

LETTER FROM MR. C. HOCKIN,

ENGINEER,

written at Banjoewangi

NOVEMBER 30TH, 1871

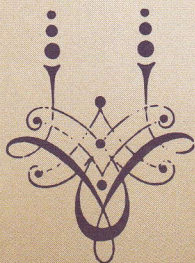


REPORTING TO HIS PRINCIPALS IN
LONDON

UPON THE COMPLETION OF THE



**British-Australian
TELEGRAPH
CABLE**



Appendix K. Final Report

Banjoewangi

Nov^r. 30th 1871.

Mess^{rs}. Clark & Fide,
Gentlemen

Completion of
Cable

I write to inform you that the British-Australian Cable was successfully completed on the 19th instant. You will receive this Mail the detailed log, and abstract also Copies of the tests made on board ships at Port Darwin and here, and of the tests so far, of the laid Cable

Arrived at
Port Darwin

Tests at Port
Darwin.

and

remarks on
same.

We arrived at Port Darwin with Captain Halpin and others in the Investigator on the 30th October. The Edinburgh and Hibernia were already there. Careful tests were taken of such of the Cable on board the two Ships as it was intended to lay, the other pieces have since been tested here and are all in good condition. These tests were necessarily made on board ship and with a Marine galvanometer - They are therefore, not quite so satisfactory for the short pieces of Cable as those that were made at Singapore from the Wharf

The temperature of the Tanks a few days before our tests, was considerably below the temperature of the air. The Tanks were necessarily emptied in order to get the eye in order and filled up with very hot water from Port Darwin Harbour. - The calculated value of the insulation for the S.S. Hibernia at 75° F is therefore probably above the true value.

The value given from the Copper resistance

is probably the more accurate. The insulation was remarkably high of the Cable generally - one piece only was a little doubtful, the 8.043 knots of Type B. The deflection obtainable on a marine galvanometer with the longest obtainable focus 7 feet perhaps was still too small to read with much accuracy. The piece was therefore not spliced to the main Cable until the Ship had reached Banjowangi and repeated tests shewing no signs of a fault had been made.

The Copper resistance of the Cable at 75° has been estimated partly by the values of the W.R.M. sent from England and partly from the values of the C.R. when tests were made on board Ship at Greenwich because I notice that a difference of 10° & 15° between the observed & estimated temperature occurred in 2 cases at home & a similar discrepancy was observed here in the same pieces.

The Telegram despatched from here on our arrival will have informed you that the Staff at Port Darwin are but indifferently accommodated at present. Their stores are packed away in Iron houses which belong to the Government and they are living under small Canvas tents which are intensely hot during the day.

Mr Squires is getting up Log Huts as quickly as he can and one is already completed. Before the Rainy season sets in there is now I think, no doubt that he will have got all his Staff under cover; one Hut was finished 12 days ago, and another is now just completed. - The Station House will not be ready for a year - Not a Stone has yet been laid.

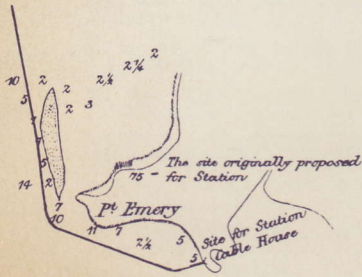
Position of British
Australian
Company's Staff at
Port Darwin.

Requirements of
Staff.

Captain Halpin telegraphed to Mr Earl that it would be advisable to send out authority to some one here to despatch the "Investigator" to Port Darwin with such stores as the Staff may want and this I think will be very necessary. Nothing is produced at Port Darwin - no Horses or Cattle bred - no ground cultivated. Preserved Meats &c. from the Government Stores are alone obtainable.

Captain Halpin was kind enough to give Mr Squires a case or two, all that remained of his private stores and offered to sell anything that the Investigator could spare.

On arriving at Port Darwin we found the Station house commenced on a site near the beach, about 2 miles from the Settlement, at the bottom of the Bay to the N of the Settlement, and which is bounded by Point Emery to the South. You will easily recognize it on the Chart. This site appeared to us all to be very objectionable. The house would be fronted by a bank of sand half as high perhaps as the rooms and not more than 50 Yards from them at the edge of the beach.



The tide recedes half a mile or so at low water exposing a mud flat with sparse mangroves here and there. We did not perceive any effluvia from the mud. At the back of the houses there would have been on one side, much higher ground shutting out the breeze in that direction and on the other side low ground which is flooded to depth of 2 or 3 feet in the rainy season and drains away to the sea by a little channel passing immediately in front of the proposed buildings. It was estimated that this land

British Australian
Company's Station
at Port Darwin
site originally
chosen.

could have been drained for about £100. The Doctor of the Settlement said he could not speak well of the site but thought it would not be unhealthy if the low ground mentioned were drained.

It appears that Colonel Finnis chose and Mr Squires accepted this site as the only one available in the then position of matters. He thought the Cable could not have been brought round by the Harbour and landed over the Rocky beach and further the Contractors from Adelaide did not understand how little was obtainable at Port Darwin and had not brought Horses enough to draw Water for them to the Hill on which the proposed Town is to be built. We all wrote a letter stating our Opinion that the better site for the House would be on the high ground near Government House and Captain Douglas, the Governor of the Settlement promised to spare a Bullock Cart for the Contractors use. It appeared that £500⁰⁰ over the Contract, by the drawings would have been expended in digging foundations on the original site and the Contractor agreed to give up what had already been done (viz. the foundation for the Operating room 6 feet deep) for £400. The Company will therefore save £100. by the change - and lose only one fortnight in the time for completing the Contract. The house will now stand on the high ground chosen as the site for the future town of Palmerston, looking out to Sea in front and open on all sides to any wind blowing. The foundations hard ferruginous Clay, there is perhaps only 5 or 6 inches of Vegetable Soil. It is so certainly the healthiest spot to be found - I think quite healthy.

Site proposed

Water Supply

Captain Douglas informs me that at Port Darwin there

falls 64 inches of rain in the year 56 inches during the three wet months, December to March and 8 during the rest of the year. Water is kept in Tanks and there is a well near the Settlement they say never fails. Iron Tanks in plenty are in Store, so there will be no difficulty on that score as to the new site.

State of progress
of land line

As to the land line - Mr. Little the Agent for the South Australian Government informed me that from Adelaide the line will be completed as far as Lat 19° 36'S Long 134° 30'E by December, next, from Port Darwin the line is (Nov. 6th) completed to Lat. 14° 40'S at the Katherine leaving 440 miles to be completed. The most advanced parties being at Elze Creek, near the Roper. Mr. Patterson who is in charge of this party now working South from Port Darwin, left for the interior while we were there, he spoke in desponding terms of his expedition. The Cattle sent for him from Adelaide arrived in very bad condition after the voyage and he had already lost some 30 per Cent of them. He said he expected to lose the fourth of his Men. I hope it is not so bad as he fancied but a evidently great delay must occur in completing the line. If it is done in 6 months it will be well. Mr. Little goes with supplies to the Roper River and leaves them as high up as the River is navigable. Where Pattersons party send to fetch them. He then goes round the Continent to Adelaide to hasten reinforcements up to Port Darwin and give information in order that the parties working Northward from Adelaide may advance as far as possible. From his account these have not met with much difficulty so far - They have found water and their Cattle have kept in good condition

Difficulties of
Mr Pattersons
expedition

Line reaching
southward from
Port Darwin.

becoming gradually acclimatised as they advanced
from the South to the hotter Country. The portion of
the Line I, from Port Darwin was originally let to
Contractors who failed to complete their Contract not
understanding the difficulties of the route. Every
effort appears to have been made by the South
Australian Government and I think they have
done a great work in completing the Line so
far.

Nature of Country in
immediate neighbourhood
of Port Darwin.

The Country as far as we saw it, about 10 miles
inland from Port Darwin is very favorable for
a telegraphic line, the jungle consisting of slight
trees with no underwood or many creepers.
Plenty of trees for posts of course and not so many
or so large as to make a wide Road necessary
or a Road difficult to cut - the insulators are
set on the top of the posts.

Mr. Squires
suggestion of hiring
Investigator.

The only plan that occurs to me is that (suggested
by Mr. Squires and telegraphed to Mr. Earle) of hiring
the Investigator to run between Port Darwin and
Normanton or Burke Town in the Gulf of
Carpentaria from whence the Line is complete to
S. Australia &c. She might do two Voyages
a month giving 6 as the minimum and 22
as the maximum number of days a message
would take from England to Australia. Any
how some saving on the Galle route - All this
has no doubt been discussed before you see this.

Landing place
of Cable at Port
Darwin.

The Cable at Port Darwin is landed as indicated
by the log. The Shore end is certainly clear of the
various patches of Shoal Water shown on the Chart
numerous positions were fixed by Angles and the
course plotted from these points and then compared with
the course as given by the courses sailed & distances in the Ships Log.

The Landing place is not a bad one - theref

is mud to nearly high water mark at neap tides and thence a few yards (say 50) of rock and sand to the temporary Cable house, an iron hut lent for the purpose. A trench was cut and blasted through the rock on the beach and was satisfactorily completed when we left except for about 6 feet. This bit was afterwards done by the Investigator Crew - a Cairn of Stones then built over the Cable - The shore end was landed on Boats. - Since we left we have heard that a hink or rather turn was put into the Cable.

I suppose in dropping the light from one of the boats The point is dry at low water springs. The part I am informed has been buried well in the mud and a boat load or two of Stones dropped over it. I presume it will be quite safe. - After a long conversation with Mr Stevenson through the Cable on the subject Captain Halpin and myself were convinced that the damage to the Cable was slight and that it was not a proper hink drawn tight.

Turn in Cable
discovered after Ships
Edinburgh & Hibernia
had left Port Darwin

Course of Cable.

On the course of the Cable from Port Darwin to Bali Straits there is little to remark - the Log giving all information. I think that the amount of slack payed out on different days is perhaps not exactly as represented the Cable lying E & W. the slack depends on the differences of longitude and this is not so easily determined as the ^{or} latitude. Strong Currents were experienced. Captain Halpin has given me a complete Copy of the Log of both ships which I shall hand to Captain Moody of the Investigator. I have not completed a fair Copy of the Charts to send by this Mail as I wish to compare mine with Captain Halpin's before sending it away.

In the Abstract a few positions are given which

numbered - These are the positions by morning sights for longitude and dead reckoning from preceding afternoon, for latitude they are therefore not so accurate as the position given by a line from the nearest numbered positions the error in latitude showing the error from Currents.

The Cable course is in sight of land off Both, New Island, Cape Blackwood and thence a great part of the way on to Banjouwangi - there can be no difficulty in finding its position at any point I consider. Angles were taken wherever possible. From Pandita to Banjouwangi the course was very carefully determined and I believe it to be quite accurately marked on the Charts.

Nature of bottom

The soundings were mud or sand all the way with one exception

British Australian
Telegraphic Company's
land lines at Port
Darwin

At Port Darwin a Mile of India Rubber wire has been spliced to the Cable for future use when the Station house on the Hill is completed.

Land lines at
Banjouwangi

At Banjouwangi the Cable lands half a mile from the Station house a good trench has been dug every where down to soft ground. It passes through sand for 100 yards or so and then through ground where the Water stands a few inches below the surface. - Through the sand the depth is 4 to 6 feet. The trench crosses two or three rivulets or Creeks where the Cable is properly secured. Lambert tested the land line here and the insulation was satisfactory, 4000 millions per knot, and over.

Tests of Spare
Cable.

A Telegram was received from Mr. Clark on the 25th instant asking for Careful tests of the Singapore Cable, Investigator and Land Lines.

The Investigator has now on board only 7 miles of India Rubber core, in fact, I understand

for Suva. All the Cable on board the Ships has been carefully tested as you will see by the forms sent, and is in good condition. It will be tested, as it is transferred to the Investigator and I telegraph results when it is all on board. -

Final tests of
laid cable, as
telegraphed. -

The estimated value of the insulation, at 75° , and one atmosphere pressure sent by telegram on the completion of the cable is calculated thus - The mean depth for every degree of longitude is taken from the Chart - For depths below 200 fms. the surface temperature is taken out from the log, and diminished by the same amount as the surface temperature was found to diminish from the experiments made on the Bombay Bank at the same depth - For deeper water the temperature is taken from the soundings made in the Indian Ocean for Aden Bombay Cable (and these agree with soundings made by H. M. S. Nassau in China Sea) The Coefficient for conducting power is taken out for each degree of longitude, and the mean coefficient so obtained - These numbers you will be able to check as you have all the data. The temperature actually found by the Copper resistance agrees with the estimated temperature - More exact numerical data on this point will be obtainable at the end of the thirty days tests when the mean of more experiments on the C.R. will be available I believe the numbers sent to be accurate within the limits the observations themselves determine.

Position of British
Australian Telegraph
Company's Staff at
Banjowangi. -

At Banjowangi the British Australian Company's Staff are well placed - The house is a large one and quite suited to the climate - All sorts of supplies are here to be had at a fortnight's notice - The Edinburgh will leave in about a week - The Investigator and Hibernia at the end of the thirty days -

Remain, Yours very truly
(signed) C. Hockin.



NEW GUINEA

WEST NEW GUINEA

FLORES SEA

FLORES

SAVU SEA

TIMOR OR ARAFURA SEA

TORRES STRAIT

GULF OF CARPENTARIA

NORTHERN TERRITORY

QUEENSLAND

A U S T R A L I A