

## **A Bucolic Upset in Nineteenth Century Morvern.**

At four o'clock in the afternoon of Friday, 29<sup>th</sup> March, 1895, somewhere along a more or less straight line across the land between the old Lochaline Post Office, by the West Pier, and the land beyond Ardness, on the Bonnavoulin Road, a cow (Alas! We do not know her name.) put a temporary stop to an experiment in the development of over-sea "wire-less" communication. This happened a week or so after an unidentified ship had let its anchor or trawl-gear sever the under-sea telegraph cable from Oban to Grass Point on Mull, thereby cutting Mull off from long-distance communication with the rest of the country and the rest of the world.

The route of the damaged under-sea cable was from the Oban Post Office under the Sound of Kerrera and on across Kerrera itself before passing along the bottom of the three-mile (5km.) wide Firth of Lorn, coming ashore on Mull at Auchnacraig, slightly south of Grass Point, and then overland to Craignure Post Office.

On discovering that the undersea section was broken, the immediate response of the Telegraph Department of the General Post Office was to summon a cable-ship and, while waiting the several days for it to arrive, to attempt to re-establish contact between Mull and Kerrera, using the "induction method" devised by Mr W. H. Preece, later to be Sir William, the Engineer-in-Chief of the nation-wide Telegraph Department.

What is not clear from the official record is how many days passed before this attempt proved to be a failure and had to be abandoned. Only then was it realised that the Sound of Mull opposite Lochaline was only two miles (3.2 km) wide. Furthermore, the existing telephone line from Craignure Post Office to the Aros Post Office, just beyond the village of Salen, ran parallel to the shore on the Mull side; whilst on the Morvern side the Lochaline Post Office at the West Pier was in telegraphic connection with the rest of the country.

Mr Preece's "method" required two wires, one on each side of the Sound, running parallel to each other for about a mile and a half (2.5 km). The plan was to use that telephone line on Mull and, on the Morvern side, to lay on the ground a rubber-insulated wire from the Post Office westward to beyond Ardness, where it was to be 'earthed' into the sea.

On Thursday, 28<sup>th</sup> March 1895, two Telegraphic Engineers, a Mr McNair from Glasgow and his junior, a Mr Crompton, travelled on the ferry from Oban, arriving at 2pm at Craignure, where Mr McNair disembarked, Mr Crompton continuing on the journey to Lochaline. The two, now on either side of the Sound, quickly set up their identical sets of equipment, Mr McNair's being attached to the existing Craignure to Aros telephone line, and Mr Crompton's to that rubber-insulated wire he had just run out across the meadows towards Ardness. By 4pm they began alternately 'speaking and listening' to each other, but without success until 6.35pm when Mr McNair heard a very faint signal from Mr Crompton, though nothing was happening in the opposite direction. As arranged, they gave up for the day at 8pm.

The next day, Friday 29<sup>th</sup>, Mr McNair had realised that the resistance posed by his using the there-and-back 11-mile circuit to Aros was too great for his equipment, the maximum current he could raise being 0.7 amps, when what was needed was 2 amps.

He overcame the problem by 'short-circuiting' the telephone line somewhere along the northern side of Fishnish Bay and 'earthing' it into the sea. All was well until 4pm, when the Morvern side suddenly went dead -- that cow had chewed the wire. Let's be fair, from the cow's point of view what she had just chewed must have looked like an extraordinarily long earthworm lying on the grass! Mr Crompton had to check every inch of his 1½ mile rubber-insulated wire to find the problem. He managed to have it back in working order by the next morning.

On that Saturday, 30<sup>th</sup> March, Mr McNair and Mr Crompton were able to transmit one 'commercial' telegram. On the Sunday four telegrams were transmitted. By the Monday, 1<sup>st</sup> April, word had got around that the telegraph was again up and working and 40 telegrams were transmitted. On Tuesday business was back into full swing, with 71 more telegrams. By Wednesday, 3<sup>rd</sup> April, the cable-ship had arrived and the Oban cable was repaired, but not before a further 40 telegrams were transmitted, making a total of 156 over the five days, including one press message of 120 words. The archive does not distinguish between incoming and outgoing telegrams, but there is no doubt that this temporary arrangement was working in both directions.

In the 1890s weekday telegrams cost sixpence (6d = 2½p) for the first twelve words, every additional word costing a halfpenny (½d = 0.2p); on Sundays there was a sixpence surcharge. This was at a time when basic wages had not yet reached ten shillings (50p) per week, a telegram was a luxury item.

Interest in the exercise was immediate. The Scottish Office wanted to see the Telegraph Department's records of the event, as did the Postmaster General himself. The prestigious weekly scientific journal *Nature* picked up the story, publishing a short paragraph, which it republished a century later in 1995. The German Postal Service was particularly pressing to be given the details, possibly seeing the "method" as a way of overcoming wide continental river crossings, though one cannot help thinking that the rapidly expanding German Navy might have been behind this interest.

However, all was to be rendered in vain, for in 1896 Guglielmo Marconi had brought to Britain his ideas for a truly wireless system, in which electro-magnetic radio waves, once launched, proceeded on their way totally independent of what had transmitted them. To give William Preece his due, he immediately dropped his "method" and enthusiastically adopted Marconi's system as the way forward for long distance communication.

This incident was not the very first occasion when there was 'commercial' wire-less transmission of messages across the sea, but it was by far the largest incident before the introduction of true wireless telegraphy by Guglielmo Marconi.

I am very grateful for the guidance I received from the Department of Technology and Engineering at the Science Museum, South Kensington. Any technical gaffes are entirely mine, for which I apologise in advance of their discovery!

**Michael Brambell, Edinburgh. March 2022.**

(The Post Office archived file is POST 32/72B)

Typed report

The cable connecting the Island of Mull with the main land having recently become broken, it was decided, pending the arrival of the cable ship charged with the repairs, to establish communication across the channel by means of induction.

The relative positions of the Island and the neighbouring channels are shown in the attached drawing.

The width of the channel at the point selected for the inductive circuit varies from 1½ to 2 miles, and skirting the coast of the Island an overhead wire exists between Craignure and Aros, in a position well adapted for the object in view. The distance of this wire from the mainland is almost uniformly two miles – As there was no existing line on the mainland parallel with and sufficiently close to the Aros Craignure circuit, a gutta-percha insulated wire was laid along the ground from Morven [Post Office in Lochaline] in a North Westerly direction, for a distance of 1½ miles. This is coloured in red in the drawing. Hence the distance between the two conductors averaged two miles.

The wire connecting Aros and Craignure was at first divided at Craignure and joined up as part of the circuit, its length being twelve miles. It was found however that the combined resistance of the line and the earth was too great to admit a larger current than .7 amperes circulating with the power at command, and the circuit was therefore divided at a point exactly opposite the North Western termination of the Morven Gutta-Percha wire. Its resistance was thereby so reduced that it was possible to send 2 amperes of current through it. Until this was done satisfactory communication could not be established.

The apparatus connected to each wire consisted of

(a) A rheotome make and break capable of causing 260 undulations per second.

(b) A battery of sufficient EMF to send a current of 2 amperes through the circuit – In this case dry cells of the type known as ECC were used for portability and 150 were joined up on each circuit

(c) An ordinary morse key.

(d) A telephone to act as a receiver.

*Middle C. is  
260 Hz.*

*There must also have been  
an Ammeter and a variable resistor.*

The method of joining up is shown in the attached sketch No.2. (*This is not in the Archive file*)

In practice the rheotome consists of a small Electro motor driving a divided disc that makes and breaks the current the requisite number of times. It is joined in multiple with the line and the main battery and the requisite speed is obtained by varying an added resistance.

This intermittent current is broken up into Morse signals by means of the key, these signals being read on the telephone connected to the opposed circuit.

The traffic dealt with was as follows:-

Telegrams.

Saturday	March	30	1
Sunday	„	31	4
Monday	April	1	40
Tuesday	„	2	70

(including 1 press message)

Wednesday	„	3	40
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The Cable was repaired on the last named date and the ordinary method of transmission resorted to.

MRB doc. No 38

Handwritten note

Expenses incurred in connection with the Mull Induction Circuit.

Commercial Staff Expenditure

Travelling	7 . 0 . 5½
Overtime	1 . 14 . 1½
Railway & Steamboat Fares	<u>2 . 13 . 6</u>
	<u>£11 . 8 . 1</u>

Engineering Expenditure

Travelling	7 . 1 . 3
Labour	- . 12 . -
Freight	<u>3 . 12 . -</u>
	<u>£11 . 5 . 3</u>

MRB doc. No 3 - 7

(handwritten by another hand)

The Superintending Engineer.

In accordance with your instructions I proceeded to Oban on Thursday morning (28 March 1895), met Mr. Crompton there, & arranged with him what was to be done at certain times in the event of our being unable at once to open Communication by means of induction working between Craignure and Morvern [Post] Offices.

Mr. Crompton went on to Morvern & I left the steamer at Craignure arriving there at 2 pm. I was ready by 3.20 pm – operations were to be commenced at 4 pm.

I commenced at that hour alternately speaking and listening, but without success until 6.35 pm when I heard Mr Crompton's Signals but so faintly as to be unreadable. I increased key power as much as possible, & varied the motor power occasionally – nothing more was done before 8 pm at which hour we stopped.

I found the earth resistance at Aros somewhat high, so linesman was sent over line to earth the open wire at a point nearly opposite where the Morvern G.P. [gutta percha – i.e. natural rubber insulation] was earthed in the sea – The moment this was done I got readable signals & could converse. This continued up to 4 pm when I lost Morvern – owing as was afterwards discovered – to the G.P. on that side being chewed through by cattle –

Mr Crompton had that made good & by 9 am on Saturday both sides of the Sound were reading –

I left Craignure at 10 am having first given Mr J Stewart all the information he desired, or might require, and leaving him a tracing of the apparatus Connections –

The Current sent out from the Mull side with open wire earthed at Aros was .7 amperes – When wire was earthed nearer Craignure 1.9 amperes.

Morvern under both these conditions read all right but it was only under the latter that Mull could do so.

(unreadable signature, very probably) Jn McNair

1<sup>st</sup> April 1895.

The Engineer in Chief

(footnote in different hand writing)

Submitted. As advised by wire communication with the Island of Mull was established on Friday (29 March) last and Mr McNair's report will be of interest to the Engineer in Chief. The attached diagram shows the arrangement of the wires in the experiment.

The traffic is now being conducted without a hitch and the delay caused by the extra transmissions etc is varying from 30 minutes to 1 hour 50 minutes.

On Friday one telegram was transmitted, on Saturday none, on Sunday four, and today up to noon there have been 18.

[note in the margin] It was not generally known in Mull that telegrams cd. Be transmitted until this morning. [end of note]

The clerks at Craignure & Morvern were sent from my office with the Surveyors approval. I thought it better to do this and have some one in charge of the special apparatus who would take an interest in the experiment & be able to remedy any defect that might occur, Already the clerk at Morvern has had to repair one break in the G.P. wire.

I am sorry that owing to so much time being lost experimenting between Oban and Auchnacraig, where the conditions do not seem to have been favourable, that we have only succeeded in restoring communication as the Cable Ship is about due to effect the repair of the cable. [note in margin "The Cable is now repaired " endorsed by the stamp of the ENGINEER IN CHIEF'S OFFICE A AP 2 95] I hope however the fact that we have been able to prove that communication without a cable is practicable will be sufficient justification for continuing the experiment.

D Stewart [rubber stamp "for Superintending Engineer"]

(footnote in different hand writing)

Handed to Secretary by Mr Preece 2.4.95

(unreadable word)

Mr Milford This practically gives the information asked for yesterday. Please return the papers quickly. (initial) CG 2 . Apl . 95

### MRB doc. No 10 & 12-13

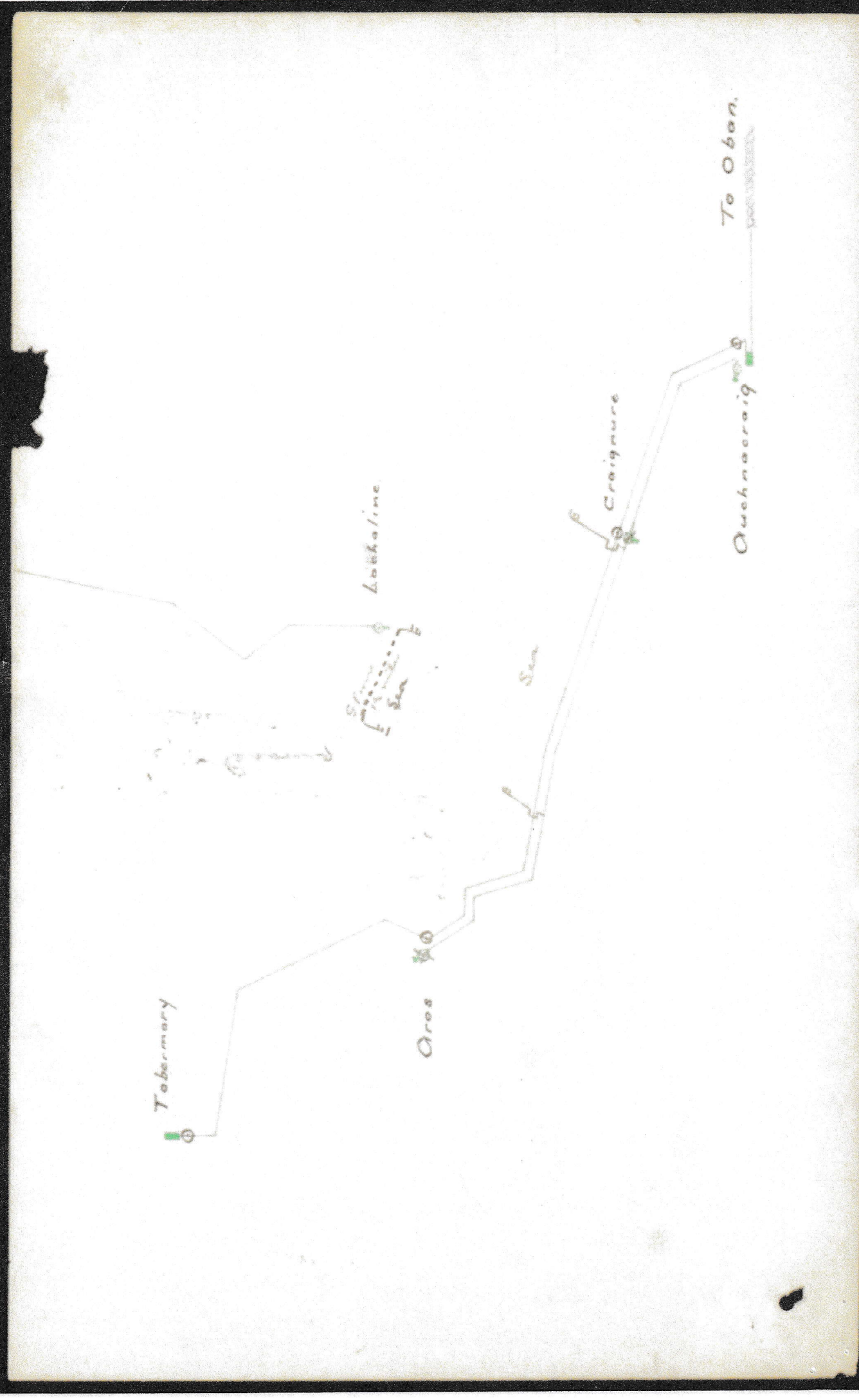
Extract from 'Daily News' 4 April 1895

News comes from Scotland of a species of telegraphic communication which, though not new to the scientific world, may fairly be described as marvellous. The cable between Oban and the Isle of Mull being out of order, messages have been transmitted across the water without any connecting apparatus whatever. This astonishing result has been achieved by means of the well-known telegraphic phenomenon called induction. A wire is erected on the mainland opposite to and parallel with a portion of the telegraph line on the island. The message which it is desired to communicate to Mull is transmitted over the wire on the mainland in the ordinary way. The signals thus transmitted pass at the same time over the parallel line in the Isle of Mull, and telegraphic operators there read them by means of a telephone. This fairy-like achievement of science is not by any means novel as an experiment, but we believe it is the first time it has been turned to account in the practical, everyday working of telegraphy. Great credit is due to Mr Preece and his assistants on the Engineering Staff of the Post Office for their ability and readiness to translate into actual facts the latest abstract discoveries.

### MRB doc. No 12

Extract from The Echo 17 April, 1895

Mr. Preece's system of induction has been used for the first time in practice in transmitting messages across the Sound of Mull, the cable connecting Mull with the mainland having broken down near Oban.



Tobermary

Oros

Lothaline

Craignure

To Oban.

Ouchnaoraig

Sea

Sea





NM 647452

NM 672444

NM 636426

NM 717372

X Points where the wires were earthed into the sea

I S

O F

50  
49  
48  
47  
46  
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44  
43  
42  
41  
40  
39  
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37