



**THE JOURNAL
OF
THE ROYAL SIGNALS
AMATEUR RADIO SOCIETY**

NUMBER 14

DECEMBER 1965

OFFICERS OF THE SOCIETY

PRESIDENT : Brigadier R.H.E ROBINSON, OBE, ERD, Director of Telecommunications

VICE PRESIDENT : Major General E.S. COLE, (RETD), CB, CBE. **CALL SIGN G2EC**

TREASURER : Major M.H.PRIESTLEY, Royal Signals,
School of Signals,
CATTERICK CAMP,
Yorkshire.

HQ SECRETARY : Lieutenant Colonel (Retd) J.S. MARTINSON
Signals 1(A),
Defence Signal Staff,
Ministry of Defence,
LONDON, S.W.1.

FIELD SECRETARY : Mr. J.E. HODGKINS, **CALL SIGN G3EJF**
2 Squadron,
8 Signal Regiment,
CATTERICK CAMP,
Yorkshire.

HEADQUARTER STATION - CATTERICK CAMP - GB3RCS/G3CIO

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The Officers of Royal Signals Amateur Radio Society
and the staff of Headquarters Station G3CIO wish all members

A HAPPY AND PROSPEROUS NEW YEAR

EDITORIAL

In this issue of MERCURY you will find the Minutes of the Annual General Meeting. Perhaps the average member may think it of little concern! But it does concern YOU. It concerns you in several ways.

With effect from this issue we shall be making payment for all articles which appear in the journal provided they fill at least one page. We await the avalanche.

Talking of money matters, we shall be running another Fund Raising Draw and you will receive tickets in due course. Your support last year was wonderful and we hope you will give it again. Because of the support you gave last year we can now make more generous grants to Unit Radio Clubs which are affiliated to the Society.

Details of the "Royal Signals Amateur Radio Award" are given in this issue together with dates of Activity Periods to help members to qualify. Even if you can only manage to get on for half an hour please do so and help other members by QSLing the contacts you make. This is not an open award it is for members only.

Membership of the Society is now open to all serving soldiers. Do you know an amateur who is eligible under this rule? If so, either recruit him yourself or ask us to send him details.

So, you see, the A.G.M. does concern you. It is the occasion when decisions affecting the future well-being of the Society are taken.

No organisation can afford to stand still and Royal Signals Amateur Radio Society must continue to move forward if it is to be successful.

73

ECHO JULIET FOXTROT

ACTIVITY PERIODS

On the LAST SUNDAY OF EACH MONTH from 1000 - 1200 And 1400 1600 UK time.

Approx. Frequencies:- 3530, 14050 and 21050 Kc/s on CW
3700, 14120 and 21150 Kc/s on Phone (AM or SSB)

UK members are particularly asked to attempt to contact overseas members on 14 and 21 Mc/s during these periods.

Ring these dates on your calendar:- Jan 30th, Feb. 27th, Mar 27th, Apr. 24th.

BCNU

MINUTES OF THE ANNUAL GENERAL MEETING OF THE
ROYAL SIGNALS AMATEUR RADIO SOCIETY
HELD AT THE MINISTRY OF DEFENCE WHITEHALL ON FRIDAY 29TH OCTOBER 1965
COMMENCING AT 1430 HOURS

PRESENT

Brigadier R.H.E. ROBINSON
(President and Chairman)

Maj. Gen. (Ret'd) E.S. COLE
(Vice President)

Lt. Col. J.C. CLINCH	London District
Major J.E.P.PHILP	30 Signal Regiment
Major R.J. HUGHES	92 Signal Regiment AER
Major R. BARRETT	Western Command
Major M.H. PRIESTLEY	Treasurer
J.E. HODGKINS Esq	Field Secretary
Major M.W. SIMMS-REEVE	Eastern Command
Lt. Col. (Ret'd) H.O. PARGETEE	DSS 2 MOD
Capt. (Ret'd) G. COURTENAY-PRICE	
Cpl. P.F. SCOTTORN	65 Signal Regiment (TA)
Lt. Col. (Ret'd) Sir EVAN Y NEPEAN	Southern Command
Capt. I.D. SCOTT	11 Signal Regiment
Officer Cadet D.F. MOIR	RMA Sandhurst
I. WHITWORTH Esq	63 Signal Regiment (TA)
Officer Cadet P.N. HENWOOD	Nottingham University OTC (TA)
Cpl. G.E. GRAHAM	3 Squadron 14 Signal Regiment

Lt. Col. (Ret'd) J.S. MARTINSON
HEADQUARTERS SECRETARY.

ITEM I - OPENING ADDRESS

1. The Chairman welcomed all to the Meeting. The presence of Major General Cole was particularly welcomed as our member No. 1 whose efforts had brought the Society into being. The increase in membership during the year was gratifying rising from 285 to 371 individual members. In addition 7 more Unit Amateur Radio Clubs have become affiliated.
2. The Draw met with a tremendous response from members and over £100 was raised. The first prize winner was Major Gus Taylor GW8PG of 92 Signal Regiment AER.
3. There were several encouraging instances of the position the Society holds in the Army. The Field Secretary was approached by Middle East Command for our views on proposed new Amateur Licence regulations for Aden and the South Arabian Federation. The Royal Signals Institution have notified their intention of retaining copies of all issues of Mercury as they felt that they have considerable historic interest and merit keeping in the archives. 10 Signal Regiment have made profitable use of Amateur Radio in recent recruiting displays.

4. The Chairman then described the most generous presentation which The Marconi Company were making to the Society through the good offices of Major Reg Laws. A D11 station would shortly be consigned by them to Catterick. This equipment would be of very great value. The present SSB transmitter is much lower power and the FSK facility of the D11 would enable the Society to join a small number of Amateur Stations using radio teleprinters.

5. The Chairman concluded by tending his congratulations to Lt. Col. Nepean and to Major Philp whose contributions were voted best in the four Mercury issues October 64 - July 65. Marconi R51 receivers have been sent to them as prizes.

ITEM II - MINUTES OF THE PREVIOUS GENERAL MEETING

6. Copies of the minutes were circulated and studied and were duly passed.

ITEM III - FIELD SECRETARY'S REPORT

7. The past year had been unique in the Society's history in that throughout the period there had been no change of Field Secretary or Treasurer. This had made for continuity of effort and had prevented the increased membership making the task of running the Society impossible. At times the telephone between them had resembled the Hot Line but the advantages of having both Officers within the few hundred yards of each other were obvious.

8. Four issues of Mercury have appeared during the year but it had been a near thing. The source of the items which appeared in the journal was the membership of the Society and at one time it looked as though the next issue would consist of two covers and an Editorial. However a small number of members rallied round and we were able to publish on time, albeit a rather thin issue. It was intended that the next few issues should contain not more than one lone technical article per issue. This would enable a stock of technical articles to be built up and would help to prevent future crises such as occurred earlier in the year. He hoped there would be sufficient copy of a non-technical nature to avoid any reduction in the number of pages. In this context it was interesting to note that in the ballot for the best articles published in four issues the two leaders were in striking contrast to one another. One was of a technical nature and described the working of a piece of measuring equipment whilst the other was a humorous account of its author's efforts to contact Catterick during Reunion Weekend. It would appear that members did not want too technical a diet.

9. If we were to continue to publish a worthwhile journal more members must join the small band of contributors who had helped to keep Mercury going. Articles on all aspects of Amateur Radio were still urgently needed. In the past it had been the more technically minded members who had submitted the majority of the articles published. He had been accused of slanting the journal to the technician member but until such time as news and other materials were forthcoming it would be impossible to produce a more balanced publication. Contributions could be submitted in any form on any stationery the member had available and as long as he could read the writing and understand the diagrams there was no difficulty in reproducing the article. He appealed to all members to forget their shyness and have a go.

10. Once again an item from Mercury was reproduced in part in Short Wave Magazine to the financial benefit of the author and the journal has been quoted several times in the Amateur Radio press.

11. He reported that the Society QSL cards were selling well particularly now that they were able to overprint members' call signs etc. Their initial order was soon sold and a repeat order was going well. Their other venture, members' notepaper, was however not selling so well despite the fact that at a penny a sheet it was by no means expensive.

12. The HQ Station at Catterick has continued to be active, both in contests and at other times. During the Annual Reunion there was a high level of activity and many members were contacted. One feature of the year's activity was that the station was operated for much of the time by Old Comrades, one of whom came especially from Liverpool to spend most of the weekend at the station. The regular operators were most grateful for the assistance these former members of the Corps gave.

13. Their annual contests attracted more entrants than last year and the winners were the club station of 65 Signal Regiment in the CW contest and Lt. Ray Webb of Donnington in the Telephony contest. If they adopted the award proposals under Item VII of the Agenda he proposed we drop the contests in favour of regular activity periods.

14. Among other activities at Catterick we were this year running classes for the City & Guilds Radio Amateurs' Examination in conjunction with the RAEC .

During the summer Society Members took part in two unusual activities. One group operated for a fortnight from the Isle of Man and described their visit as "The Royal Signals DX pedition to the IOM". Another group from 14th Signal Regiment operated from Lundy Island for a week. By all accounts both parties enjoyed themselves and they certainly gave the Corps and the Society valuable publicity. Perhaps next year other groups of members would organise similar activities.

ACTION

15. As members would remember we ran a Fund Raising Draw during the year. The Treasurer would be dealing with the financial aspects but he wanted to say how heartening it was to see the support members gave. Neither the Treasurer nor himself had had so much mail in so short a time.

16. The President had mentioned the increase in membership during the year. We continued to send publicity literature to potential members. The main gap in membership was among affiliated Clubs. There were a number of units of the Corps with Amateur Radio Clubs which have not yet affiliated despite letters of invitation from the Society.

17. During the past year it has become evident that the Society was becoming well known in as much as he had become a clearing house for letters dealing with matters as diverse as gifts to the Corps Museum, accommodation for Old Comrades Weekend and assistance with training problems. These letters had been passed on to the appropriate people.

18. Members of the Society continued to be active on the amateur bands as witness the regularity with which their call signs appeared in the results of various contests. It was with great pleasure that he contacted six members within a fortnight of getting his own station on the air.

19. The Meeting recalled that last year he had concluded his report on a sour note. He did not intend to do so this year. The Instructional duties he had had in recent months had been less onerous and had allowed him time for a more normal home life.

20. He wished publicly to express his thanks to many people at Catterick whose co-operation had made the job possible, particularly the powers that be of his own Regiment who had put up with an awful lot. As they knew there were only a few amateurs at Catterick at present. These Gentlemen had helped in various ways with the many activities of the Society's Headquarters Station.

ACTION

It would be perhaps invidious to single out individuals but he had to mention S/Sgt Pocock whose efforts had relieved him of the day to day worries of the maintenance and administration of the station.

21. Under the present circumstances, and provided that his instructional duties did not become more time consuming, it would be possible for him to carry on if the meeting so wished. There was one matter which he felt must be borne in mind. At all costs we must avoid letting the Society get into a rut. There was always the danger of stagnation if the reins remained in the same hands for too long one tended to become too engrossed in day to day administration and ceased to look for new ideas. When at some future date an officer with the necessary experience for the post of Field Secretary became available in Catterick let him apply a new broom to the Society's affairs without delay.

The Chairman thanked the Field/Sec for his invaluable work and assured him that his offer to continue was warmly welcomed and was carried nem con.

22. The Chairman asked if the Trg Bde were feeding their operators through the HQ Station during the year. The Field/Sec replied that it had not really materialised. The Chairman then directed that a letter should be sent to Commander Trg Bde reminding him of this arrangement.

HQ Sec

ITEM IV - TREASURERS REPORT

23. Copies of the Report including minor Audit Board observations, and Balance Sheet were studied by the Meeting (Attached). The funds were healthy showing an excess of income over expenditure of £141 as compared with a deficit of £26 in the previous year.

24. The Chairman although welcoming the increase, stated that we should take all reasonable measures to add to our balance in order to be able either to spend it on the HQ station or to help deserving affiliated cases with Grants. He strongly advocated another lottery. Gen Cole concurred and seconded this with the proviso that beneficiaries were truly deserving. The motion was carried with the intention, 1st, 2nd and 3rd prizes would be £50, and £5 and £5 respectively, prizes to be redeemed by vouchers which would not limit the individual choice of the winners concerned. Tickets to be provided accordingly.

Field/ Sec
Treasurer

25. The policy of grants was discussed and it was decided that:

a. Present Treasurers authority for up to £10 would be increased to £20.

b. Present President's powers would be increased from £40 to £80.

Grants would not be made to individuals but to affiliated clubs, or in exceptional cases to a deserving member who was utilising grant to form an affiliated club It must, however, be made clear that in the event of a Club's closure and thereby ceasing to be affiliated the material purchased with the Grant would be returned to the Society.

d. All requests for grants must come through OC unit in every case.

Field/Sec
Treasurer

26. Lt Col Nepean raised the proposal that:-

a. Mercury should in future contain a happy balance between tech and non-tech/humorous articles.

b. Payment should be made at some agreed scale of contribution.

After deliberation both these points were agreed and it was decided that an acceptable fee would be to the order of £1 a page (75% print). The final decision on the payment to be made on any article shall rest with the Editor.

27. The Treasurer announced that he would be obliged to vacate his appointment in Feb./Mar 66 on posting. The Chairman directed that Commander Trg Bde be so advised and be requested to arrange for a successor to Major Priestley, whom he thanked for his services to the Society.

HQ Sec

28. It was confirmed that the Society HQ Station would remain in Catterick, upon the move of the School of Signals.

ITEM V1 - REVISION OF RULES TO GRANT ELIGIBILITY FOR MEMBERSHIP TO ALL SERVING SOLDIERS

29. The Field/Sec explained that at the 1964 A.G.M. a similar proposal was lost. Members would have seen in MERCURY several "Letters to the Editor", opposing that decision and pointing out the anomalous position in which we found ourselves. Thus although 33 Field Squadron, Royal Engineers were affiliated to the Society, the two senior NCO's who ran this unit's Radio Club were ineligible for membership. The licensee of the Amateur Radio Club of a Royal Signals Regiment in BAOR is a Military Policeman and is thus debarred from membership. He therefore proposed we amend Rule 5(b) to read:- "Associate Membership shall be granted to Amateur Radio Clubs of Commonwealth Armies and to all serving soldiers." After some discussion General Cole was reassured that affiliated clubs did derive the same rights as individual members, and in summing up the Chairman stated that he felt the amendment should be adopted for the good of the Society and to rationalise an anomalous situation.

The motion was carried.

ITEM VII - INAUGURATION OF 'ROYAL SIGNALS AMATEUR RADIO AWARD

30. The Field/Sec recalled that at the 1964 A.G.M, a subcommittee was set up to produce the rules for such an award. These had now been agreed and he sought the authority of the meeting to inaugurate the award. The cost to the Society would be between 30/- and £2 per award and he estimated not more than ten members qualifying in any one year. The reason for the high cost was that the award would take the form of a Royal Signals plaque with a suitably inscribed brass plate affixed thereto.

ACTION

31. In general it was felt that 50 QSL's was perhaps too high a target and General Cole suggested that there should be two classes of award, a plaque for say 40/50 and a paper certificate for some lower attainment 25/30.

Finally it was declared that the awards should be on 50 & 25 QSL basis.

Field/Sec to
amend rules
accordingly.

ITEM VIII - PURCHASE OF RACAL RA 17 RECEIVER

32. The Field/Sec pointed out that having had a RA 17 receiver on loan from Racal for three years they were offered the opportunity to purchase it at the give-away price of £150. The few second-hand RA 17's that had appeared on the market had sold at about £300. The receiver had been serviced by Racal and the official price was about £460. A Nuffield Grant of £125 had been obtained and authority was requested for the expenditure of the balance of £25.

He would propose a motion of thanks to Racal Ltd. for their generosity in this matter.

This purchase was proposed by Col. Nepean and seconded by Major Philp and was carried unanimously.

The Chairman added that he would endeavour to look into any likelihood of further help from Racal, perhaps a panoramic adaptor.

OTHER BUSINESS

33. General Cole had no particular subject to bring up but he wished to express his pleasure in the growing strength of the Society and he briefly contrasted its circumstances in previous years. He further thought that as no voluntary organisation can stay stationary, that now was the time to write to all CO's of the Corps, pointing out the healthy position of the Society, and invoking their co-operation towards further advancement. The Chairman concurred with this and directed action accordingly.

HQ Sec

SOCIETY STAND AT THE INTERNATIONAL AMATEUR RADIO EXHIBITION

34. Major Hughes raised this item and pointed out that TA had succeeded in being represented in previous years. He stressed the public interest shown and recruiting potential, and suggested we determine possibilities of Society representation. After several exchanges of views, Field Sec agreed to look into costs and practicabilities.

Field Sec

SHOULD MEMBERSHIP FEES BE WAIVED FOR DISABLED MEMBERS?

35. The Field Sec introduced this and cited a disabled ex-Cpl who had been a member for two years. Hardship could not be assessed.

As the fee in question was so low (2/6) both the Chairman and others were of the opinion that there should generally be a 5-year membership, and that life membership, could be granted to proven deserving cases if they arose, and put to the A.G.M. This course of action was agreed by all present.

POSSIBILITY OF INCREASED DISCOUNT FACILITIES FOR SOCIETY GEAR

ACTION

36. The Field Secretary reported on a meeting with the Secretary of the Royal Naval Amateur Radio Society. Until recently NAAFI had been willing to supply equipment to serving members of RNARS but the facility had been withdrawn. As purchase through NAAFI could be advantageous to serving members he suggested a joint approach with RNARS and RAFARS to get this service reinstated. The Chairman stated that it was doubtful if NAAFI would co-operate in view of the comparatively small demand. The HQ Sec would contact HMS Mercury.

HQ Sec

37. Major Philp asked if he might take this opportunity to express his appreciation of the great help he had received as a Society member from the Corps in the Far East.

38. There was no further business.

39. The Chairman then closed the meeting. He concluded by saying that he would be vacating his office as President upon retirement from the Army in March and he wished to express his thanks to all and especially to officials who had done so much for the Society's well-being. As a life member he looked forward to his attendance at future meetings.

General Cole, seconded by Col Nepean, tabled a vote of thanks to the President and paid tribute to the work he had done.

TREASURER'S REPORT

1. Finance

a. The audit as at 14th July showed:-

(1) An increase of £141 in the consolidated funds from the previous year.

(2) An increase from £198 to £427 in funds held in bank & cash.

b. The present bank and cash holdings are about £400, due to purchase of QSL cards for stock.

c. Sources of income during the year have been:-

(1) Subscriptions	£154 (previous year £96)
(2) Profit on stock	19 (" " £11)
(3) Profit on Lottery	£106
(4) Insurance Claim	10
(5) Miscellaneous	10
	<u>£299 (previous year £110)</u>

d. Expenditure has been due to:-

(1) Stock & property write off & depreciation	£92	
(2) Grants (257 Sig Sqn, 66 Sig Regt)	20	(previous year 10)
(3) Prize Plaques	3	
(4) Maintenance (Postage, Insurance, etc.)	<u>43</u>	
	<u>£158</u>	(previous year £136)

2. Membership

The membership is at present:-

Affiliated members	36	(29 last year)
Life members	129	(89 " ")
Annual members	242	(196 " ")

3. Purchasing Scheme

A total of approximately £800 was brought during the year under the scheme, on a non-profit basis to the Society

BALANCE SHEET as at 14th JULY 1965

<u>LIABILITIES</u>			<u>ASSETS</u>			
£.	s.	d.	£.	s.	d.	
Sundry Creditors	-	-	Cash at Bank	421	1 3	
Accumulated Funds as per last Balance Sheet	798	10 2	Cash in Hand	-	- -	
Add excess of income over expenditure	141	0 7	Stocks on Hand (detailed under main heads)	-	- -	
		939	10	10	120	13 11
			Property per last Balance Sheet	431	11 6	
			Add Additions	30	18 0	
				<u>462</u>	<u>9 6</u>	
			Less Disposals & Depreciation in period	71	7 2	
					391	2 4
					<u>£939</u>	<u>10 10</u>

LICENCE NEWS

We continue to hear of cases where difficulty occurs with regard to issue of a UK licence when members are posted home. In an attempt to help make the position clear we approached the GPO and quote from their reply.

"If a United Kingdom licence holder goes abroad, obtains an amateur licence there and then gives up his United Kingdom licence, he may obtain another United Kingdom licence on application on his return without further examination or test, provided that his overseas licence is still valid at the time of application. This is on the basis of continuous amateur service. Secondly, the holder of a valid Commonwealth amateur licence who has not previously held a United Kingdom licence may, on coming here, obtain one without examination or test if in order to obtain his Commonwealth licence he was required to demonstrate his technical and morse competence to standards comparable to our standards in force at the time.

Perhaps you would emphasise that applications should be accompanied by full details of the Commonwealth licence, i.e. when it was granted, has it remained in force continuously, is it still in force and under what conditions was it granted - e.g., by virtue of holding another amateur licence (and if so what licence) or by passing a technical and morse examination. If we have full information at the outset, applications can be handled without the delay which at present arises in many of them through insufficient information being provided in support of an application."

Bearing in mind that there are a number of places to which you can be posted where there are no amateur licences it seems to us that the only foolproof way of ensuring that you will have no difficulty in getting on the air when you next return to UK is to pay you. two quid a year to keep your G ticket in force while you are overseas. If however you do obtain a licence in a Commonwealth country please make sure that it doesn't become invalid while you are on your way home.

If you decide to keep your G licence in force whilst overseas you may be interested to know you can arrange to pay your licence fees by Bankers Order whilst you are away. Write to St. Martins le Grand asking for details on how to go about it.

TO MEASURE THE P.E.P. OF AN AMATEUR TRANSMITTER

We regret that there was an error in this article published in our last issue.

In the example given it was stated "If 150 watts D.C. input produced 110 watts of R.F."

This of course represents an efficiency of over 70% and it has been pointed out that the latest GPO regulations state a (Class C) P.A. efficiency of 66%. Consequently the maximum p.e.p. RF output permitted on those bands where the maximum D.C. input for A1 and A3 is 150 watts will work out as 400 watts and not as stated in our last issue.

Full details of an alternative method of measuring the p.e.p. of an SSB transmitter are given in detail in the October issue of the RSGB Bulletin.

A 14 Mc/s GROUND PLANE AERIAL

W.J. OMER (G3DOJ)

1. GENERAL

The quarter-wave vertical ground-plane aerial is deservedly popular for the h.f. bands and is capable of providing efficient, low-angle, omnidirectional radiation for DX work. It is particularly useful where space is limited, and does not require the more ambitious mast or tower needed for a quad or other type of beam.

With regard to TVI, sometimes attributed to the use of a ground-plane aerial (GP), it is worth quoting W3EKA in "CQ Antenna Roundup": "antennas do not cause TVI - transmitters do"!

2. DIMENSIONS

The formulae for calculating the length of the vertical radiator and radials are shown in fig. 1. These dimensions work out well in practice, probably because the aerial is not affected to any extent by height above ground as it has its own artificial earth reflecting surface (the radials).

The dimensions for a GP centred on 14.05 Mc/s (for CW work on this band) work out as follows:-

$$\text{LENGTH OF VERTICAL RADIATOR (L}_1\text{)} = 16' 8".$$

$$\text{LENGTH OF EACH RADIAL (L}_2\text{)} = 17' 1".$$

(Note: the length of the vertical portion is measured right up to the point where the co-ax cable terminates; the length of radials is similarly measured to the termination of the braiding).

An aerial made to these dimensions has performed well, and when recently checked with a GDO was found to be resonant very close to the design frequency.

3. METHOD OF FEEDING

The feed-point impedance of a GP with near-horizontal radials is 37.5 ohms, so that the aerial cannot be fed directly with a single cable if the S.W.R. and line losses are to be kept low.

Several methods of co-ax cable feed are possible:-

- a. Use of 75-ohm cable in conjunction with a quarter-wave matching section of 52-ohm co-ax.
- b. Use of two 75-ohm cables in parallel.
- c. Drooping the radials to 45° and feeding with 52-ohm cable (drooping the radials increases the feed-point resistance).

- d. By making the length of the vertical portion slightly longer than a quarter-wave, the radiation resistance can be increased to, say, 75 ohms. The inductive reactance must then be tuned out, using a series capacitor at the base of the vertical, if direct 75-ohm cable feed is then used.

The method of feeding finally chosen was the use of a quarter-wave matching section of 52-ohm cable with a 75-ohm main feed cable. This seems a good compromise between simplicity of construction and efficiency. Details of the matching section are given separately in the Appendix.

4. CONSTRUCTIONAL DETAILS

Details of the construction are shown in fig. 2 and 3.

The vertical radiator is made from a length of 1/2" - 3/4" diameter aluminium or alloy tubing (steel conduit can be used, but is rather heavy). This vertical is fixed to a 12-foot length of 2" x 2" straight-grained timber, using stand-off insulators. With the mast fastened to the side of a garden-shed, the base of the vertical was only 9 ft. from the ground but none the less performs well.

The two insulators screwed to the mast serve to anchor the vertical, which is held in place with two "P"-shaped aluminium clips which grip the tubing when screwed up tight. (Drilling the tubing is not recommended as it weakens it just where the maximum strength is needed). The tubing was thoroughly cleaned - using "Brillo" pads from the kitchen! - where it is held and clamped by the bottom P-clip to the lower insulator.

Particular attention was paid to providing a weather-proof termination for the co-ax cables, and, at the same time, an easy means of terminating the four radials and connecting them to the co-ax outer braid.

A co-ax socket, covered by a beehive stand-off insulator, was mounted on a brass angle-plate screwed to the mast - see fig. 3. (Brass screws should be used throughout to prevent corrosion). Remember to include the length of the two pigtailed in L_1 , as they are part of the radiator.

The four radials, made off to insulators at their far ends, were secured to the 2BA screws on the angle plate. They were then pulled away more or less horizontally to four convenient supports so that they 90° or so apart. (The house, the garden fences and a convenient clothes post were chosen.)

The lower P-clip and the co-ax plug/socket under the angle plate were finally taped over with p.v.c. tape to keep out moisture. By pulling taut, this tape stretches easily and follows the contour well. Using a plug-to-plug co-ax connector arrangement (also taped over with p.v.c. tape), the quarter-wave matching section of 52-ohm co-ax cable was joined to the main 75-ohm feeder.

5. RESULTS

On-the-air results over the last four years have been very encouraging the best being S8 reports from S. America with 50W input on CW.

The measured S.W.R. has been found to be very near to a 1 : 1 ratio. As a further check, the transmitter was loaded into a 75-ohm dummy load. When the G.P. was reconnected the pi-tank circuit was found to require practically no re-tuning, indicating that the aerial and feeder arrangements were providing a load close to 75 ohms at the transmitter.

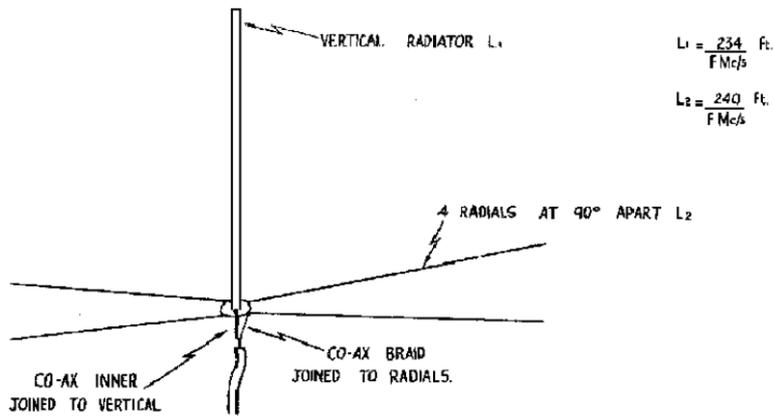


FIG 1.

SIMPLE GROUND PLANE AERIAL

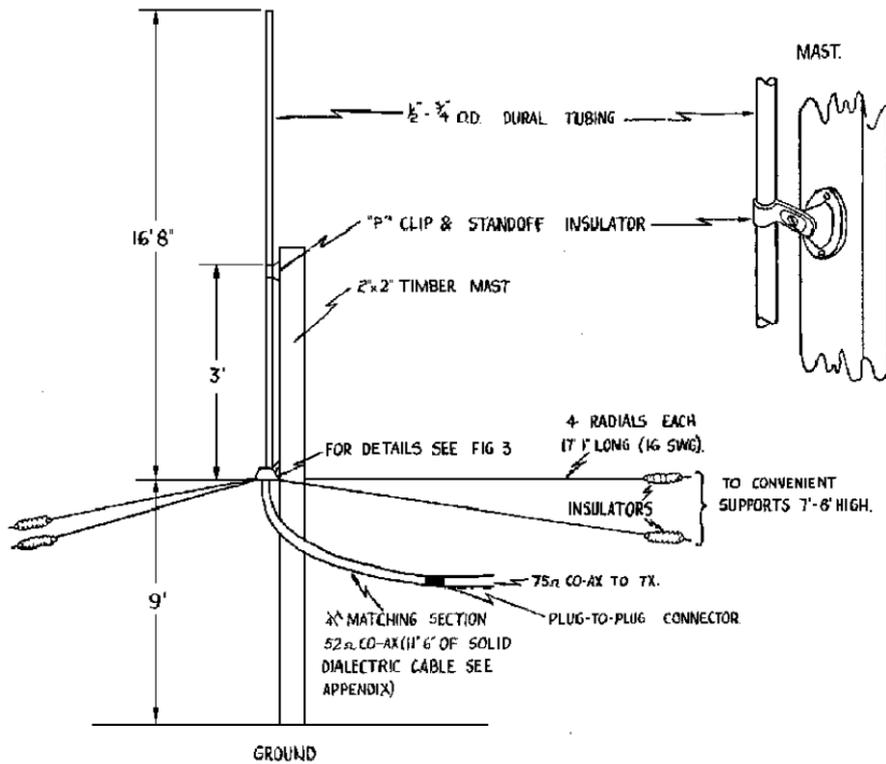


FIG 2.

GENERAL FORM OF CONSTRUCTION.

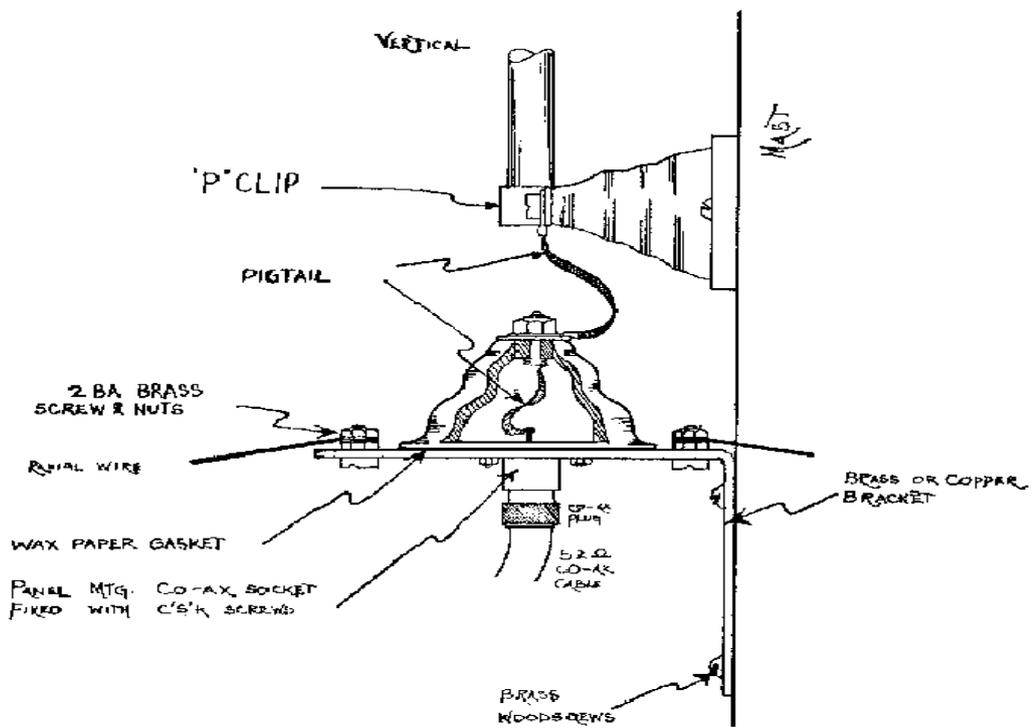
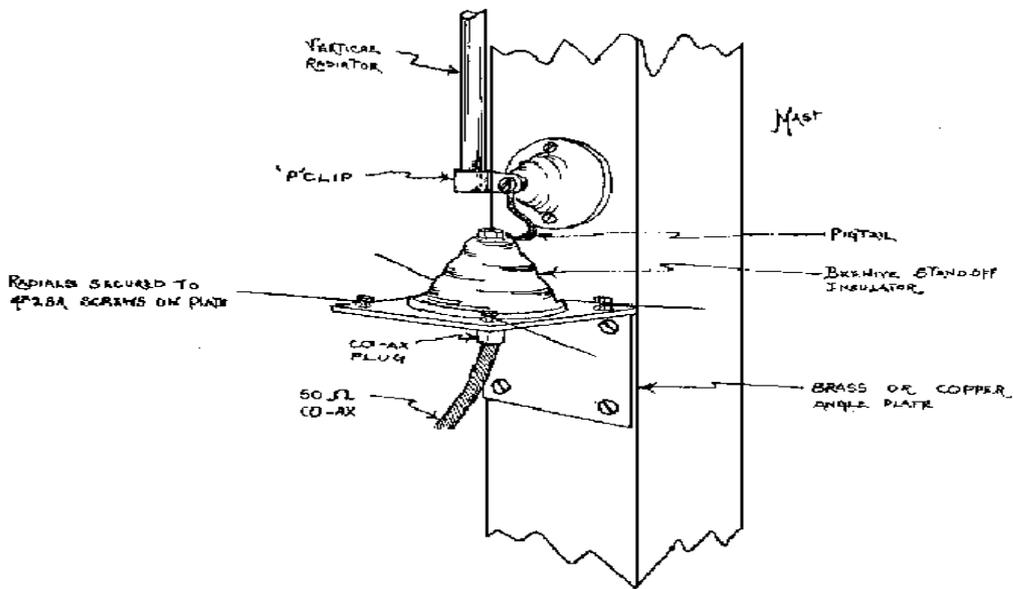


FIG. 3 DETAILS OF BASE CONSTRUCTION & CABLE TERMINATION

6. FUTURE MODIFICATIONS

Having decided on a quarter-wave matching section, it seems at first sight that no additional vertical radiators can be added in parallel for multi-band operation.

In fact, a 28 Mc/s vertical portion could be added in parallel with the 14 Mc/s radiator. If it is made longer than a quarter-wave to bring the radiation resistance up to 75-ohms, it then becomes necessary to include a weather-proof capacitor at the base of this added vertical to tune out its reactance. However, the matching section at 28 Mc/s behaves as a half-wavelength of cable and acts as a 1 : 1 transformer so that the 75-ohm main feeder is again terminated in a 75-ohm load.

Length of 28 Mc/s vertical portion	10' 4".
Reactance of Capacitor 160 ohms	(C = 35pF approx.)

(The use of a 28 Mc/s vertical in parallel has NOT yet been tried in practice.)

APPENDIX. THE QUARTER-WAVE MATCHING SECTION

The length of a quarter-wave of cable can be calculated from

$$\text{LENGTH OF QUARTER WAVE} = \frac{246 \times (\text{VELOCITY FACTOR})}{f \text{ Mc/s}} \text{ ft.}$$

The "velocity factor" varies from about 0.66 for solid dielectric (polythene) cable, to 0.85-0.9 for semi-air spaced co-ax cables.

Using solid dielectric cable, the length of a quarter wave of 52-ohm co-ox cable at 14.05 Mc/s can be taken as 11' 6".

If semi-air spaced co-ax is used, it would be advisable to try to find out the maker's figure for velocity factor if a good match is to be achieved.

(It is worth noting that a short-circuited quarter-wave of co-ax behaves as a tuned circuit and can, therefore, be checked with a GDO for resonant frequency.)

NEWS OF MEMBERS

G3PEC, having moved house recently reports that he is so far only active on 160m with the rig in the airing cupboard. We've heard of temperature controlled ovens for oscillators but

Iain Scott, G3SYW, hopes to be on the air with a VS9M call shortly. Apparently one has to apply to the Sultan himself for a licence in Muscat, makes a Change from filling in forms and supplying birth certificate etc.

G3UOL and G3URG are recent calls issued to members of the Society. Congratulations to them and we hope they enjoy the QRM.

DX-Pedition to the Isle of Man - September, 1965.

Some considerable alarm was caused on 80 metres in the early months of 1965 when two stations were heard on AM - not unusual in itself - but apparently uninterested in Bert's cucumbers, whether Fred's carrier was 38.9 or 39.1 dB's down or even what the weather was like in Birmingham. Further confusion was added by the fact that one of the stations was using the secret "uncontrolled cackling" type of modulation produced by his prototype DX35. With lots of "Has the thing I wrote to you about the other day, arrived at you know where" and other such inanities the idea of going to the Isle of Man was discussed.

About three and a half hundredweight's of "bumf" later the idea still seemed feasible although the idea of sleeping in a converted pigsty and operating from a bivouac seemed strangely unattractive. However the Isle of Man T.A. Association came to our rescue by offering accommodation in a disused ATC hut at the T.A. Centre in Douglas. In true "Certa Cito" tradition we eventually left Liverpool staggering under vast weights of equipment (it's only a 1.2 Kv auto-transformer he said!), trying to keep the tea dry and protect the kettle (undoubtedly the most important single item) from damage.

Having practically swum from the harbour in Douglas (shades of things to come) we arrived at the TA Centre. Not an ideal QTH as one could see at a glance but not too closed in, one would have thought. After plugging in the kettle and with a modest three gallons of compo tea quietly festering in the pot we decided to get the aerial up. During a fourteen second gap in the rain we got the Mosley V-4-6 vertical erected - and it really is unbelievably simple to erect. Strange that the first station to be worked was a YU - the first of millions to come!

At a rate of about two QSO's per CQ (not to mention unseemly bursts of obscenity which if they did not raise any stations, at least helped to heat the shack) we decided it "must be the aerial". Inspired by the sight of a nearby flagpole we decided (mad fools) to mount the vertical on the top of it. Perhaps it would be better to draw a discreet veil over the activities of the next hour. Anyway it got up there and it really looked rather fine - as it pumped RF back into the transmitter. After a few hopeful QSO's we lowered it and found it in fact worked better on the ground - probably because of the better earth system we concluded. We also tried a dipole belonging to GD3TNS but it proved no better. Since neither Paul nor I could get many QSO's (and therefore couldn't blame each other) and we couldn't blame Dave since he was making the tea, we were forced to conclude that it was "conditions".

After yet another cup of tea we had a high-level policy discussion and decided to work whatever we could - whatever it sounded like. I can say at this stage that I am at present receiving special deliveries of mail direct from Yugoslavia and Romania. We worked them everywhere - although mainly on frequencies drifting up and down the 14 Mc/s band (we are sorry about the disappointed stations we had to abandon if they drifted more than 100 kc/s in the first fifteen seconds). The stations (we concluded) operated by gorillas keying with the smallest toe on the left foot also caused some initial difficulty although once we realised they were trying to contact us using Morse Code (doubtful but we couldn't think of anything else) and not on SSB it made things quite a lot easier.

It might perhaps be of some interest to describe our exact location. The TA centre in Douglas is to the north-west of the town, in a hollow at almost exactly zero feet above sea level. We ate, lived and occasionally slept in a wooden hut originally belonging to the Air Training Corps. It showed signs of once having housed a T1154 and R1155 (shades of the dreaded TVI) but had the distinct advantage of having a 20' aluminium mast attached to one end of the hut.

Out of a rabbit-warren of rooms we chose (of course) the office which once housed the C.O. to put the rig in. Heating and cooking was all accomplished on a small electric fire we "found". It was all "well appointed in select neighbourhood" except for the fact that the local police had been told that the place was unused. The vision of one burly constable, dripping with rain water, appearing at the shack window at three o'clock in the morning caused a quietly dozing G3RWF (probably working a W in his sleep) a shock from which he has scarcely yet recovered. Cups of tea all round soon restored relations (of course).

While we excited all Western Europe with our strength four signal, the Top Band rig simply refused to oblige at all. How were we to know that the RF choke in the anode of the buffer was dud? - just because Paul's DX35 worked only after its removal was not definite proof! When a rather wavery (sort of T9X to central Europe) signal wandered into the ether, we found that a two hundred foot long wire erected from the shack to the roof of the TA Centre worked rather well. It was interesting that all the requests for skeds were for Top Band - not a single one elsewhere.

Conditions gradually improved and we found that the vertical was bringing in some quite nice bits of DX at times when they were not being worked elsewhere. We also kept a close eye on the RSGB prediction charts and found that for 20 metres they were accurate to a very high degree. The big flop of the trip was 15 metres, which never obliged properly. Apart from a few South American stations and one or two African stations worked during the RSGB 21/28 Mc/s contest there was hardly anything there. On twenty conditions were not good enough for much SSB and so (to Paul's sheer delight) we stuck to CW almost entirely. Best DX on that band was W7 although nearer but more interesting things were raised. We worked FG7XX on three consecutive days - and he was called by no-one else. We also worked a good variety of South American stations on Twenty. On Forty we persevered despite the terrible noise and worked VK on a couple of occasions and found we had a very regular path to PY every night - with good strengths both ways. In all we worked 55 countries in all the continents, during the ten days we were there. Not as good as expected, but not too terrible considering the prevailing conditions. We were disappointed not to work more Royal Signals stations. The only station outside the UK was 9HIAA - ZC4 seemed to yield only RAF stations to us. We also worked GB3LPC (after listening to him being tortured by Klub stations several times previous to our QSO), G3CIO (of course) and G3EJF (some vague connection with the society). Paul and I are planning to return to the island soon (to finish up the QSL cards if nothing else!) and would be pleased to hear from any station about skeds.

The return to civilisation (I don't think we have any GD members!) was at least lighter by some cases of compo but no less amusing. After smuggling all the equipment on board the ferry disguised as kippers, we found ourselves trying to get it into a left luggage office in Liverpool under various names (i.e. the KW Vanguard was a "steel case" since that cost 3d. and a Radio cost 1s 3d. I can't remember what we said the aerial was, - possibly it was left as an umbrella). I returned to Leeds on Paul's scooter to collect a car to remove the equipment from the vicinity of the Mersey (very corrosive). We finally staggered into Leeds at just after midnight - having driven most of the way in a gentle snooze. For some reason Paul objected to being driven by me when I was asleep.

Practically all the operating was done on an NCX3 transceiver, which was lent to us by Ad Auriema (the British agents for National) and Brian J. Ayres Ltd. The aerial was a V-4-6 for almost all our QSO's. We found that we could get an excellent match on all bands with it and it showed the strangely directional properties often attributed to Ground-planes.

The Nottingham University Radio Society's KW Vanguard supplied the odd squirt of AM here and there - it was used with a MR44/2 receiver. We were also offered the loan of a Joymast by Partridge Electronics but were unfortunately prevented from collecting it. Undoubtedly the trip would never have happened without, the assistance of the Isle of Man TA Association. They didn't just supply what they had promised, but were very kind and helpful in many ways. Finally the help, we had from the regular members of the GD amateur fraternity was very considerable - they were a marvellous lesson in "ham spirit". Where else would you be offered a complete transmitter, aerials, components - not to mention less tangible help.

And so we left - seven hundred QSO's, fifty-five countries and thirty-two and a half gallons of tea later. Well worth it, we thought. Hard luck conditions were so bad, but what a field day for the chirpers, drifters and clickers of this world!

Nick Henwood. G3RWF.
Paul Scottorn. G3RFI.
Dave Forgan. (i/c Tea brewing).

GB3LPC - Lundy Island

Eight members of 3 Squadron, 14th Signal Regiment, including G3LQC, G3UOU and G8ALD visited Lundy Island in the Bristol Channel.

The station was set up in an outbuilding of the Lundy Field Trust centre and 520 contacts with 70 countries were made during the 136 hours operation.

Although conditions, radio and living, were a bit rough at times it was a most enjoyable experience and it is hoped to repeat the venture next year. The Field Trust were so delighted with the immaculate condition in which the outbuilding was left that accommodation in the Centre itself is likely to be available next time.

RULES FOR THE ROYAL SIGNALS AMATEUR RADIO AWARD

1. The object of this award is to encourage activity amongst the transmitting and listener members of Royal Signals Amateur Radio Society.
2. The award is available to all individual members of the Society and the affiliated clubs subject to the conditions laid down in these rules.
3. The award will be made in two classes and will consist of a certificate for the Class II award and a Royal Signals plaque for the Class I award.
4. Transmitting members must furnish proof of contact and Short Wave Listener members proof of having heard, member stations as detailed below:-

For the Class II award:

25 member stations including the Society's HQ station G3CIO/GB3RCS

For the Class I award:

50 member stations including the Society's HQ station G3CIO/GB3RCS.

5. Members may either submit QSL cards or other written confirmation or a list certified by two licensed radio amateurs, an officer of a National radio society or an Officer of Royal Signals. Such a list must take the following form:

"This is to certify that I have examined QSL cards or other written confirmation from the stations listed below which confirm contacts made by/reports submitted by station

Signed

Appointment/Callsign

Signed

Appointment/Callsign

Date	Time	Freq. Band	Callsign of Member station contacted/heard

6. Member stations contacted/heard after : Jan 1965 will count towards this award. For the purposes of the Award the same member operating under different callsigns from different countries will count separately under each callsign. Thus G3NJM and 9M4MB although operated by the same member count as two member stations.

However, contacts made by this member under either callsign will count towards his own award.

7. Claims together with the supporting evidence should be sent to:-

Mr. W. E. Caughey, Awards Manager RSARS,
Gilnahirk Park, Cherry Valley,
Belfast 5, Northern Ireland.

8. Details of awards presented will be published in MERCURY.
9. Transmitting members of the Society are asked to scrutinise all listener reports received and to assist by issuing QSL cards to listener members of the Society. Listener members are asked to ensure that their report cards are clearly marked "Member Royal Signals Amateur Radio Society".
10. In conjunction with the award Activity Periods will be detailed from time to time in MERCURY. These will state approximate spot frequencies and will last two or three hours. During these periods G3CIO will be on the air and UK members are particularly asked to use the HF bands in order to help overseas members to qualify for the award.

EQUIPMENT FOR AFFILIATED CLUBS

The Society still has a number of WS36 which can be loaned to Affiliated Clubs. Whilst this transmitter as it stands is not really suitable for amateur use it is capable of modification to form a useful 150 watt AM/CW rig. Several clubs have successfully carried out these modifications details of which were given in the March 1965 MERCURY.

Unfortunately the Society cannot arrange the despatch of equipment and units must therefore collect from Catterick.

AVAILABLE FROM HEADQUARTERS

Society Notepaper and Members' QSL cards are available from the Field Secretary. Order Forms appeared on the back covers of recent issues of this journal.

AWARDS LADDER

What's your score?? G3EJF - worked 15, confirmed 9. Let's be hearing from you.

SOCIETY NEWS

The Field Secretary has the address of a firm which supplies sheet Aluminium at quite reasonable prices (about 3/3d. a square foot for 16 gauge). Carriage charges are 3/- for orders under £2.

With the inauguration of the Royal Signals Amateur Radio Award the thought strikes us that you may have worked the HQ station since 1 Jan 65 but not received a card. If so drop us one of yours direct and we will fill one in right away.

G3LPC, the club station of 3 Squadron, 14th Signal Regiment now has three licenced members and three others have RAE and are studying those dits and dahs.

9M4MB is QRT and G3NJM active once again. In other words the Society's first Secretary is back in UK. Having equipped himself with a KW2000A Ted intends to concentrate on local nattering as a change from DX.

Short Wave Magazine recently ran a competition for the best reply to a letter from a beginner asking for advice on getting into Amateur Radio. The winning letter was written by RSARS member G2TA.

Steve Chisholm VE3ATU, G3GSK, wishes to be remembered to any other members of No 8 F of S course and friends of Catterick days. Look for Steve about 2230 GMT on about 14.175 Kc/s, as he runs a kilowatt you should hear him if the band is open.

More members getting their licences - G3CIO recently worked G3UUA who turned out to be member No 362.

VS9ARV is the call of Sgt. Ray Vasper of 210 Squadron. his interest in amateur radio dates from 1954 when he used to clean out the shack of VS2DF, the club at Kuala Lumpur, organised in those days by Sgt. F. Potter. Later on Ginger Caplan GW3NWQ supplied the spark that led to the RAE and morse test. Ray's gear consists of a 50 watt tx to a Practical Wireless design and a rebuilt and hotted up PCR3. It is a change to hear of someone using simple gear but lest anyone should scoff the countries score is 107 with 89 confirmed.
