



NEWSLETTER

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Members of the Science Research Council examining some of our mm.-wave propagation studies during their recent meeting at R.S.R.S.

"A REMARKABLE TELEGRAPHIC EXPERIMENT"

December this year will see the 70th anniversary of trans-atlantic wireless signalling, whilst next year it will be 50 years since broadcasting first started in this country. In terms of human life span, long distance radio telegraphy is now a senior citizen and broadcasting well set in maturity. Both arts have marched with the twentieth century. It is not therefore without some interest to recall that its rapid development from a physics laboratory experiment to a viable commercial enterprise took place, and took place very rapidly, entirely during the reign of Queen Victoria, and may have been said to have come to fruition in 1899 when wireless signals were first transmitted across the English channel.

Just prior to Easter 1899 the French Government granted Marconi permission to erect a mast for wireless telegraph experiments at Wimereux near Boulogne and a corresponding mast was erected at the South Foreland lighthouse, the stations being 32 miles apart. The transmitter and receiver were erected in a small room in the lighthouse and in the Chalet d'Artois at Wimereux. Details of the plant are few but it is known that the aerial was a single strand copper wire 150 ft long, covered with india rubber and upheld at the top by ebonite rod insulators. The apparatus appears to have worked as soon as completed and communications, which began on 27 March 1899, numbered among others, signals to various scientific worthies in England. (A shrewd move on the part of Marconi since it resulted in considerable public interest throughout the world). In the words of J. A Fleming, who was closely associated with the Marconi Co. at that time, "The bridging of the English channel by electric waves was one of those sensational feats which at once aroused the daily press to lively comment upon the matter." Matters were brought still further into the public eye within a month when on 28 April 1899, a steamer, the R. F. Mathews, outward bound, ran into the East Goodwin lightship and inflicted serious damage. The lightship, however, was equipped with wireless telegraph apparatus and communicated at once with the South Foreland lighthouse which sent out tugs and lifeboats from Ramsgate to render all assistance necessary.

In the autumn of that year the British Association chanced to be holding its annual meeting at Dover and the success of previous experiments seemed to justify an attempt to signal from France to England at Dover before the assembled British Association. It was just a century since the voltaic pile had been

invented and this anniversary was being marked by the B.A. with, among other things, a discourse on the centenary of the electric current by none other than J. A. Fleming. Fleming demonstrated the wireless apparatus, communicating with South Foreland lighthouse, the East Goodwin lighthouse, and with Wimereux. During the lecture messages were sent to the President of the French Association for the Advancement of Science which was then meeting at Boulogne and numerous messages were exchanged between the South Foreland and East Goodwin. The B.A. appears to have been suitably impressed.

Much of the account given of this occasion is taken from Fleming's book on electric wave telegraphy written in the first years of this century, and now a valuable source of information. An illustration too poor to reproduce in the Newsletter, reminds us sharply of the times in which the work was carried out. We see a mast and aerial on the tower of the Town Hall at Dover, nothing particularly odd about that perhaps, but in front is a scene which is now vanished for ever, a woman, voluminously clothed and with a parasol and hat, accompanied by a small child, is seen walking along the path at the side of which is waiting a horse-drawn carriage difficult to identify, partly owing to the poor photograph and partly owing to the author's ignorance of the various types - he wouldn't know a brougham from a barouche. The picture is certainly one of an antique time and is reinforced by the elegant description given by Fleming of the occasion of cross-channel wireless telegraphy.

"During the last few days I have been permitted to make a close examination of the apparatus and methods being employed by Signor Marconi in his remarkable telegraphic experiments between South Foreland and Boulogne, and at the South Foreland Lighthouse have been allowed by the inventor to make experiments and transmit messages from the station there established both to France and to the lightship on the Goodwin Sands, which is equipped for sending and receiving ether wave signals. Throughout the period of my visit, messages, signals, congratulations and jokes were freely exchanged between the operators sitting on either side of the Channel, and automatically printed down in telegraphic code signals on the ordinary paper slip at the rate of twelve to eighteen words a minute. Not once was there the slightest difficulty or delay in obtaining an instant reply to a signal sent. No familiarity with the subject removes the feeling of vague wonder with which one sees a telegraphic instrument merely connected with a length of 150 feet of copper wire run up the side of a flagstaff begin to draw its message out of space and print down in dot and dash on the

paper tape the intelligence ferried across 30 miles of water by the mysterious ether.

The apparatus, moreover, is ridiculously simple and not costly. With the exception of the flagstaff and 150 feet of vertical wire at each end, he can place on a small kitchen table the appliances, costing not more than £100 in all, for communicating across 30 or even 100 miles of channel. With the same simple means he has placed a lightship on the Goodwins in instant communication, day and night, with the South Foreland Lighthouse. A touch on a key on board the lightship suffices to ring an electric bell in the room at South Foreland, 12 miles away, with the same ease and certainty with which one can summon the servant to one's bedroom at an hotel. An attendant now sleeps hard by the instruments at South Foreland. If at any moment he is awakened by the bell rung from the lightship, he is able to ring up in return the Ramsgate lifeboat, and, if need be, direct it to the spot where its services are required, within a few seconds of the arrival of the call for help. In the presence of the enormous practical importance of this feat alone, and of the certainty with which communication can now be established between ship and shore without costly cable or wire, the scientific criticisms which have been launched by other inventors against Signor Marconi's methods have failed altogether in their appreciation of the practical significance of the results he has brought about.

Up to the present time none of the other systems of wireless telegraphy employing electric or magnetic agencies has been able to accomplish the same results over equal distances. Without denying that much remains yet to be attained, or that the same may not be effected in other ways, it is impossible for any one to witness the South Foreland and Boulogne experiments without coming to the conclusion that neither captious criticism nor official lethargy should stand in the way of additional opportunities being afforded for a further extension of practical experiments. Wireless telegraphy will not take the place of telegraphy with wires. Each has a special field of operations of its own, but the public have a right to ask that the fullest advantage shall be taken of that particular service which ether wave telegraphy can now render in promoting the greater safety of those at sea, and that in view of our enormous maritime interests, this country shall not permit itself to be outraced by others in the peaceful contest to apply the outcome of scientific investigations and discoveries in every possible direction to the service of those who are obliged to face the perils of the sea. If scientific research has forged a fresh weapon with which in turn to fight nature, 'red in tooth and claw,' all other questions fade into insignificance in comparison with the inquiry how we

can take the utmost advantage of this addition to our resources".

Thus spake Fleming, and a fair enough summary it seems; indeed the sentiments expressed at the end of the final sentence still ring true a lifetime later.

G. W. Gardiner

Staff News

Welcome to:-

Mrs S. L. McCaig	C.O.
Mrs B. M. Hutchins	Cleaner P/T
Mrs I. B. Holland	" "
K. B. Ahlstedt	Vacation Worker
J. J. Rousseau	" "

Other changes

D. A. Cowcher E.O. left U.K. for F.Is. and arrived F.Is.

ESRO

Miss D. Pole Evans Clerk/Typist Re-engaged for further 3 years in F.Is.

News of Former Staff

Staff will be glad to learn that Simon Newman who left us for duties at CERN, has been appointed editor of Europhysics News. We offer our congratulations.

Station Review Panel

The report of the Station Review Panel has been completed and considered by the Station Committee and by the Astronomy Space and Radio Board. It will go forward to the Council at an early date for consideration together with comments made by the Committee and Board.

An opportunity will also be provided for the staff, through the Staff Side, to comment before the Council makes final decisions on the Report's recommendations.

Station News

The Director is going to New York for two weeks beginning 3rd July to lead the U.K. delegation at the meeting of the Scientific and Technical Sub-Committee of the U.N. Committee on the peaceful uses of outer space.

Members of Dr. Hall's group are at present in South Uist preparing to launch two more rocket-borne experiments.

Dr. King and Dr. Dickinson are among those attending symposia at the XIVth plenary meeting of COSPAR which is taking place at Seattle, Washington from 17th June to 2nd July.

Dr. L. Thomas will be in Urbana, Illinois for a meeting devoted to D-region chemistry which is to take place from 6th-8th July.

Dr. Rishbeth is at present in Trapani - Sicily, at the International School of Atmospheric Physics where he is delivering a series of lectures.

Which?

"Which?" subscriptions will be due again after the July issue. Our bulk subscription will again be available at the discount price of:-

£1.05 p.a. for monthly Which

£2.10 p.a. for Which + quarterly Money Which

or Which + quarterly Motoring Which

£3.15 p.a. for Which + Motoring Which + Money Which.

New subscribers will be welcomed.

Details of the new quarterly magazine Handyman Which will be available in the near future and it will be possible for existing subscribers to order then.

At renewal time I will order any other Consumer Association publications requested and paid for by members.

Please may I have renewal subscriptions and orders for publications by Thursday, July 15th.

Marilyn D. Harrison

Sports and Social Club News

Cricket

- Scores vs. British Aluminium (A): R.S.R.S. 51 British Aluminium 52-2
vs. Windsor Schoolmasters (A): Schoolmasters 131-4 R.S.R.S. 86-6
(L. Thomas 20)
vs. Windsor Great Park (A): R.S.R.S. 79-5 (Kitt 31, Bramley 27)
Windsor Great Park 43 (Davies 3-21, Dunford 4-2)
vs. I.C.I. Jealotts Hill (H): I.C.I. 113-8 (Kitt 4-8) R.S.R.S. 88-5
(G. Thomas 43 N.O., Davies 21 N.O.)
vs. Admiralty Engineering Laboratory (A): A.E.L. 101-6 R.S.R.S. 87-7
(Moosajee 23)
vs. Geodetic Office (H): R.S.R.S. 99-7 (Kitt 32) Geodetic Office 74
(Dunford 4-20)

As can be seen from the scores a not too auspicious start to the season with four defeats and two wins. However there have been some individual performances that hold promise for the rest of the season.. After suffering badly against a demon bowler from British Aluminium who took 7-21 off 10 overs we did a little better against Windsor Schoolmasters, but a few too many long hops from our bowlers and some good batting put this total beyond our reach, despite Lance Thomas's obvious enjoyment of the slow bowlers. Against Windsor Great Park a very good partnership between Kitt and Bramley gave us a good total with two memorable sixes from Kitt. The Great Park's batting collapsed after a good start, Dunford making the most of a wet wicket. I.C.I. Jealotts Hill once again proved too strong for us, but sloppy fielding offset some good bowling by Davies and Kitt. Our batsmen failed to score quickly enough, although the Davies-Thomas partnership produced 46 runs. Our fielding was again below par against A.E.L., but Felix collected three wickets on their composition strip. Chief architects of our victory against Geodetic Office were Kitt with an excellent 32 and Dunford who collected four wickets for the second time this season.

Finally, congratulations to Ali Moosajee for reaching the third round of the Windsor Single Wicket Competition.

Bridge Club

In this, my final, report the only item of news is the result of the ex-D.S.I.R. cup match.

R.S.R.S. entered two teams for the competition, which was played at the Warren Spring Laboratory, Stevenage on May 23rd, and were placed 2nd and 3rd out of 6. The cup was retained by the Warren Spring "A" team with a final score of 55 I.M.P's, our teams scoring 20 and 13 I.M.P's respectively.

The past year has been one of mixed fortunes, winning three out of the six matches played. The club evenings seem to have attracted a slightly higher attendance than for the past year or so, particularly in the latter part of the season.

Robert Pratt

HARMONICS

1. Apropos our recent tenth anniversary:

Having concluded our first Volume, we would be deficient in gratitude did we not return thanks (sic!) to the public, in general, for the favourable reception our labours have experienced; and to those Scientific Gentlemen, in particular, who have assisted us with Communications, as well as Hints respecting the future conducting of the Work.

As the grand Object of it is to diffuse Philosophical Knowledge among every Class of Society, and to give the Public as early an Account as possible of every thing new or curious in the scientific World, both at Home and on the Continent, we flatter ourselves with the hope that the same liberal Patronage we have hitherto experienced will be continued; and that Scientific Men will afford us that Support and Assistance which they may think our Attempt entitled to. Whatever may be our future Success, no Exertions shall be wanting on our part to render the Work useful to Society, and especially to the Arts and Manufacturers of Great Britain which, as is well known, have been much improved by the great Progress that has lately been made in various Branches of the Philosophical Sciences

Phil. Mag. I 1798

2. Burdens of High Office

On 19th September, the Director, making his way at 7 p.m. from the Chief Park Warden's house to the adjacent guest house, bumped into a lion at the Chief Park Warden's birdbath.

The Chief Park Warden, hearing grunts and noises on his verandah, followed by the precipitant and explosive retreat of the Director into the sitting room, rushed to a window - whereupon a pelmet fell on him, adding to the turmoil.

'News from Serengeti National Park'

3. Saying of the month?

Raw data is data that has not been cooked.

Letter to the Outstations

Dear Colleagues,

You will recollect that a meeting of the Science Research Council took place here recently, part of the Council's day being devoted to seeing various aspects of the Station's work. It is sad to report, therefore, that our Distinguished Visitors missed by a day or two a brilliant demonstration of the first law of excavation.

The principle, I would remind readers, rests upon these facts:- Primarily; in terms of space-time coincidence a conductor and a hole are mutually exclusive. Secondly; if a hole be introduced into a field in which conductors are embedded in an apparently non-random fashion, a near infinite degree of disorder will result, such that hole - conductor coincidence assumes a very high degree of probability. The outcome of such an action being the transformation of acoustic energy into heat at a number of distant but related points and, after a delay τ , which is peculiar to the system, the coincidence probability tends to zero, and the status quo is restored.

Thus the principle - now the practice.

An excavator, about to have a leisurely afternoon browse on the site of a new building was directed to start at a point where no possible damage could occur to the cables carefully laid about our Station.

Scarce had it gulped its first nourishing mouthful than subterranean disorder resulted and the bright gleam of severed wires showed once more the validity of the excavation principle. Telephones fell silent, H.F. oozed away into the ambient ether, tempers rose, - all part of the inexorable logic of a fundamental of Natural Philosophy.

Now, after some days, we are almost ourselves again thanks to the Post Office, Testroom and others. The irony is that they were, it seems, looking for the water table, which, thanks to a true British Summer has lately been at about +2" and lapping over the boots of,

Yours sincerely,

The Editor

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H. Rishbeth, Rotation of the Upper Atmosphere. Nature, Vol. 229, 1971
Page 333-334.

Internal Memoranda - nil