ADELAIDE AND PORT DARWIN TELEGRAPH.

REPORT by C. Todd, Esquire, C.M.G., on the Construction and Completion of the Adelaide and Port Darwin Line of Telegraph.

[*Laid before the Conference by Sir Henry Ayers.*]

Post Office and Telegraph Department, Telegraph Branch,
General Post Office, Adelaide, 1st January 1873.

SIR,

Having received the last of the sectional reports only a few days since, and as I still require some documents and maps, which will take some time to prepare, to complete the information I want, I am unable to furnish the Government with a general report on the Telegraph from Adelaide to Port Darwin, constructed under my superintendence, in time for the outgoing mail leaving on Friday next, the 3rd instant. As, however, statements disparaging the stability of the line have been very freely circulated, I think it undesirable that the mail should leave without an official and emphatic denial from me of the truth of the statements made, as, is alleged, on good authority. I have, therefore, drawn up a brief report on the whole of the line, which I have now the honor to furnish. Having personally inspected the line from the Daly Waters southwards in the course of my overland journey, as well as portions of the line at Port Darwin and Southport, I am able to speak from personal knowledge in confirmation of the reports of the chief officers employed as to the substantial manner in which the line has been constructed.

This report being a very brief one, and intended only as preliminary to a general report, which I hope shortly to be able to furnish you, I have not entered into any lengthy description of the country nor is there time to collate all the reports from the different sections; as, however, Mr. Patterson's name has been mentioned as the chief authority for the disparaging statements referred to, I have thought it only just to that officer, he having both verbally and in writing denied that the statements were made on his authority, to enclose you his final report, that it may be published with this, should the Government deem it desirable. The other reports, as well as Mr. Patterson's, will of course be appended to my general report.

BAGOT'S CONTRACT.

On Bagot's contract, extending 509 miles from Port Augusta, or to latitude 26° 52′ south, the poles are pine and gum, the latter being mostly considerably over the specified size. There are also about 1,500 iron poles, planted generally alternately with wooden poles, distributed over the line north of Chambers' Creek. Considerable delay occurred in completing this section, which was commenced in October 1870, owing to the absence of suitable timber over 300 miles of the line, but by allowing the contractor to put in at first only ten poles to the mile, on the northern end of the contract, the wire was suspended by the beginning of January 1872, and communication established with the MacDonnell Ranges on the 3rd of January. The full complement of twenty poles to the mile were filled in subsequently, and the contract was satisfactorily completed about the end of March. From personal inspection I am able to report it a most substantial line, which will stand for a number of years with very little attention. This section was constructed under the supervision of Messrs. Babbage and Abbott, the former having charge, till he left for England, of the northern half.

On this section, and throughout the whole of the line, a lightning-conductor has been placed on every alternate pole. It consists simply of a piece of ordinary wire, stapled very securely on to the side of the pole, terminating in a coil beneath the butt, so that it cannot be withdrawn.

They have proved an effective protection from lightning, for although the line for many hundreds of miles passes over treeless plains, and is exposed to thunderstorms of great severity and extent, we have scarcely had a pole destroyed by lightning. The only interruptions caused by lightning have occurred where iron poles have been used. Since the line was opened on 22nd August we have had three interruptions, all of which have arisen from this cause, and have happened on the same section and in the same locality, viz., on the iron poles north of the Hamilton, on the section between the Peake and Charlotte Waters. The lightning, in each instance, smashed several insulators, leaving the wire in contact with the iron pole, thus making "earth" and stopping the communication.

To obviate this in future, I have had a short length of stout wire led from the line wire down the face of the insulator and brought within three-eights (⅜) of an inch of the top of the iron pole. This has been done to every iron pole, and will I think protect the insulator. I am having the same done on the wooden poles furnished with lightning-rods between the Katherine and Port Darwin, where iron insulator-pins have been inserted during the last dry season.

CENTRAL SECTIONS.

The central sections—respectively designated A. B, C, D, & E, extending from 26° 52′ to 19° 30′, or 626 miles, were completed before the end of 1871, so that had our operations in the Northern Territory been equally successful, the line could easily have been opened by the 2nd or 3rd January 1872.

Section A.

Constructed by Mr. R. R. Knuckey, extends from latitude 26° 52′ to 25° 30′, a distance of 120 miles. On the north end of Bagot's section, and on this as far as the Goyder, the line passes over a considerable extent of very rough, stony tableland, of slight elevation above the surrounding country, from which it rises in gradual slopes. This stony country is wholly destitute of trees, but is well grassed, though there are patches often met with of several acres in extent utterly bare of vegetation, thickly covered with a layer of stones. The stones, which are mostly quartzose sandstone, stained externally with iron, seem wholly confined to the surface, lying on or, if large, embedded in the loose friable loam, the latter being of a reddish color, reduced to a very fine powder, and in some places (south of Section A) largely mixed with gypsum in various stages of decomposition. At the Hamilton, and north of the Goyder, the line traverses well-grassed sandhills, covered with mulga and various kinds of acacias, many of which were in full flower when I passed. An abundance of fine water is to be found in large deep waterholes in the Stevenson, in the Goyder, close to the Charlotte Waters Station, and, I believe, in the Finke to the westward, and most of this country is well grassed. The creeks are lined with stunted box, gum, and myall; but very little serviceable timber was obtainable till near the Finke, towards the north end of the section, where an abundant supply was found, which continues up the Finke and Hugh as far as the MacDonnell Ranges. Iron and wood poles are planted alternately from the south end of the section to the angle south of the Stevenson, a distance of 30 miles. The wooden poles are stout gum saplings, of about 10 inches at butt and 5 or 6 at the top. I did not see a single bad pole on the line. Twenty to the mile are planted throughout. The line has been laid out with judgment, crossing the creeks at the best places, and at right angles, and carefully avoids low lands subject to inundation.

Section B.

Constructed by Mr. G. R. McMinn, extends from latitude 25° 30′ to 24° 0′ or 142 miles 9 chains. It was commenced in February 1871, and completed in every respect by the 15th November following, when, in accordance with instructions, Mr. McMinn went north to complete Section C, Mr. Mills, the officer in charge of that section and his party going forward to the north end of Section E, to assist Mr. Harvey.

The line on Section B follows, within a short distance, the Finke to its junction with the Hugh, a little south of latitude 25°, and keeps a general northerly direction to the junction of the Alice and Hugh, from whence it follows the Hugh, making a considerable detour to the north-west, passing through the Hugh Gorges of the James and Waterhouse Ranges, joining on to Section C at the latter. It crosses the Finke and Hugh several times, but is quite safe. At the first or Marchant's crossing of the Finke, immediately north of Section A, the line was carried away in January 1872, but Mr. McMinn has now planted a mast on either side at some distance from the bank. On the south side the mast is 52 feet long, planted 8 feet in the ground, and on the north side, which is higher, 39 feet. Both masts are securely strutted and stayed, and the longer one is built round with several tons of large stones. For about 60 miles along the Finke the line crosses heavy sandhills, covered for the most part with spinifex and low bushes, relieved in places by clusters of fine black oaks (*casuarinas*); but the country improves north of this, and is generally good and well grassed. Water is found in many places in the Finke, Hugh, and the smaller creeks running into them—at Marchant's Springs, Mount Musgrave, Polly's Springs (horseshoe-bend on the Finke), at St. Patrick's Camp, Whinham Springs (near Mount Burrell), first crossing of Hugh, Kragen's Creek, junction of Minnie Creek and Hugh, Stuart's Camp (in the James's Range), McClure's Springs, and Owen's Springs.

The poles throughout this section are sound good gum saplings, rather over than under the specified size. I did not see a bad pole on the line, which was substantially constructed throughout.

There are white ants on the sandhills and on the flats near the Finke, but they have made very little impression on the poles as yet. Some poles which had been in the ground for nineteen months were recently taken out by Mr. McMinn, who found that the white ants had commenced at the foot of the pole, where they had eaten out a hole about the size of his finger.

I quite concur in Mr. McMinn's recommendation that iron poles should be planted, when necessary to re-pole, alternately with wood on the sandhills, but on the other portion of the section no white ants have been seen; and, as timber is plentiful in the Finke and Hugh, there may be no occasion to use iron poles.

Section C.

Constructed by Mr. W. W. Mills, extends from latitude 24° to 22½°, or 131 miles, was commenced 22nd March and finished 29th December 1871. The section starts from Lawrence's Gorge on the north side of the Waterhouse Range, from whence the line crosses a well-grassed mulga plain, following up the Hugh, and then the Jay, both of which are splendidly timbered, to the foot of the MacDonnell Ranges, where it crosses a low gap, and turns abruptly to the eastward, keeping between rugged parallel ridges for several miles, to Fenn's Gap, where a practical crossing was found leading generally north-east to the Alice Springs (where a station has been built), and finally emerges from the range about 12 miles north. Leaving the MacDonnell Ranges the line crosses the mulga plains to the Reynolds Ranges, keeping to the west of the Strangways Range, and crossing a low gap in the intervening Hann's Range: the plains are well grassed, but the mulga is very dense in places, and water is scarce, but can be obtained by sinking on the flat. A native well was opened one mile to the west of the line, near the Burt, 25 miles from the MacDonnell Ranges, which yields a permanent supply at a depth of only 10 feet. The next water is found 35 miles further on, at a native well in the gap, at Hann's Range. A well, 50 feet deep, was sunk in the Burt, but yielded only a small supply.

Mr. Mills discovered a running brook in the Strangways Ranges, 9 miles N.E. of the line, which he believes to be permanent, as it was still running when he last saw it in July 1871, the middle of the dry season. Owing to the scarcity of surface water between the MacDonnell and Reynolds Ranges for a distance of 70 miles, and the absence of suitable timber, the construction of this portion of the line was attended with considerable difficulties. With few exceptions, however, the line is equal to what we have in the settled districts. From the Waterhouse to the north side of the MacDonnell Ranges, the poles are all good full-sized gum poles. Between the MacDonnell and Reynolds Ranges they are not so good, but are quite sound; and in the mulga there are more white ants, the soil being a light red sandy loam, splendidly grassed.

Section D.

Constructed by Mr. A. T. Woods (who was also the superintendent of the five Central Sections), extends from latitude 22° 30′ to 21°, or 124½ miles. This section follows for a considerable distance the Woodforde, Hanson, Stirling, and Taylor Creeks, from which the poles have been got. The supply was not very abundant, and difficulty would I fear be experienced in getting more near the line. About 500, or 25 miles of poles, were obtained from the Woodforde, which was striped of all its serviceable trees for a distance of 15 miles. The line follows the Woodforde for about 30 miles, where the creek ceases to have any defined channel, though it, no doubt, in high floods, runs into the Hanson, which the line follows for nearly 20 miles. Leaving the Hanson, the line crosses the Taylor 10 miles on, and then passes over the Forster Range between Mounts Mann and Gwynne to Barrow's Creek, where we have a station, and again crosses the main channel of the Taylor, 22 miles beyond Barrow Creek Station.

The line throughout this section has been erected in a most creditable manner, the poles are straight, of the full size, and are a very hard description of gum timber, which should, I think, last a number of years. The flats into which some of the creeks run will yield a limited supply of gum saplings for repairs, and there is probably a reserve left in the Hanson below the line; but no doubt eventually we shall have to place iron poles on this and the adjoining section.

The country is generally well grassed, and admirably adapted for stock. Mr. Woods, in his report, remarks, "Adjacent to this part of the line is some very good stock country, not only open and attractive in appearance, but probably the most healthy country for stock north of the MacDonnell Ranges, perhaps on account of the prevalence of salt bush, which is deficient or altogether absent elsewhere. There is much good grazing country throughout the length of Section D. The grasses are not rank; they are varied and nutritious, our stock thriving well. By judicious burning, green grass can be secured throughout the year, many of the grasses being perennial." There is a large admixture of spinifex, but, after burning, other grasses spring up with it.

With regard to water, in ordinary seasons, there is probably an ample supply all the year round, and can generally be got by sinking in the sand in the creeks, which have an uneven clay bottom, covered with sand. Mr. Woods states that the clay is very tenacious, and that wherever from inequalities in the bed of the creek a hollow basin is formed, water can be obtained by sinking in the sand. There is at present a large supply at the Barrow Creek, where the spring has been running since it was first opened out; but, as a precautionary measure, I would advise two or three wells to be sunk in the most likely places, by which means I have not the slightest doubt that a permanent supply could be obtained in the driest seasons.

The white ants are not very numerous on this section, and up to the present time have done little or no damage.

Section E.

Constructed by Mr. W. Harvey, extends from latitude 21° 30′ to 19° 30′, or 107 miles 76 chains. Mr. Harvey also erected 82 miles 16 chains 41 links of the line north of Section E to latitude 18° 26½′, or in all over 190 miles of line, having the assistance of Mr. Mills for a few months.

Leaving Adelaide in August 1870, he did not reach his work till the 24th May 1871, the first poles being planted on the 1st June, and the wire was stretched to the end of his section (E) by the 1st November following, the last 34 miles having at first only ten poles to the mile, according to my instructions dispatched by special mail in July, or immediately I had reason to fear delay on the northern side. Mr. Harvey then pushed on north of Section E, and, as just stated, extended the line another 82 miles. The intermediate poles, making 20 to the mile throughout, were planted before he left the work.

The country in this section, and more so to the north of it, is rather poor, the soil being mostly an intermixture of sand and clay, covered with spinifex and low scrub, excepting immediately along the creeks, where the soil is richer and the flats are well grassed. Here and there are belts of mulga, where grass is generally plentiful. The ranges, which are mostly quartzose sandstone resting on granite, nowhere rising over 600 feet, seldom so high, are covered with spinifex. In some places vast boulders of granite are scattered on the surface, lying singly or piled up in curious fashion to a considerable height. Quartz reefs are frequently met with, and a soft micaceous clay slate, nearly vertical, and running north and south.

Mount Samuel, a quartzose sandstone hill, some 250 or 300 feet high, a little to the west of the line, is crowned with immense ironstone rocks, highly magnetic—every fragment being polarized, rendering the compass-needle of the theodolite useless.

Timber of any size is wholly confined to the creeks; and there the description suitable for telegraph poles is by no means plentiful. Mr. Harvey had considerable difficulty in procuring the quantity required, having to cart poles long distances. Many of the poles on the northern end of Section E, and from there to the end of Mr. Harvey's work, are small and very crooked; they were, however, the best he could procure. The bulk of the poles are full-sized, and good; the others, although unsightly and small, are sufficiently substantial, and will probably last as long as the rest. When this section is re-poled I would advise iron throughout; indeed, iron poles for the north end of the section have already been provided.

North of the Gilbert the white ants become more numerous, and a beetle, termed the borer, also becomes numerous and destructive to the poles and insulator pins.

The best watered creeks on Mr. Harvey's section are the Bonney, Tennant's Creek, and Attack Creek, the first and last being probably permanent. A well has been sunk at the station on Tennant's Creek. Water is found in most of the other creeks, lasting for some months, and two or three wells were sunk, which require timbering.

NORTHERN TERRITORY.

Patterson's Section.

This brings me to the section constructed by Mr. Patterson, extending from the north end of Mr. Harvey's work, latitude 18° 26′, or 533 miles from Port Darwin, to the King 225 miles, from Port Darwin 308 miles. Commencing at the north end, the line, after crossing the King, takes a general S.E. course, crossing the Elsey Creek at 281 miles, and thence follows the Birdum to the Daly Waters (where a station has been built), 368 miles from Port Darwin. The line then takes a more southerly course, passing to the east of King's and Frew's ironstone ponds, across Sturt's Plain to the north end of the Ashburton Range. Passing between the range and the Newcastle Waters the line enters the range at the Watson, crossing Powell's Creek, where it passes over to the east side of the range.

With the exception of about 35 miles of line south of the Elsey, and a few miles north, where the poles are small, a better line could not have been erected. The first 17 miles south of the King, cypress pine (*Callitris*), which the white ants do not appear to touch, have been used throughout, and from 50 miles north of the Daly Waters, and for a long distance south, we have splendid poles—blood-wood, gum, and ironbark, the majority of them much over the specified size.

From the Newcastle Waters southward, timber, which to the northwards was generally thick, involving heavy clearing, becomes scarce, the trees being too stunted; but by dint of searching fair average sized poles were found. The white ants are numerous, especially north of the Lawson, and most of the timber is stunted and piped, but with good care sound poles can always be picked out.

Between the Daly Waters and the Elsey Creek, it was supposed there was no water after the middle of the dry season; but the discovery of a fine waterhole, a few days since, at the very end of a long dry season, has removed one great difficulty; and it will probably be necessary to sink only one well between the waterhole and Elsey Creek. Even as it is, the newly-discovered waterhole will make the whole of this piece of line easily accessible for repairing purposes at all seasons.

South of the Daly Waters I do not anticipate any difficulty, as heavy repairs will always be made at the most favorable season of the year, and the discovery of the fine springs called the Renner Springs, about 18 miles south by the line of Powell's Creek, makes the road quite safe as regards water at all times.

Darwent and Dalwood's Section.

I have now only to refer to the section constructed under Messrs. Darwent and Dalwood's contract, from Port Darwin to the King, 225 miles. This being the oldest piece of line (commenced in September 1870), I was more anxious about it, especially as it was in a disabled state during a great part of the previous wet season.

I have had it thoroughly overhauled, every bad pole taken out, and between Port Darwin and the Katherine iron pins have been substituted for the ironbark pins, which, although soaked in boiling petroleum, were found to attract the white ants and the boring beetle. The result after examination is, that out of 225 miles of line it has been necessary up to the present date to replace about 150 poles, destroyed by bush fires, white ants, and dryrot, which, I think, is sufficient to show that the line was faithfully built. I feel it only due to the overseers of the work, Messrs. W. McMinn and R. G. Burton, to say that I am perfectly satisfied that they efficiently protected the interests of the Government, and were faithful to their trust. Whilst the fact that, since the opening of the line in August last, there has not been a single interruption between the Charlotte Waters and Port Darwin, a distance of nearly 1200 miles, although we have had frequent and severe thunderstorms raging over many hundreds of miles, and a cyclone which blew down several thousand trees on the line, should be sufficient to remove all anxiety for the future, and to prove that the line is strong and has been constructed in a proper manner.

In a country so abounding with white ants as the Northern Territory, it is not pretended that wooden poles will last as long as elsewhere. Had I thought so, I certainly should not have advised the Government to order 6000 iron poles, in addition to the 500 previously sent to the Northern Territory (now at Southport), and the 2500 on the southern portions of the line.

With regard, then, to the state of the line generally, I can faithfully and honestly assure the Government that it has been substantially built throughout, and that with very few and unimportant exceptions, I have every reason to believe, from the reports of my officers as well as from my own personal observation, that the poles are sound, and of the full size specified. As explained in my letter of 2nd December, my principal reason for ordering the iron poles now was that they could be more expeditiously and economically carted now while we have a large number of acclimatized teams, both horses and bullocks, in the territory than we could do at any future period; besides which I think it desirable to have the iron poles on the ground to take the place of the wooden ones as they decay, to the extent it is intended to use them.

My present idea is, that we should gradually introduce iron poles, planting them alternately with wood where suitable timber is plentiful and near at hand, and consecutively where timber is inferior and difficult to get.

In the Northern Territory it will probably be found desirable to have iron and wood alternately from Port Darwin or Southport to the Newcastle Waters, unless experience should show that the pine, blood-wood, paperbark, and ironbark poles escape the ravages of the white ants. From south of the Newcastle to the MacDonnell Ranges, it may be well to look forward to re-poling with iron throughout. From the MacDonnell Ranges to some distance south of the Charlotte Waters, timber is easily procurable, and, at most, alternate iron poles will be sufficient. From here to Leigh's Creek we have nearly 2500 iron poles in already, and, as the wooden poles decay, we shall do well to substitute iron. Having 9000 iron poles, either on the ground or provided for, it will be obvious that we shall only require to introduce the remainder gradually, spreading the expense over a series of years.

Stations.

We have the following stations on the line, commencing north from Port Augusta :—

	Distance from Adelaide.
Beltana	355 miles.
Strangways Springs	545 ,,
The Peake	636 ,,
Charlotte Waters	804 ,,
Alice Springs	1,036 ,,
Barrow Creek	1,207 ,,
Tennant's Creek	1,354 ,,
Powell's Creek	1,467 ,,
Daly Waters	1,605 ,,
The Katherine	1,771 ,,
Yam Creek	1,848 ,,
Palmerston, Port Darwin	1,973 ,,

Temporary stations have also been placed during the wet season at the Alberga, between the Peake and Charlotte Waters, and at the Elsey, between the Daly Waters and the Katherine.

At Beltana we have only a small iron hut as a temporary accommodation, and at the Strangways Springs the operator is lodged at Messrs. Warren and Hogarth's station. At both of these places we shall have to build a station. It may perhaps be desirable to remove the operator from Strangways Springs to Mount Hamilton, which would better divide the distance between Beltana and the Peake.

At the Peake, Charlotte Waters, Alice Springs, and Barrow Creek, we have built substantial stone stations of eight or nine rooms, roofed with galvanized iron.

At Tennant's Creek we have at present only a wooden hut of three rooms till it is finally decided whether the station shall be there or at Attack Creek. But the galvanized iron for roof and other materials are on the spot.

We have only a temporary hut at Powell's Creek, the building material being at the Roper.

At the Daly Waters a large and substantial log house of six rooms, roofed with galvanized iron, has been built, building stone and lime not being procurable.

A similar station is being built at the Katherine.

At Yam Creek we have put up a substantial three-roomed hut, built of cypress pine, and roofed with galvanized iron. It is nearly completed.

At Port Darwin it was necessary to provide offices and quarters for the staff of the British-Australian Telegraph Company, in addition to the offices and quarters for our own staff. We have, therefore, had to erect a very large building, consisting of a central building and two wings. The central building comprises three offices, one of which is used by the British-Australian Company. The other two are used by the department, one for an operating-room, the other for the public on the business of the Telegraph, Post Office, and Customs. The South Australian quarters comprise a house of five large rooms, a detached kitchen and bath-room for the station-master, and two detached rooms for one assistant operator, the men being accommodated in adjoining huts of wattle and dab. The British-Australian quarters consist of a long range of buildings, containing ten rooms in all, being quarters for the resident superintendent and five (5) assistants. The rooms are large, one being a billiard-room and library, a handsome billiard-table and a good collection of books being provided by the company, who have also given their officers a light rowing gig.

The buildings are of stone, roofed with iron, and are surrounded by a broad verandah; the floors are concrete, to prevent the woodwork being destroyed by white ants. There are also out-buildings for stables, stores, workshops, &c., and two large underground tanks, each capable of holding 12,000 gallons of water. The buildings stand on four acres of ground fenced in, and half of which has been conveyed to the company, who, of course, pay for the cost of their portion of the building.

The site chosen is the one originally recommended by me, on the Esplanade near the Government residence, facing the harbor, of which a fine view is obtained.

It may be well to remark, in connection with this portion of my report, that in the interior we have six persons at each station—viz., the station-master, assistant operator, and four men. There are also about twenty horses, draught and saddle, and in most cases a team of bullocks, besides spare bullocks for food. The stations are all well provisioned, most of them up to the end of 1874.

Survey of Roper.

Before leaving the Roper I gave Captain Lawrie instructions to take complete set of soundings in the Roper, from its mouth up to the landing, to buoy and beacon the end channel, placing substantial beacons on the north, and, where required, on the south bank, between the bar and the river entrance; to mark by beacons, lopped trees, or otherwise, the position of all rocks and shallows in the river; to plot, on a general plan of the river, the deep-water channel, and depth of water at low-water springs; and to keep a record of the rise and fall of tide, a tide board being fixed at the landing. This appeared to me to be the most profitable way in which I could employ the *Young Australian*. I have not yet received Captain Lawrie's report, but I understand he has carried out my instructions with much intelligence and zeal. From a telegram received from him, dated August last, he says that the upper river had fallen considerably, but there was little or no difference in the depth of water below Garden Reach, and that there, on the bar, there was a foot more water than is shown on chart, so that the river, in the driest season, is navigable for vessels drawing 12 feet for 40 miles; above that there are the two pinches I have before mentioned in the Omeo, and three island reaches, where there is not more than 10 or 11 feet, which are the chief obstacles to navigation higher up the river. The channel, however, could be easily deepened by dredging at these points where there is any necessity for it.

Stock left at the Roper.

The following quantity of stock and plant where left at the Roper landing by Mr. Patterson, most of which will be available for carting the iron poles next season, viz. :—

Stock ... ... { 174 horses. 325 bullocks.

Plant and equipment ... ... { 16 horse waggons. 4 spring-drays. 17 bullock waggons. 13 bullock drays. 32 saddles, harness, &c.

In addition to these, forty-one horses and six bullocks have since been sent down to the landing from the Daly Waters; but four teams of horses and two teams of bullocks have been sent to the Katherine with balance of station loading and building materials since this return was compiled, and Mr. Patterson fears that 30 per cent. of the draught horses will be useless.

Financial Result.

Even a preliminary report, such as this, would not be complete without some statement as to the amount of business passing over the line, and the following tabular statement, showing the number of messages and gross receipts since cable communication was restored on 21st October up to the end of the year is not without interest.

Table showing the Number of Cable Messages, the Gross Receipts thereon, and the Net Proportion due to South Australia, between 21st October and 31st December 1872.

1872.	Number of Messages.		Cash Receipts in Australia.			Cash Receipts elsewhere.			Proportion of Receipts due to South Australia.		
	From Australia.	To Australia.	£	s.	d.	£	s.	d.	£	s.	d.
Week ending 26th October	153	148	1,662	17	5	1,405	3	8	353	5	0
" 2nd November	86	137	1,043	10	6	1,347	13	9	269	0	0
" 9th November	86	98	985	7	3	1,023	2	6	226	10	0
" 16th November	66	98	865	10	0	715	16	5	197	16	6
" 23rd November	58	75	566	12	9	920	10	9	166	10	0
" 30th November	83	110	748	4	9	1,342	2	6	235	10	0
" 7th December	96	91	1,093	1	0	969	15	9	229	0	0
" 14th December	44	69	499	15	3	856	0	6	146	10	0
" 21st December	74	69	820	14	9	790	14	9	181	0	0
" 28th December	62	86	675	3	9	1,091	13	0	198	9	3
Three days ending 31st December	30	27	271	10	0	358	10	3	70	10	3
Totals	835	1,008	9,232	7	5	10,821	3	10	2,274	1	0

So that the revenue accruing to South Australia on cable messages in the above period (21st October to 31st December) was £2274 1s. 0d., or at the rate of nearly £12,000 a year; to which must be added the revenue on local messages, which, since the line has been opened, has averaged over £300 a month—the receipts from this source in October and November (which were less than the previous month of September) being £634 5s. 5d.; besides which we find that the opening of the line has largely increased the intercolonial and general traffic on other lines.

Journey Overland.

With regard to my own movements, it may be well just formally to mention that I finally left the Roper, after having visited Port Darwin, on 13th June, and rode overland, arriving at Beltana on the 19th October. On my way I carefully examined the portions of the line in course of construction, and inspected it generally all through, completing the necessary organizations at the different stations. Having communication with Mr. Patterson and the several working parties, I was enabled to give final instructions with reference to the embarkation from the Roper, establishment of depot, and many other matters which I need not specify.

Conclusion.

In conclusion, it affords me much pleasure to acknowledge my obligations to the energetic officers and men who have with so much credit to themselves, and in the face of difficulties not easily realized, carried out their part of the work entrusted to them; and I cannot close without making special reference to Mr. R. C. Burton, by whom some of the best sections of the line in the Northern Territory were constructed. There are those, too, whose duties in the office, have been most arduous, though their names have not had so much prominence, to whom my thanks are equally due and are here most cordially given.

I have, &c.,

CHARLES TODD,

Postmaster-General and Superintendent of Telegraphs.

To the Honorable the Chief Secretary.

Sir, Adelaide, 30th November 1872.

I have the honor to submit herewith my final report upon that portion of the Overland Telegraph constructed by the officers and men under my command. I purpose confining myself to a general statement of the route of the line, and a brief description of the country passed through, together with some remarks upon the question of water supply for maintenance purposes.

The line was surveyed to the King by Mr. McMinn previous to his return to Adelaide, and the country from Port Darwin to that point has, doubtless, been described by that officer. The line after crossing the watershed of the King, 225 miles from Port Darwin, follows the general direction of the Roper Creek, S.E. by E., passing two miles to the westward of Bitter Springs, after which it takes a generally southerly direction, crossing the Elsey at 281 miles, and following the Birdum throughout its course for 112 miles, passing Stuart's Camp at Daly Waters at a distance of 370 miles from Palmerston. At 392 miles the watershed changes to the south, all the waters flowing towards the interior; up to this point the watershed

had been to the north, towards the Roper. The line passes 6 miles to the eastward of King's Ponds, thence still in a southerly direction, passing 2 miles to the east of Frew's Ironstone Ponds, across Sturt's Plains to the north end of the Ashburton Range, distant from Port Darwin 442 miles. The line then passes between the Ashburton Range and the Newcastle Waters, crossing the Lawson at 480 miles; the range is entered at the Watson, Powell's Creek crossed at 505 miles, and the creek followed up to the summit of the range, from which point the watershed again changes—all the waters now flowing to the eastward. The junction with Mr. Harvey's work was effected at a point 4 miles north of the North Tomkinson, and distant 533 miles from Port Darwin.

The country from the King to the Elsey is thickly timbered with gum and ironbark, but the trees are stunted, and before attaining any size are invariably piped by white ants. In the first 17 miles from the King there are occasional copses of cypress pine, a tree which does not appear to be attacked by these insects, and Mr. Rutt accordingly used this timber exclusively for poles; the remainder of the poles between the King and the Elsey are of ironbark and gum saplings, tolerably sound, but seldom having the specified diameter at the butt. The soil for the most part over this length is a sandy loam, hard in the dry season, but becoming impassable after the first heavy rains. The line is kept on the highest ground, and, consequently, passes over some very rough ironstone ridges. After crossing the Elsey, the Birdum is followed, the line being kept out of the valley and carried along parallel to its course through an ironstone forest country, with scrubby stony rises. The Birdum, which is perfectly dry towards the end of the dry season, although showing flood-marks 20 feet high in the trees, runs through a Bay of Biscay valley, which is quite impassable in the wet season. For the first 40 miles of the Birdum country good poles are very scarce; the poles are principally ironbark or gum saplings, and owing to the stunted nature of the timber, and the abundance of the white ant, could seldom be obtained of the specified scantling. In the next 20 miles the line, still following the Birdum, the timber is larger and sounder, and the poles, consequently, much better; and for the remainder of the distance, to Daly Waters, they are amongst the best erected in the Northern Territory; they are principally of blood-wood and grey-gum, perfectly sound, and, for the most part, in excess of the specified dimensions. The line enters broken country, when within 21 miles of Daly Waters, the ground being full of deep holes, and portions of it very rotten. Three miles further on (353 miles from Port Darwin) the Birdum is crossed; it is three-quarters of a mile wide, but, even when flooded, is only about 4 feet deep, with a current of 2 miles an hour; it has a good stiff clay bottom, and is safe for horsemen at any time. Some of the Biscay flats, however, in this neighborhood, presented well nigh insuperable obstacles to the passage of either horses or men during the middle of last wet season. If difficulty is experienced in maintaining the line, it would be well to corduroy a road along the line over the worst of these flats; they run in belts from east to west, and could not be avoided, and so were crossed in the narrowest parts.

From Daly Waters to Frew's Ironstone Pond the poles are very sound, being mostly of blood-wood, and of the full size. The clearing over this length was exceedingly heavy; I believe by far the heaviest on the continent—the line being carried for the greater part of its length through a dense mulga scrub, which here attains a height of over 40 feet, and hedgetree, through which it was impossible to lead a horse. The scrub and hedgetree, which has been thoroughly cleared on, could not be avoided either side of the line without taking the line through the Biscay flats to the westward, which are impassable in the wet season. The soil is a red loam for the most part, overlying an ironstone conglomerate, which not unfrequently crops out on the surface. After leaving Frew's Pond the line traverses a portion of Sturt's Plains, and crossing the north end of the Newcastle Waters, follows the western slope of the Ashburton Range to the Lawson. On this length the poles on the northern portion are mostly of good blood-wood; but on the 25 miles north of the Lawson sound timber has not been obtained—the poles are pipy and otherwise defective. Between Frew's Pond and the Lawson there is a good deal of open country, what little timber there is being scrubby, poor, and stunted; most of the poles were obtained from the range.

Soon after crossing Lawson's Creek the line enters the Ashburton Range, and traversing high, undulating country, crosses numerous rocky spurs, and generally passes through a most worthless country until it effects a junction with Mr. Harvey's work, 4 miles north of the North Tomkinson. The poles erected on this length are almost wholly of blood-wood and of grey-gum, and were the best obtainable in the district. In some portions of the work Mr. Burton experienced great difficulty in obtaining sound poles, most of the timber south of Powell's Creek being piped with the ants.

My progress reports have been so full of detail that it is not necessary for me to recapitulate what I have written before save in a general manner. Mr. Rutt arrived at his first working camp (the King) on the 1st December 1871, and had only succeeded in erecting 18 miles of line—when the country, which had been rapidly becoming boggy from the rains, was inundated—the floods coming so suddenly that, although measures were instantly taken to shift camp to a small rise half a mile distant, the removal was only accomplished by carrying the whole of the stores and equipage on the men's shoulders, they working for four days up to their waists in water. From the 3rd January 1872 to the 10th April, Mr. Rutt and his party remained at Providence Knoll, unable either to work or shift camp. Work was resumed on the 11th April, although the country was still boggy, and the shifting of camp attended with extreme difficulty. From this date the work progressed, without a break, until its completion on the 30th August.

Mr. MacLachlan arrived at his first working camp (Well No. 1. on the Birdum) on the 6th December, and only succeeded in erecting 18 miles of line before he was stopped by the floods, and compelled to retreat 8 miles, his men having to shift camp and carry their effects on their backs. Work was resumed by this party on the 15th April, and continued without interruption until the completion of the work. Mr. MacLachlan having been recalled to Palmerston, as warden of the goldfields, was succeeded by Mr. Mitchell, who remained in charge to the last.

Mr. Burton did not succeed in reaching his first working camp until the 4th January 1872. The troubles he experienced on the Birdum for want of water, and the still greater difficulties brought about by the floods, have already been described in previous reports. Mr. Burton commenced work poling on the Milne, a stream to the eastward of Daly Waters, but after constructing 4 miles of line, the country became so much flooded, that he deemed it advisable to abandon the work done and search for a better route and a safer camp to the westward. On the 16th January, Mr. Burton resumed work on the west bank of Daly Waters (Stuart's camp) and continued until the 28th February, during which time he contrived, in spite of rain and floods, to erect 14 miles of line. Work had then to cease; the country was becoming worse, and the work and exposure had filled the camp with sick disabled men. Work was again resumed on the 15th April, and continued without a break, as with the other parties, until the completion of the line.

I cannot refrain here from expressing my admiration of the energy and perseverance with which Mr. Burton and his men pushed their work; they were the pioneers throughout, and they endured more privations and ran greater risks than any of the others. Mr. King, I am sorry to say, is still suffering from the effects of his long continued exertions and exposure to the weather.

My acknowledgments are also due to Messrs. Rutt and MacLachlan, the leaders of the other sections, for their loyalty to myself in the midst of great troubles, and for the manner in which they continued faithful to their work throughout. Mr. Mitchell succeeded Mr. MacLachlan, and well sustained the charge laid upon him.

Special recognition is due to the overseers of transport; they all without exception, did their work well, and I could not wish to be associated with a better lot of officers.

Before concluding this report, I think it well to draw attention to the necessity of sinking one or two wells on the Birdum between the Warloch Pond and Daly Waters, directly after the ensuing wet season. So far as my experience has gone, that was the only stretch of country that could not be traversed by horsemen last November, and it was then absolutely waterless. It would be advisable, however, also to sink a well half-way between the King and Bitter Springs. Last year there was not more than a fortnight's supply left on that track when the rains set in.

I think it possible there might be some difficulty in travelling from Daly Waters to the Newcastle Waters in some seasons, but there has been ample water on this track for horsemen during the dry season, which is just now approaching its termination.

I have, &c.,

ROBERT C. PATTERSON,

Commanding Expedition.

C. Todd, Esq., C.M.G., Postmaster-General and Superintendent Telegraphs.