERS IN THE NEWS

Member 213 was among the radio amateurs who picked up a mysterious SOS in January. At the time the missing yacht "Christine" was in the news and the message read "SOS trawler Christine 300 miles West of Lands End. This is last time of calling. Abandoning ship." Lloyds later reported that they could not trace a trawler of that name.

INT QTH

Dennis Dumbleton, G3HCM, seeks news of the CW DX hounds who were with No 2 Wrls Regt in 1948 - 1950 and operated as MD7DC. Also the operators of G3CHR at Loughborough in 1950 - 1952.

Address:- 321 Tile Hill Lane,
COVENTRY.

ERRATUM

A note from 13th. Signal Regiment denies all knowledge of a club being formed as reported in our last issue. The Editor is still trying to find out who fed him the duff gen.

NAME	QTH	MEMBERSHIP No.
Cpl R. Bailey	124 The Ridgway, Marshalwick, ST ALBANS, Herts.. Service QTH: 92 Signal Regt., AER	186
C.H. Barlow	31 Princess Avenue, WARSOP, Nr. Mansfield, Notts... Service QTH: Cpl C.H. Barlow, 404 Sig Sqn (Press Comms) AER	64
W.G. Beaumont	40 Hollydale Road, ERDINGTON, Birmingham	213
Sigmn P. Bishop	3/343 Sqn, 42 Sig Regt (TA), Signal House, Score Lane , LIVERPOOL, 16	230
Sigmn E.J. Blackmore	21 Cromwell Road, COLCHESTER, Essex	179
S/Sgt R.A. Blackwood	3 Sqn, 42 Sig Regt (TA), Signal House, Score Lane, LIVERPOOL, 16	54
Sgt H. Broughton (WRAC)	Address unknown	153
WOII (F of S) Brown V.	208 (Comwel) Signal Sqn, Terendak Camp, c/o GPO, MALACCA, Malaya	75
D.A. Buckley	Whitecross Road, Tideswell, Nr. BUXTON, Derbyshire Service QTH: Sigmn D.A. Buckley, 404 Sig Sqn (Comm Press) AER	66
Mr A. Butler	2 Sqn, 8 Signal Regt., Catterick Camp, Yorkshire	44
Major W.D. Capjon, TD,	150 Milward Road, HASTINGS, Sussex	96
Sigmn B. Careless	30 Sig Regt. or HQ AER, Blandford	103
Major B.C. Complin	Operational Research Section, HQ BAOR, B.F.P.O. 40	219
Sigmn J.G. Convery	9 Carron Place, Springburn, GLASGOW, N.	171
Cpl R. Corner	42 Sig Regt (TA), Signal House, Score Lane, LIVERPOOL, 16	60
M.A. Ellis	Little Hill, Brownlow Road, CROYDON, Surry	223
Sigmn W. Fleming	2 Tp, 2 Sqn, 9 Sig Regt., B.F.P.O. 53	73
WOII Foulkes	3 Sqn, 42 Sig Regt (TA), Signal House, Score Lane, LIVERPOOL, 16	53
A.C. Frost	50 Abercorn Road, FARRINGDEN, Sunderland Service QTH: L/Cpl A.C. Frost, 404 Sig Sqn (Press Comms) AER	111
M. Galvin	256 Signal Squadron, B.F.P.O. 20	117
P.B. Gaunt	2 St James Walk, Horsforth, Nr. LEEDS, Yorkshire	19
W.A. Gibbs	6 Courtney Avenue, Poulton, WALLASEY, Cheshire Service QTH: Lieut W.A. Gibbs, 404 Sig Sqn (Press Comms) AER	115
H.C. Gill	40 Green Glade, Theydon Bois, EPPING, Essex Service QTH: Cpl H.C. Gill, 83 Signal Regt (AER)	224
C.J Goddard	Dovedale, Birmingham Road, BUDBROOKE, Warwick	147
S/Sgt (F of S) B.T. Godfrey	108 Stonefall Avenue, HARROGATE, Yorkshire	159
C.W.T. Green	c/o Warren Cottage, Westergate, Aldingbourne, Nr. CHICHESTER, Sussex	215

NAME	QTH	MEMBERSHIP No.
Cpl J. Haddleton	Air Formation Signal Staff, ADEN, B.F.P.O. 69	98
W.F.M. Hahn	11 St Patricks Road, COVENTRY, Warwicks...	156
Sigmn P.A. Hainsworth	Address unknown	72
Capt. A.D. Hall, R Sigs TA	3 Sqn, 42 Sig Regt (TA), Signal House, Score Lane, LIVERPOOL, 16	105
Sigmn S.J. Harmsworth	97 Barret Road, Lakenham Estate, Norwich, NORFOLK	175
J.K. Harvey	22 Elm Grove, Norton, Bromsgrove, Worcestershire	95
J. Hawkshaw	4 Eldon Drive, HARRBY, Carlisle Service QTH - S/Sgt J. Hawkshaw, 404 Sig Sqn (Press Comms) AER	126
Capt M.F.G. Haywood	124 Longlamd Drive, Totteridge, LONDON, N20	152
W. Hodkinson	29 Wellhouse Street, Barnoldswick, COLNE, Lancs...	109
Lieut (TOT) B. Hornby	9 Garden Road, WALTON-ON-THAMES, Surrey Service QTH - 92 Sig Regtt AER	187
WOI R.E. Howard	2 Sqn, 14 Sig Regt., Worcester Road, Droitwich, Worcs...	49
Sigmn W. Hudson	13 Signal Regiment, B.F.P.O. 33	116
Sgt R.T. Hughes	42 Signal Regt TA, Signal House, Score Lane, LIVERPOOL, 16	57
S/Sgt W.R. Hughes	42 Signal Regt TA, Signal House, Score Lane, LIVERPOOL, 16	55
H. Irwin	73 Risedale Road, Barrow-in-Furness, Lancs	208
P.H. Jackson	15 Oldfield Street, LEEDS, 12, Yorkshire	20
F of S N.H. Jessop	Dereham, Southend Road, Howe Green, Chelmsford. Service QTH: 404 Sig Sqn AER	129
Sgt R.H. Johnson	42 Signal Regt TA, Signal House, Score Lane, LIVERPOOL, 16	58
V.M. Johnstone	Address unknown	144
D. Jowett	70 Spring Road, BEDFORD	65
L/Cpl A. King	39 Godfrey Avenue, WHITTON, Middx.	35
T.W. Langham, MBE	13 West Ridge, Allesley Park, COVENTRY, Warwicks.	145
Major R.A. Lawson, TA	3 Sqn, 42 Signal Regt TA, Signal House, Score Lane, LIVERPOOL, 16	52
Major R.F. Little TA	3 Sqn ,42 (Lancs) Sig Regt TA, Signal House, Score Lane, LIVERPOOL, 16	51
Capt. R.A. Macheath	2 Squadron, 22 Sig Regt., B.F.P.O., 16	78
Sigmn M. Marriage	1 Tp, 2 Sqn, 9 Sig Regt., B.F.P.O., 53	74
Sigmn C.L. Mayman	256 Signal Squadron, 47 Regiment RA, BAOR, B.F.P.O. 20	211

NAME	QTH	MEMBERSHIP No._
Sigmn R. McArthur	Branchal Lodge, Coltness Road, WISHAW, Lanarks...	178
Sigmn A.C. McGrady	3 Sqn, 42 (L) Sig Regt TA, Signal House, Score Lane, LIVERPOOL, 16	151
Cpl A.G. Moffitt	42 Signal Regt TA, Signal House, Score Lane, LIVERPOOL, 16	59
Sigmn C.J. Mooney	2 Barsby Walk, Stocking Farm Estate	176
A. More	19 The Coppice, Kirkham, Lancs Service QTH:- Sgt A. More, 404 Sig Sqn (Press Comms) AER	114
K.W.L. Morgan	8 Beech Close, Oxlease, HATFIELD, Herts...	220
M.B. Morgan	17 Gerneth Close, SPEKE, Liverpool, 24	161
Sgt F. Moss	2 Longroyd View, Burton Road, LEEDS, 11, Yorkshire	132
Sgt Nixon	Address unknown	38
Mr Pat O'Keefe	Catterick SWS Troop, Gough Road, Catterick Camp. Yorkshire	202
Mr G. Pearson	Moor Road, Bellerby, LEYBURN, Yorkshire	201
Sigmn W. Pickles	42 Signal Regt TA, Signal House, Score Lane, LIVERPOOL, 16	212
Sigmn R.J. Platt	11 Signal Regt., Catterick Camp, Yorkshire	170
S/Sgt D.C.Pocock	8 Signal Regt., Catterick Camp, Yorkshire	169
The Junior Tradesman's Regiment	'A' Coy, Kinmel Park Camp, RHYL, Flintshire	AFF 9
WOII Richardson	8 Signal Regt., Catterick Camp, Yorkshire	36
R.B. Ridley Martin	Racal Electronics Ltd., Western Road, BRACKNELL, Berks...	48
Capt. A.D. Roberts, TD	59 Signal Regiment (TA), TA Centre, Everton Road, LIVERPOOL, 6	218
W. Robinson	62 Manners Road, ILKESTON, Derby	232
G.F. Roper	133 Dartmouth Road, Forest Hill, LONDON, S.E. 23	67
Capt. E.W.J. Sandy	2 The Paddocks, LEIGHTON BUZZARD, Service QTH :- 92 Sig Regt AER	188
Lieut. Iain D. Scott	School of Signals, Catterick Camp, Yorkshire	183
Lt. Col. S. Schofield (Retd)	Junior Leaders Regt. RAOC, Dettingham Bks., BLACKDOWN, HANTS...	AFF 10
Royal Canadian Scool of Signals	Vimy Barracks, Kingston, ONTARIO, Canada	AFF 20
K. Fawkner-Simpson	4 K.H.I. Cottages, Hextable, SWANLEY, Kent	158
14 Signal Regt., AARC	Robinswood Barracks, GLOUCESTER	AFF 8
59 Signal Regt., (TA) ARC	TA Centre, Everton Road, LIVERPOOL, 6	AFF 15

NAME	QTH	MEMBERSHIP No.
257 Signal Squadron	B.F.P.O. 20	AFF 19
316Signal Squadron TA (Arty Bde)	TA Centre, Stamford Brook Avenue, LONDON, W.6.	AFF 14
404 Signal Squadron (Press Comms AER	c/o Capt. J.M.S. Sweet, 30 Preston Road, LYTHAM, Lancs...	AFF 13
O/Cadet R.E.F. Spencer	Rhine Coy., Victoria College, RMA Sandhurst, CAMBERLY, Surrey	163
Cpl M.G. Springer	2 Squadron, 8 Signal Regiment, Catterick Camp, Yorkshire	194
A. Starkey	34 Thorley Lane, BISHOP STORTFORD, Herts...	81
Sgt P. Steers	113 Jeans Way, DUNSTABLE, Beds...	190
I.C. Stevenson	74 St Quintin Avenue, LONDON, W.10	154
Cpl J. Strickland	24 Signal Regiment, Catterick Camp, Yorkshire	209
Sigmn M.A.J. Taberner	'Childe of Hale', 6 Church End, HALE, Lancs...	180
H. Tallis	12 Zetland Street, CLACKMANNAN	86
2/Lieut M.G. Taylor	Headquarters Mess, School of Signals, Catterick Camp, Yorkshire	226
B.C. Torrill	Address unknown	32
Sgt Threlfall	8 Signal Regiment, Catterick Camp, Yorkshire	33
L/Cpl L.W. Thompson	20 Regiment, RA, Barnard Castle, Co. Durham	173
Sigmn P.J. Towns	45 Tresham Street, KETTERING, Northants..	177
R. Taylor	120 Cobham Road, Fetcham, LETHERHEAD, Surrey	150
A.E. Wakeman	13 Fairhaven, Sundridge Park, YATE, Bristol	9
E.J. Walke, TD	13 Southbrook Place, Micheldever, WINCHESTER, Hants...	13
R. Webster	138 Parklands, Little Sutton, Cheshire	28
Major General A.M.W. Whistler, CB, CBE	Director, J.C.E.S., Ministry of Defence, LONDON	2
Sigmn Whitehead	Address unknown	93
L Williams	91A Ashley Lane, Moston, MANCHESTER, 9	214
N. Williams	11 Bramble Gardens, ASPLEY, Nottingham	228
L/Cpl W. Wilson	Address unknown	71
Lieut L..A. Woods	40 Whinny Hill, Catterick Camp, Yorkshire	181
Sgt J.T. Worrall	204 Signal Squadron (Gds Bde Gp), B.F.P.O. 44	225
Sigmn M. Wreghitt	43 LyeLL Street, SCARBOROUGH, Yorkshire	172
Bains	Address unknown	41

CALL SIGN	NAME	QTH	MEMBERSHIP No.
G2EC	Maj Gen E.S. Cole	28 Royal Avenue, Chelsea, LONDON, S.W.3.	1
G2JF	J.C. Foster	Wye College, New Ashford, KENT	134
G2TP	Maj C.W. Andrews	Haslemere, Pilgrims Way, West Humble, DORKING, Surrey	18
G2WH	Lt Col W.D. Horniman	58 Sturges Road, WOKINGHAM, Berks...	146
G2AHL	J.A. Rouse	New Ruskin House, Little Russel Street, LONDON, W.C.1.	195
G2BPW	Lt Col I.W.K. Smith	Ignors, Compton, GUILDFORD, Surrey	148
G2HDY	J. Ballard	169 Huntingfield Road, Roehampton, LONDON, S.W.15	142
G2HNP	W. Short	88 Lynn Road, Newbury Park, ilford, Essex	12
G3HN	Lt Col W.W. Cock	18 Signal Regiment, c/o G.P.O., SINGAPORE	22
G3ADS	R. Sawkins	21 Newcome Road, Heath End, FARNHAM, Surrey	143
G3ADZ	Major D.W.J. Haylock	3 Norris Gardens, Grange Esatae, HAVENT, Hampshire	39
G3ARM	Capt. R.L.F. Ramsey	32 Sydney Road, GUILDFORD, Surrey	222
G3BEC	J. Clark	107 Eastland Road, YEOVIL, Somerset	113
G3BJA	H.A. Bonnett	58Prince of Wales Drive, Battersea Park, LONDON, S.W.11.	221
G3CIO	Headquarters Station	Catterick Camp, CATTERICK, Yorkshire	
G3CIV	Capt F. Sweet	30 Preston Road, LYTHAM, Lancs...	63
		Service QTH:- 404 Signal Squadron (Press Comms) AER	
G3CRP	J. Pigou	7 Gloucester Walk, LONDON, W.8.	43
G3DBU	W. Bevan	10 Hilltop Cres., HARROGATE, Yorkshire	130
G3DBU	E.R. Frarey	31 St Johns Road, Hipswell, CATTERICK CAMP, Yorkshire	29
G3DNF	G.J. Bennett	Kingcausie, West Winterslow, Wiltshire	185
G3DOJ	W.J. Omer	81 Eastfield Road, BURNHAM, Bucks...	110
G3DPS	S/Sgt J. Cooper	66 Burley Avenue, Pennypot Lane, HARROGATE, Yorkshire	90
G3DWW	G.E. Cripps	115 Bushey Road, Raynes Park, LONDON, S.W.20	197
G3EJF	J.E. Hodgkins	Bridge House, Hunton, BEDALE, Yorkshire	4
G3EKL	Lieut R.A. Webb	610 Signal Eqptt Tp., C.O.D., DONNINGTON, Salop	46
G3EMO	W. Ward	24 Manor Way, WOOLTON, Liverpool, 25	10
G3FDU	Major J.A.Blandon	215 Dower Road, SUTTON COLDFIELD, Warwicks...	127
G3FGN	Capt A.C. Earl	Armed Forces Signal Regt., Rifle Range Road, KUALA LUMPER, Malaya	68
G3FMW	J. Stockley	22 Manor Gardens, KILLINGHALL, Harrogate, Yorkshire	131
G3FQN	Mr R.F. Gilding BEM	24 Conway Street, HOVE, 3, Sussex	231
G3GVV	Major R.J. Hughes	FARLEIGH, 65 Harlands Road, Haywards Heath, Sussex	104
		Service QTH:- 92 Signal Regt., AER	
G3HCM	D. Dumbleton	321 Tile Hill Lane, COVENTRY, Warwickshire	16

CALL SIGN	NAME	QTH	MEMBERSHIP No._
G3HJI	S/Sgt B.A. Bennett	225 Signal Squadron, B.F.P.O., 40	70
G3HKR	Club Station AAS Harrogate	Army Apprentices School, HARROGATE, Yorkshire	AFF 11
G3HZW	D.C. Mainhood	12 St Mildred's Road, RAMSGATE, Kent	42
G3IBB	F of S R. Walmsley	257 Signal Squadron, B.F.P.O. 20	37
G3IDG	F.A. Herridge	96 George St., BASINGSTOKE, Hampshire	24
G3IUH	Major P.S. Harris	32 Avondale Road, Waterlooville. PORTSMOUTH, Hants...	77
G3JFW	F.S. White	82 Nottingham Road, HUCKNALL, Nottingham	78
G3JKO	M. Dransfield	Institute for Agricultural Research, Ahmado Bello University Samaru, ZARIA, N. Nigeria	139
G3JNO	F. Buck	30 High Street, BURNHAM-ON-CROUCH, Essex. Service QTH:- 92 Sig Regt. AER	189
G3JZP	Mrs. Jean Hodgkins	Bridge House, Hunton, BEDALE, Yorks...	120
G3KLX	D.V. Richey	22 The Fridays, East Dean, EASTBOURNE, Sussex Service QTH: 404 Sig Sqn AER	206
G3KPQ	S/Sgt W. Graham	c/o Military Attache, British Embassy, KHARTOUM, Sudan	99
G3KYU	J. Ashford	9 Well Meadow Gardens, Copthorne, SHREWSBURY, Shropshire	94
G3LMX	T.W. Mitchell	7 Burlish Crossing, STOURPORT-ON-SEVERN, Worcs...	25
G3LOV	M.J. Francis	8 Lipsham Close, Banstead, Surry. Service QTH:- 92 Signal Regt., AER	191
G3LWQ	H. Hilton	60 Montrose Drive, SOUTHPORT, Lancs...	216
G3LWS	E. Ross	Civilian Wing, 9 Signal Regiment, B.F.P.O., 53	89
G3MEF	T. Wylie	Wylcot, Manor Park, BARNSTAPLE, Devon	100
G3MKR	B. Haywood	15 Tunnicliffe Street, MACCLESFIELD, Cheshire	11
G3MLM	S/Sgt D. Parker	1 Recce Regt., Federation Signals, MALACCA, Malaya	166
G3MUU	G.E. Hathaway	Yolander, The Street, Kennington, ASHFORD, Kent	165
G3NJM	Capt. J.E.P. Philp	263 Signal Squadron (Trg), c/o GPO, SINGAPORE	7
G3NKR	2/Lieut M.A. Rolands	5 Eastover Close, WESTBURY-ON-TRYM, Bristol Service QTH:- 57 Signal Regt (TA)	203
G3NOL	Cpl Brown-Greaves	HQ Bty. R Signals Tp., 49 Regt (RA), B.F.P.O. 16	92
G3NOT	Sgt D. Tanner	9th Signal Regt., B.F.P.O. 53	80
G3NUI	A.T. Dobson	58 Keppel Road, CHORLTON-cum-HARDY, Manchester, 21	140
G3NVK	R. Winters	245 Ashfordby Road, MELTON MOWBRAY, Leicestershire	138
G3NWZ	Major J.L. Donne	18 Signal Regiment, SINGAPORE	45
G3NZY	WOII R. Shelley	8 Signal Regiment, Catterick Camp, Yorkshire	91
G3OAZ	Sgt J. Akehurst	Junior Leaders Regiment, DENBURY	62
G3OEK	A.E. Knevett	Copse View, Newton Valence, ALTON, Hants...	164
G3OFV	Cpl D.A.C. Jack	Dungar Park, ROSCREA, Co. Tipperary, EIRE	31

CALL SIGN	NAME	QTH	MEMBERSHIP No.
G3OHJ	E.W. Ashley	188 London Road, ROMFORD, Essex	30
G3OKB	M. Ireson	Church Lane, Bulwick, CORBY, Northants..	69
G3OKX	J.W. Roberts	21 Addison Drive, ALFRETON, Dorbys..	8
G3OMH	D.F.S. Hayward	Hazeldene, 6 Larkhill Road, YEOVIL, Somerset. Service QTH: 404 Sig Sqn AER	112
G3OOB	WOII L.Buckley	12 Newton Park Drive, LEEDS, 7, Yorkshire	174
G3OPL	WOII Milham	57 Bty RA, 21 Regt RA, B.F.P.O., 30	119
G3ORY	Lieut R.G. Titterington	3 Sqn, 42 Signal Regt., Signal House, Score Lane, Liverpool, 16	106
G3OYP	J.K. Fidler	4 St Lawrence Drive, Eastcote, PINNER, Middlesex	108
G3PCG	D. Askew	Ebenezer Cottage, 28 Bolehill, Derby. Service QTH: 404 Sig Sqn AER	124
G3PCV	Capt P.C.V. Dolan	HQ Mess, Catterick, Yorkshire	47
G3PDS	W.Lawrence	6/445 New John Street West, NEWTON, Birmingham, 19	137
G3PFC	A.J.Rawlings	43 Mackie Avenue, FILTON, Bristol	21
G3PGM	E.Davies	11 Tape Lane, Hurst, READING, Berks..	27
G3PIC	G.Mclean	41 Olive Mount Heights, LIVERPOOL, 15	123
G3PNE	Lieut J.M. Passmore	St Johns College, CAMBRIDGE	79
G3PNF	Lieut D.A. Bowden	Army Apprentice School, HARROGATE, Yorkshire	85
G3PNU	E.M. Clark	5 Bedford Street, MILLOM, Cumberland Service QTH:- L/Cpl E.M. Clark, 404 Sig Sqn (Press Comms) AER	118
G3PYZ	Club Staion Jnr Ldrs Regt	NEWTON ABBOT, Devon	AFF 1
G3RAQ	H.J. Powell	Capella, Denstone Avenue, Ellesmere Park, ECCLES, Manchester	155
G3RCJ	S/Sgt T. Quinn	57 Signal Regt (TA), Horfield, BRISTOL, 7	157
G3RFI	L/Cpl P. Scottorn	2 Squadron, 8 Signal Regt., Catterick Camp, Yorkshire	133
G3RFP	Capt F.C.D. Taylor	77 High Street, Cottenham, Cambs.. Service QTH:- 404 Signal Sqn (Press Comms) AER	207
G3RGF	R.D. Young	3 Bell Hill, Danbury, CHELMSFORD, Essex	135
G3RII	H. Armstrong	Outdoor, Williton Hill, WATCHET, Somerset Service QTH:- Cpl H. Armstrong, 404 Sig Sqn (Press Comms) AER	205
G3RLM	K.R. Belcher	Pine View, Savill Road, LINDFIELD, Sussex	160
G3ROY	Club Station, 50(N) Sig Regt TA	DARLINGTON	AFF 6
G3RUS	Major L. Beaumont	240 Signal Squadron, Imphal Barracks, YORK, Yorkshire	122
G3RWM	R.W. Martin	3 Buckingham Road, LIVERPOOL, 13	149
G3RZE	WOII R. Chidley	240 Signal Squadron, Imphal Barracks, YORK, Yorkshire	168
G3SAE	WOII R. McMillan	26 Beatty Hall, P.O. Central Training School, STONE, Staffs... Service QTH: 410 (P.T.F.) Signal Sqn AER	193

CALL SIGN	NAME	QTH	MEMBERSHIP No.__
G3SAX	J. Robinson	Adrien, Queensway, GERRARDS CROSS, Bucks...	198
G3SIG	Club Station, 92 Sig Regt AER	Tannadice, By Forfar, ANGUS	AFF 5
G3SIQ	A.J. Greenwood	83 Ash Road, Cuddington, Nr. Northwich, Cheshire Service QTH:- Sigmn A.J. Greenwood, 405 Sig Sqn (Press Comms)AER	204
G3SJB	Capt A.D. Yerxa (Royal Canadian Signals)	School of Signals, Catterick Camp, Yorkshire	196
G3SJF	P. Heaton	17 Bracken Way, Highcliffe, CHRISTCHURCH, Hants...	200
G3SPQ	Club Station, 240 Sig Sqn	Imphal Barracks, Fulford Road, YORK, Yorkshire	AFF 18
G3SQB	Club Station, 58 Sig Sqn (TA)	58 Signal Regt (TA), Wolseley House, Fallings Park, WOLVERHAMPTON	AFF 16
G4JT	Major D.A.W. Clark, TD	99 Ennersdale Road, KEW, Surrey. Service QTH:- 41st Signal Regt (TA) (Princess Louise's Kensington Regt) 190 Hammersmith Road, LONDON, W.6.	17
G5HZ	N.I. Bower	Little Priory, Peppard, HENLEY-ON-THAMES, Oxon	23
G5PM	Club Station, RMA Sandhurst	Headquarters, The Royal Military Academy Sandhurst, CAMBERLEY, Surrey	AFF 12
G5TV	Col W.H. Lloyd, CBE, MC, TD	13 Monro Gardens, HARROW WEALD, Middx	182
G5YN	Lt Col Sir Evan Y. Nepean, Bart	'Greystones', Peffant, SALISBURY, Wilts...	40
G6MA	Lt Col H.O. Pargeter	39 D'Abernon Drive, COBHAM, Surrey	184
GI2DZG	W.E. Caughey	35 Gilnahirk Park, Cherry Valley, BELFAST, 5, N.I.	5
GI3ALT	G.H. Brooks	78 Erinvale Avenue, Finaghy, BELFAST, 10, N.I.	199
GI3HXV	R. Parsons	45 Erinvale Avenue, Finaghy, BELFAST, N.I.	14
GI3IWD	Capt J.W. Douglas	21 Wellington Gardens, Bangor, Co. Down Service QTH:- 66 Sig Regt TA, Clonaver Park Camp, BELFAST	82
GI3PUE	Club Station, 66(Ulster) Sig Regt TA	Clonaver Park, BELFAST, 4, N.I.	AFF 7
GM2HIK	Lieut J.A. Clark	The Boal, Reswallie, FORFAR, Angus. Service QTH:- 92 Signal Regiment,AER	97
GM3AWF	D.F. Craig	3 Riverview Terrace, Bo'Ness, Westlothian	102
GM3GFO	J.W. Blackery	5 Kirkmay Road, CRAIL, Fife	6
GM3IAA	J. MacIntosh	Broom Park, Cradlehall, INVERNESS	107
GM3KLA	W.A. Sinclair	Ark, Haroldswick, SHETLANDS	87
GM3NXA	P. Gordon	2 Kintillo Road, BRIDGE OF EARN, Perthshire	101
GM3NXM	Capt W.G. Borland	6 Burnside Way, LARGS, Ayrshire	136
GM3OJC	W. Whyte	43 Middlefield Place, ABERDEEN Service QTH:- S/Sgt W. Whyte, 404 Sig Sqn (Pres Comms) AER	128
GM3PFU	W. Laughlin	2 Kinglas Road, Stonedyke, Bearsden, GLASGOW	167
GM6RI	Lt Col W. Robertson	School House, Tannadice, by FORFAR, Scotland	125

CALL SIGN	NAME	QTH	MEMBERSHIP
GW2OP	Capt G. Courtenay-Price, TD	Hillcourt, Freshwater East, Pembroke	15
GW3ONU	Major D. Barry	200 Signal Squadron, B.F.P.O., 41	76
GW3PPS	A.E. Cook	45 Ifield Crescent, Aberbargood. Glamorgan. Service QTH:- Sigmn A.E. Cook, 92 Signal Regt., AER	192
GW8PG	A.D. Taylor	37 Pickerill Road, Greasby, Upton, WIRRAL, Cheshire Service QTH:- Major A.D. Taylor, 92 Signal Regt (Special Comms) AER	26
DL2AB	Lieut (TOT) D.A. Bowden	Army Apprentices School, HARROGATE, Yorkshire	85
DL2AH	Club Station, 204 Sig Sqn (Gds Bde Gp)	B.F.P.O., 44	AFF 17
DL2AM	WOI Milham	57 Bty RA, 21 Regt RA, B.F.P.O. 30	119
DL2BL	Cpl R.S. Ford, R Signals	4/7 R.D.G., B.F.P.O.,17	227
DL2DD	F of S Walmesley	257 Signal Squadron, B.F.P.O., 20	37
DL2HO	Major D. Barry	200 Signal Squadron, B.F.P.O., 41	76
EI3AH	Cpl D.A.C. Jack	Dungar Park, Roscrea, Co. TIPPERARY, Eire	31
VE1ADQ	Capt A.D. Yerxa (Royal Canadian Signals)	School of Signals, Catterick Camp, Yorkshire	196
VE2BOE	F.V. Greenleaves	Canadian Marconi Company, c/o RCAF Station Knoblake, P.O. Box 1007 Schefferville, QUBEC, Canada	121
VE3BFC	J.J. Jarvie	Box 205, Stirling, ONTARIO, Canada	141
VQ2W	P. Golledge	PO Box 1149, KITWE, N. Rhodesia	162
VS1LB	Club Station Singapora	CR Sigs Branch, Singapore Base District, GPO, SINGAPORE	AFF 4
VS1LL	Lt Col W.W. Cock	18 Signal Regiment, c/o GPO, SINGAPORE	22
VS1MB	Capt J.E.P. Philp	263 Signal Sqn (TRG), c/o GPO, SINGAPORE	7
VS9ABT	Major B.H. Townson	The Priory, Odiham, Hants...	88
VS9ASS	Major G.S.Symons	HQ Mideast,ADEN	3
5B4CZ	E. Ross	Civilian Wing, 9 Signal Regiment, B.F.P.O., 53	89
5B4NO	Sgt D. Tranner	9th Signal Regt., B.F.P.O. 53	80
5B4SS	Cpl Nicholson	3 Sqn, 9th Signal Regt., B.F.P.O. 53	83
5B4TJ	Club Station, 261 Sig Sqn	B.F.P.O. 53	AFF 3
5B4TX	Club Station 259 Sig Sqn	B.F.P.O. 53	AFF 2
5N2JKO	M. Dransfield	Institute for Agricultural Research, Ahriado Bello University, Samaru, ZARIA, N. Nigeria	139
5N2RSB	S/Sgt R. Briggs, BEM	1 Bde Signal Troop, PMB 2022, KADUNA, Nigeria	217
9M2ER	Lt Col J.C. Clinch	17 (GURKHA) Signal Regt., SEREMBAN, Malaya	61
9M2EZ	S/Sgt D. Parker	1 Recce Regt., Federation Signals, MALACCA, Malaya	166
9M2GF	WOII Craze	1 F.I.B. Signal Squadron, KUALA LUMPUR, Maiaysia	210