

FURTHER PAPERS

RELATIVE TO THE

SUBMARINE TELEGRAPH ACROSS COOK'S STRAITS.

(In continuation of Papers presented 19th October, 1865.)

PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND OF
HIS EXCELLENCY.

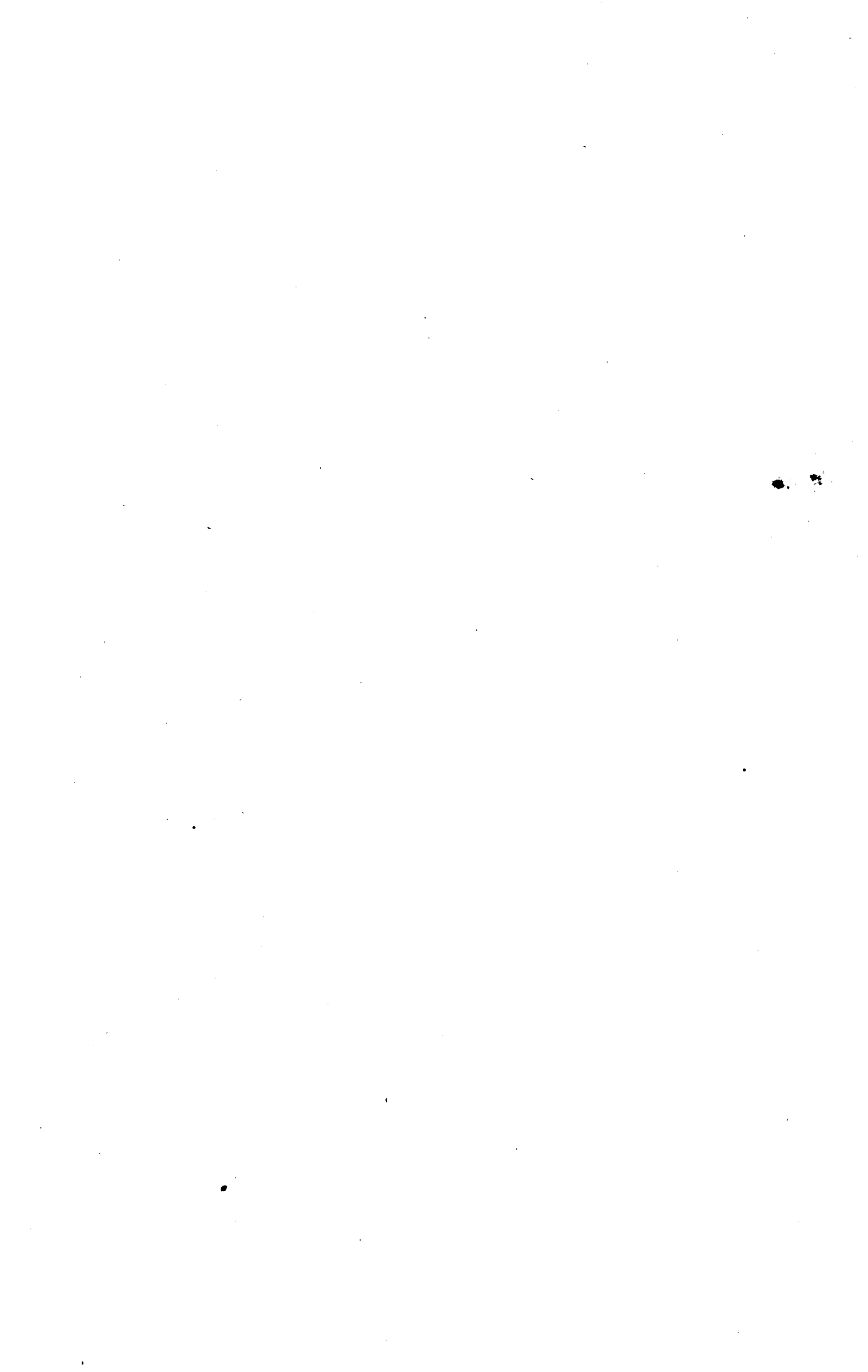
WELLINGTON.

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1866.

SCHEDULE OF PAPERS

RELATING TO COOK STRAIT SUBMARINE TELEGRAPH.

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FURTHER PAPERS RELATIVE TO THE COOK'S STRAITS SUBMARINE TELEGRAPH.

No. 1.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. the COLONIAL SECRETARY.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 24th August, 1865.

(No. 324.)

SIR,—

I have the honor to acknowledge the receipt of your letter of number and date as stated in margin, directing me to procure for the Government an Electric Submarine Cable, and at once to take the necessary steps for having such cable constructed in accordance with the most approved principle, and under the highest advice. My attention is directed to the letter from Mr. Alfred Sheath, the Telegraph Engineer in New Zealand, and I note it is not intended as a guide, but as containing suggestions for the consideration of the best authorities in England, and as furnishing information which may be useful.

No. 104.
June 10, 1865.

In reply, I beg to state I have taken immediate steps towards carrying out the views of the Government in the most efficient and expeditious manner possible, but in the absence of the detailed information as to the nature of the bed on which the cable is to be laid, and soundings, which I am to receive next month, I cannot report by this mail having concluded any definite arrangement, but I beg to assure the Government that this important undertaking shall receive my best attention.

I have, &c.,

JOHN MORRISON.

The Hon. the Colonial Secretary,
Wellington, New Zealand.

No. 2.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. the COLONIAL SECRETARY.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 24th October, 1865.

(No. 407.)

SIR,—

I have the honor to acknowledge the receipt of your letter No. 134, of 13th July last, intimating that the further particulars respecting the Electric Cable had not been received by Government, and could not be forwarded by that mail; also letter No. 156, of 12th of August last, enclosing the Parliamentary Papers noted in the margin, and directing my attention (page 5) to the Report dated 26th July, 1865, of Mr. J. M. Balfour, Marine Engineer, who had minutely examined Cook's Straits, with the view to the selection of the best route for connecting the two islands of New Zealand by a Submarine Telegraph Cable, which particulars are transmitted for the information and guidance of the contractors who may be selected to construct the cable.

D. No. 1D, 1865.

The information to hand with that already received shall now be submitted to competent manufacturers, and steps taken to obtain the immediate construction of a suitable cable.

By next mail I hope to be in a position to furnish you with the description of cable which has been recommended, and the terms and conditions of the contract.

The papers furnished by the Colonial Secretary of Tasmania are serviceable and important, and it shall be my endeavour to embody in the contract about to be made many of the suggestions therein referred to.

By the mail via Southampton, which arrived to-day, Mr. Balfour has forwarded the soundings of Cook's Straits, and states he has transmitted the information direct, in order that there might not be any delay in it reaching me. The receipt of it has been acknowledged by this mail.

I have, &c.,

JOHN MORRISON.

The Hon. the Colonial Secretary,
Wellington, New Zealand.

No. 3.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. the COLONIAL SECRETARY.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 27th November, 1865.

(No. 472.)

SIR,—

In pursuance of the instructions conveyed to me in your letters of numbers and dates as in margin, I beg to report the steps I have since taken to give effect to the wishes of the Government, by obtaining a Submarine Cable for Cook's Straits.

No. 104.
June 10, 1865.

Upon receipt of the Parliamentary and other papers enclosed in your letter of 12th August, I made arrangements with the Acting Engineer of the Submarine Telegraph Company, securing his professional services to design and prepare a specification of a cable of the most improved construction specially adapted for Cook's Straits, guided by the information and opinion of the Director of Public Works at Hobart Town; Mr. McGowan, Superintendent of Telegraphs for Victoria; and the Reports of Messrs. Sheath and J. M. Balfour.

No. 156.
August 12, 1865.

After maturely considering the character of the channel, the contingencies affecting the shore-ends of the cable, and the delay and inconvenience which would be caused by a reference to England for repairs, it was deemed desirable to adopt a cable similar in construction, but much heavier in iron

sheathing, to the proposed submarine cable for the China Seas and Torres Straits, referred to by Mr. McGowan in his letter to William R. Falconer, Esq., Director of Public Works, Hobart Town, as it is the description of cable now invariably adopted by the Submarine Telegraph Company and English Government.

I therefore beg to submit copy of the specification and conditions upon which I have invited manufacturers to tender.

They were asked to name separate prices for a cable constructed with one, with two, and with three conductors.

Acting on the strong recommendation of the Director of Public Works at Hobart Town, I stipulated that the manufacturers should ship and submerge the cable at their risk, and moreover maintain it in perfect working order for twelve months. The terms of payment submitted correspond with the views of the same functionary, as, in the absence of any special instruction from the Government on these points, I assume their concurrence in the suggestions contained in the documents forwarded to me.

The firms invited to tender were four in number. One declined, after carefully examining the specifications and conditions, stating, "The mode of payment proposed is such as would make the contract of a too speculative nature for us to entertain."

Another stated, "The conditions were still found to be so exceedingly onerous, that, unless they can be very materially modified, I regret to inform you we could not feel justified in submitting a tender."

The others sent in their tenders undertaking to supply the cable free on board a ship in the port of London, namely:—

	Tender 3.	Tender 4.
Cable with one conductor—		
14 knots for shore-ends 	£320	£317.
32 knots for main cable 	233	230.
Cable with two conductors—		
46 knots same size throughout 	386	381.
Cable with three conductors—		
46 knots same size throughout 	448	445.

No. 3 sought for the "payment to be made in London on completion of the cable, upon certificate of Engineer that it is made in all respects in accordance with contract;" whereas No. 4 stipulated for "the terms of payment to be cash on shipment." They further added, "That in consequence of the short length to be laid, and the great distance from this country where the work is to be carried out, this Company cannot take the operation of submerging the cable and taking the risk of maintenance."

Finding it impracticable to impose these terms of payment I decided to modify them, and in the course of a few days I hope to conclude a negotiation with one of the firms to construct and submerge the cable.

The point to which I attach much importance is to bind a manufacturer to submerge, and after this to maintain or guarantee the integrity of the work for a given time.

While anxious to secure this desirable end, the Government may be assured I will not consent to terms of an unreasonable character.

The modified conditions now under consideration are that at least half the cost of the cable should be payable on the shipment, the remainder by instalments upon submerging and completion of contract. Further, as considerable misapprehension exists on the part of the contractors about procuring a steamer to tow the ship across the Strait, or in case of accident to recover the cable. With a view to remove this objection, I undertook that one should be provided for this service. By so doing I do not think I commit the Government to a difficult or expensive engagement.

The question as to the number of conductors to be adopted is a point of material importance, and one upon which I should have been glad to have had definite instructions from the Government, Mr. Sheath's opinion that the cost of a cable with three wires would be much less than one-third in excess of a cable with only one conductor, is not bore out by the tenders received; and his estimate of cost per mile is much below the mark. At the present time, however, and since the estimate was made for the Indian lines in the China Seas, already referred to, the prices for all telegraphic material have advanced upwards of thirty per cent.; this will account for Mr. Sheath's estimate being lower.

All the opinions I have received concur in advising me to adopt a cable with three conductors, in preference to one with two. A cable containing two conductors is more liable to injury from compression, owing to its peculiar construction, than one with three. This testimony strengthens Mr. Sheath's suggestion in his report to Government, where he states: "The form of cable I should recommend would be one containing three conductors." The evidence of W. R. Falconer, Esq., in his letter to the Hon. the Colonial Secretary of Tasmania, states: "That in such a work it is not desirable to trust to one copper conducting wire, as in the Tasmanian cable."

Having carefully considered these opinions, and that which is recorded by Mr. Sheath of its being not at all "improbable that the amount of business between the two Islands will require two or even more lines," it appeared to be most judicious to adopt at once a cable containing three conductors, although the cost, so far as I can judge, will be more than that anticipated by the Government. It may be further observed that the excess in price between a three-wire and a two-wire cable is somewhat under three thousand pounds; whereas, if one with two wire is adopted, and in the course of a short time it is found necessary to have a third channel of communication, a single wire cable of the description referred to in specification would cost free on board in London about twelve thousand pounds.

These remarks will furnish Government with an outline of what has been done respecting the Submarine Cable, and what is about to be carried out.

When the contract is completed, I shall transmit a copy of it and all the papers connected therewith.

I have, &c.,

JOHN MORRISON.

Enclosure in No. 3.

COOK'S STRAITS ELECTRIC SUBMARINE CABLE.

SPECIFICATION and CONDITIONS upon which Manufacturers are invited to tender for a SUBMARINE CABLE on account of the Government of New Zealand.

1. Fourteen nautical miles of cable, containing a single conductor of seven stranded copper wires, equalling one of No. 14 Birmingham wire gauge, and weighing 107 lbs. to the nautical mile.

The interstices being filled with Chatterton's compound, and then insulated with three alternate coatings of Chatterton's compound and gutta percha, all of the best description, in No. 1 Birmingham wire gauge, and weighing, exclusive of the copper conductor, 166 lbs. to the nautical mile, making a total of 273 lbs.

The copper to possess conducting power at 75° Fahrenheit, equal to at least 85 per cent. of pure copper by Mathusen's standard, and the insulation tested at 75° Fahrenheit to equal a resistance of not less than 150 millions of Siemon's units per nautical mile.

All core to be kept under water until made up. This core to be then served with tarred jute yarn (wet), and further served with Stockholm tarred jute yarn to a sufficient thickness to take a covering of twelve No. 1 B. W. gauge "best best" galvanized iron wires laid on spirally, each wire being capable of being elongated 7 per cent., without breaking; the whole to be covered with two coatings of Stockholm tarred hemp and Bright and Clark's compound.

The above to compose the shore ends, including two taper ends of 100 fathoms each to meet the No. 4 wires of the main cable.

And for the main cable, thirty-two nautical miles of the same description of core to be served with wet tarred jute, and further protected with twelve No. 4 B. W. G. "best best" galvanized iron wire; the whole to be protected with two coatings of tarred hemp and Bright and Clark's compound as before stated, and kept under water until shipped.

2. For a cable of forty-six nautical miles, containing two insulated conductors similar to the above, two twisted yarns of wet tarred jute to be laid on longitudinally with the conductors so as to make a perfectly central bed for the further coating of wet tarred jute; the whole to be sheathed with twelve No. 1 B. W. G. "best best" galvanized iron wires, and further protected with hemp and Bright and Clark's compound as before stated.

3. For a cable of forty-six nautical miles containing three insulated conductors similar to before stated, having three twisted wet tarred jute yarns laid on longitudinally with the conductors; the whole making a central bed for the further coatings of wet tarred yarn twelve No. 1 "best best" galvanized iron wire and the two coatings of hemp and Bright and Clark's compound.

The sheathing to be commenced at latest fourteen days after signing the contract, and the cable to be shipped within sixty days after signing, under penalty of £100 per day.

The vessel containing the cable to be ready for sea, and to proceed on her voyage, sixty-five days after signing contract, under penalty of like amount.

All excess cable to be the property of the Government of New Zealand, and landed at Wellington.

An inspecting engineer will be appointed, who shall be entitled to inspect every and any stage of the process of manufacture of the cable, and at all seasonable times to have free access to all such parts of the works of the said manufacturer as may be necessary for the purpose of such inspection.

The manufacturer at the same time shall supply means of testing the iron wire, and of electrically testing the core and the cable at each stage of its manufacture; but such inspection and examination shall not in any way commit the Government of New Zealand to the approval and acceptance of any cable which shall not be strictly in accordance with the specification, or which when submerged shall be in any way defective.

The tender is required to state for what sum the contractor would be prepared to ship to New Zealand, submerge, and keep either cable in perfect working order from twelve months from the date of it being successfully laid, and then to deliver the cable to the Government of New Zealand in as perfect electrical condition as when approved by the inspecting engineer in England; but such twelve months is to be exclusive of any period that may be occupied in repairing the said cable, and to be prolonged for an equal period.

Payments for the cable will be made to the contractor in the Colony by the Government of New Zealand by instalments, viz. :—

1st instalment.—On the cable being submerged, and the electrical condition proved perfect.

2nd instalment.—In six months from date of laying the cable, it being at that time in perfect working order.

3rd and last instalment.—At the expiration of twelve months, the cable being in as perfect electrical condition as when approved by the inspecting engineer.

Interest will be allowed to the contractor from the date on which the cable is reported to the Government as being in perfect working order, and during the time it continues so, but will cease on payment of last instalment, or for such time or times during the twelve months that the cable is not in perfect working order.

Tenders with specimens of the cable Nos. 1, 2, 3, will be received until the 17th instant.

No. 4.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. the COLONIAL SECRETARY.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 23rd December, 1865.

(No. 498.)

SIR,—

Referring to the letters of numbers and dates stated in margin upon the subject of the Electric Submarine Cable for Cook's Straits, I have now the honor to inform you that I have entered into a

No. 407.
October 24, 1865.
No. 472.
Nov. 27, 1865.

FURTHER PAPERS RELATIVE TO THE

contract with Mr. W. T. Henley, Submarine Telegraph Cable Manufacturer and Electrical Engineer, to construct a cable for the above service.

The construction of the cable is to be strictly in accordance with the specification prepared by the Acting Engineer for the Submarine Telegraph Company, copy of which was transmitted on 27th ultimo.

I was given to understand the contract would be ready for signature, and to send to you by this mail, but in this I have been disappointed, as up to the time of writing it has not been received, it therefore necessitates my requesting your attention to the following terms and conditions to which I have agreed:—

1. The cable is to be forty-six nautical miles in length; it is to contain three conductors, and is to be constructed in every respect according to specification.
2. The cost of it is to be four hundred and forty-eight pounds per nautical mile, or twenty thousand six hundred and eight pounds free on board of ship.
3. The contractor undertakes to submerge and maintain it against all risks and in good working order for twelve months from the date on which it is laid and in work; excepting only the risk of damage done to it by vessels. It is, however, in the power of Government to accept the proposal submitted by him, as hereafter stated, and to cover this risk also.
4. For submerging and maintaining cable in good order and electrical condition for the twelve months; for providing, paying out, and packing up machinery, tank, in which to submerge cable while on board of ship, timber, buoys, &c., &c. (all of which become the property of Government), and for sending out and paying all the expenses (during the period of guarantee) of an efficient staff, the contractor is to be paid the sum of five thousand nine hundred pounds. Should Mr. Henley be required to guarantee and maintain the cable for twelve months against damage done to it by ships, a further sum of two thousand pounds is to be paid to him.
5. The Government on their part are to provide a suitable sailing vessel, to be approved by Mr. Henley, for the conveyance of the cable; one or two steamers to tow her across the Straits, and to assist at laying; to pay the freight, hire of steamers, and marine insurance on cable, &c.
6. The contractor engages to have the cable constructed and shipped on or before the 20th February next, or to pay a penalty of £30 per diem for each day beyond that date.
7. The cost of cable, machinery, guarantee, &c., being twenty-six thousand five hundred and eight pounds, it is agreed the payments are to be made as following:—
 - (1.) Say thirteen thousand two hundred and fifty-four pounds, or the moiety upon the shipment of the cable (or if required during progress of work), and production of engineer's certificate.
 - (2.) Say six thousand six hundred and twenty-seven pounds, or one-fourth, after the cable has been completed, and in good working order for three months.
 - (3.) Say six thousand six hundred and twenty-seven pounds, or remaining fourth, on completion of the twelve month's guarantee, and at the same time the extra £2,000, if agreed to.
 Both payments to be made in London on presentation of Government certificate.
8. It is provided that the Government are to have no responsibility, should the sailing vessel approved by Mr. Henley be afterwards found unsuitable or defective, nor to be liable for any default or neglect of the officers or crew, nor of any officers, pilots, or men whom the Government may place at the disposal of the contractor to assist in laying the cable.

As I considered there would be little risk of damage to the cable by vessels anchoring, notwithstanding that the contractor attached much importance to the point, I have deemed it advisable to afford the Government the option of assuming this risk themselves.

Considerable difficulty has been experienced in procuring a suitable vessel, upon moderate terms, for the conveyance of the cable, but I am glad to report that one has been secured.

In the first instance, negotiations were opened with the Panama, New Zealand, and Australian Royal Mail Company to have it conveyed by one of their steamers proceeding to Australia and Wellington, but I regret to say without success. Three vessels were then submitted to Mr. Henley, and the first-class clipper ship "Weymouth," of 830 tons register, noted for her rapid passages, was selected.

An engagement has therefore been made with Messrs. Shaw, Savill and Co., for the conveyance of the cable by the ship "Weymouth" for the sum of two thousand five hundred pounds.

One-half of this amount being payable by Government on the arrival of the ship with the cable on board at Wellington, and the remainder on the cable being successfully laid.

The payment of that portion of the freight which is made contingent on the successful laying of the cable was so stipulated that the Government might securely rely upon all possible aid from the officers and crew of the vessel on behalf of Messrs. Shaw, Savill and Co.

To this latter stipulation I attached so great importance that I determined to insist upon it, notwithstanding much opposition.

The Government will appreciate the value of this clause when they peruse the agreement entered into with Messrs. Shaw, Savill and Co., which will be forwarded, together with Mr. Henley's contract and all other papers by the ensuing mail. Meanwhile, I may observe that I am confident that the cable will be equal to anything hitherto constructed; and prove to have been contracted for upon very favorable terms as to construction, submergence, and guarantee.

I have, &c.,

JOHN MORRISON.

The Hon. the Colonial Secretary, Wellington, N.Z.

No. 5.

Copy of a Letter from Mr. GISBORNE to Mr. JOHN MORRISON.

(No. 73.)
SIR,—Colonial Secretary's Office,
Wellington, 14th March, 1866.

I have the honor, by direction of Mr. Stafford, to acknowledge the receipt of your two letters Nos. 498 and 500, of the 23rd December last, stating the steps which you had taken under the instructions of the late Government for procuring an Electric Submarine Cable for the purpose of telegraphic communication across Cook's Straits.

Under the agreement which you have entered into with the contractor for the supply of the cable, the sum of thirteen thousand two hundred and fifty-four pounds will have become due in February last. If you have not already drawn on the Government for this amount, and the premium thereon, I am to authorize you to do so at thirty days sight, through the Bank of New Zealand.

I have, &c.,

W. GISBORNE,
Under Secretary.John Morrison, Esq.,
3, Adelaide Place, King William Street, London.

No. 6.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. the COLONIAL SECRETARY.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 24th January, 1866.

SIR,—

In my letter No. 498, of 23rd ultimo, which I had the honor to address to you on the subject of the Submarine Cable for Cook's Straits, I therein stated the main conditions of the contract entered into with Mr. Henley for the construction of a cable for that service. I therefore do not again recapitulate the terms to which I have assented on behalf of the Government, but I beg to refer to the contract itself, which was transmitted to you via Southampton for further information.

The agreement made with Messrs. Shaw, Savill and Company for the conveyance of the cable in the ship "Weymouth" to Wellington, and for submerging it, was likewise transmitted via Southampton.

Upon reference to these documents the Government can estimate the advantages secured, and the care with which I have endeavoured to protect their interest.

To some of the conditions to which I have not heretofore referred I would direct attention.

1st. The agreement is signed on the assumption of the Government accepting Mr. Henley's proposal to maintain the cable for twelve months against all risks (including that of damage which may be occasioned to it by vessels or ships) for which the sum of twenty-eight thousand five hundred and eight pounds (or twenty-six thousand five hundred and eight pounds, and two thousand pounds as previously advised,) is to be paid; but should the Government elect to take upon themselves the risk from vessels, you will please note that within fourteen days after the arrival of the "Weymouth" at Wellington, notice in writing is to be given to the representative of Mr. Henley that the risk referred to shall be excluded from his agreement, and a deduction made of the sum of two thousand pounds, as mentioned in the thirteenth clause of the agreement; otherwise, if the notice be not given within the time named Mr. Henley will claim to be paid the full amount of twenty-eight thousand five hundred and eight pounds.

2nd. The Government will be called on to provide one or two steamers, such as are in use on the coast, to assist in laying the cable, and to tow the "Weymouth" from Wellington across the Strait, and back to Wellington; but when the cable has been successfully submerged the liability of Government to provide steamers at once ceases, unless they require Mr. Henley to undertake to guarantee the cable from the risk of damage from vessels, in which case a steamer has to be provided by Government, as mentioned in clause 12.

3rd. It will be observed the cable is to be constructed and shipped on or before the 20th proximo; the end of that month is the time fixed for the sailing of the vessel for Wellington. On her arrival there, the discharge of her cargo is to be effected in twenty-one days, and twenty days from the time she is ready is to be allowed Mr. Henley to submerge the cable; for whatever time occupied by him exceeding the twenty days he is to pay £10 per diem to the ship.

4th. At the expiration of the twelve months all surplus cable which shall remain, the wrought iron tank, and all other apparatus specified in the second schedule, are to be delivered to the Government in good working order.

5th. The cost of the cable, apparatus, and maintenance for twelve months, are to be paid for as previously advised to you, viz. :—

£13,254 on shipment in London.

£6,627 on cable being in good working order for three months.

£8,627, or £6,627, as the case may be, on completion of the contract.

In the agreement made with Messrs. Shaw, Savill and Company every precaution has been adopted to secure the co-operation of the officers and crew of the vessel. The amount of freight to be paid by the Government is two thousand five hundred pounds in full, one moiety on arrival of the "Weymouth" at Wellington, and the balance on the cable being successfully submerged (insulation excepted.) The latter payment, it will be observed, is made contingent on the service being properly carried out and completed.

For the information of the Government, I herewith transmit copies of the various tenders received for the construction of the cable. Messrs. Siemens Brothers declined to tender; the Telegraph Construction and Maintenance Company, Limited, quoted price closely approximating to Mr. Henley's rates, but they declined to submerge the cable, while the full cost was to be paid on shipment. The

Indian Rubber, Gutta Percha, and Telegraph Works Company, Limited, at first refused to tender, on the ground that the conditions were so exceedingly onerous; on my subsequently modifying them, the Company submitted a tender which involved an increased cost of about seventeen thousand pounds above that of Mr. Henley's contract.

Under these circumstances I conceive that in securing Mr. Henley's contract the interests of the Government have been carefully studied, and at the same time a highly satisfactory contract has been made.

Copy of my letter soliciting tenders, and of Mr. J. R. France's letter to me relative to the best description of cable, also accompany the documents before named.

The Government has already been advised that I had engaged the services of Mr. J. R. France, the Acting Engineer to the Submarine Telegraph Company, to superintend the construction and test the material employed in the manufacture of the cable. I now beg to report that for this service his fee has been fixed at one per centum on the cost of the cable.

Arrangements have been made to insure the cable in the office of the New Zealand Insurance Company, to cover the risk of total loss on the voyage to Wellington, whilst there, and the sea risk attaching to any portion of the cable being on board the ship and lost with the vessel.

Notwithstanding that I am without any instructions from the Government to purchase instruments requisite to effectually test and detect the existence and position of any fault in the cable, yet as these are absolutely essential, I have instructed Mr. France to supply me with a list of the necessary instruments, and the same have been ordered and will accompany the cable, the cost whereof will be about one hundred pounds.

In the letter received from the Government (No. 104.) of 10th June, 1865, it was stated that arrangements would be made without delay for keeping me in funds to meet the cost of procuring this cable; and in a subsequent letter, (No. 156.) dated 12th August, 1865, a remittance, it was stated, was to be made to me shortly for the same object.

As up to this time no remittance has come forward, it is necessary I should state to the Government that on or before the 20th February now ensuing, I am under an obligation to pay to the contractors, and for expenses, insurance, &c., about fourteen thousand three hundred pounds on account of this cable. The ensuing mail will, I trust, bring the anticipated funds. Should this not be so, it will be somewhat embarrassing; but the Government may rely upon my best efforts to meet the emergency.

I have, &c.,

The Hon. the Colonial Secretary, Wellington, N.Z.

JOHN MORRISON.

The Hon. the
Colonial Secretary,
Wellington.

P.S. By the "Black Swan," under the care of Captain White, I forwarded (addressed as in margin) a case containing samples of the Electric Submarine Cable, furnished by Mr. Henley, the contractor, for the service of Government.

Enclosure 1 in No. 6.

MR. J. R. FRANCE TO MR. JOHN MORRISON.

Sub-Marine Telegraph Company between Great Britain and the Continent of Europe,
(Incorporated by Royal Charter), 58, Threadneedle Street, London, E.C.;

SIR,—

Engineer's Department, 8th November, 1865.

I am in receipt of your letter of the 6th instant, and the Enclosures 1, 2, 3, 4, and 5.

After careful perusal of the above, I have come to the conclusion that the form of cable proposed in Mr. McGowan's letter to Mr. Falconer (Enclosure No. 3.) with very slight variation, is the best form adapted for Cook's Straits.

For so short a line the weight of core proposed (380 lbs.) is excessive. I believe so very little would be gained by having it so heavy, that to use it would be waste of money.

I would propose a conductor and insulator weighing together 273 lbs. to the nautical mile.

Mr. Sheath's (Enclosure No. 1.) objections to hot mixtures for the protection of the iron sheathing are right in principle; but as so many improvements have been made in the mode of applying them (Bright and Clark's compound, &c.) I have no hesitation in saying there is no fear of any damage arising from that cause, more especially as wet jute is used next the core.

Since 1861, all the new cable for the Submarine Telegraph Company has been protected with Bright and Clark's compound. The Imperial Government use it for the Persian Gulf Line; and Sweden and Denmark have adopted it also, as being the best system yet brought into practical use.

I believe it would be better to adopt the route Mr. Balfour suggests (Enclosure No. 2.) than to take the shorter and more dangerous ones.

The total length from the points suggested being 37-128 nautical miles, it would only be prudent to order forty-six nautical miles, being rather under 25 per cent. for slack and casualties. All cable left to be landed at Wellington, and stored under water till required for future repairs.

In the case of a cable containing a single conductor being adopted, it would not be necessary to have the same strength across the deeps; but the shore ends, say into twenty-five fathoms depth, should be sheathed with much stouter iron wire.

Should a multiple cable of two or three conductors be chosen, I would propose the same size and section of sheathing for either, and also make either of the same diameter and strength throughout.

Taking into consideration the above remarks, it would be well to invite tenders and specimens from the different manufacturers for the following:—

1. Fourteen nautical miles of cable containing a single conductor composed of seven stranded copper wires, equalling one of No. 14 Birmingham wire gauge, and weighing 107 lbs. to the nautical mile.

The interstices being filled with Chatterton's compound, and then insulated with three alternate coatings of Chatterton's compound and gutta percha, all of the best description, to No. 1 Birmingham wire gauge, and weighing, exclusive of this copper conductor, 166 lbs. to the nautical mile, making a

total of 273 lbs. The copper to possess conducting power at 75° Fahrenheit, equal to a least 85 per cent. of pure copper by Matthieson's standard, and the insulation tested at 75° Fahrenheit to equal a resistance of not less than one hundred and fifty millions Siemon's units per nautical mile.

All core to be kept under water until made up. This core to be then served with tarred jute yarn (wet), and further served with Stockholm tarred jute yarn to a sufficient thickness to take a covering of twelve No. 1 Birmingham wire gauge "best best" galvanized iron wires laid on spirally, each wire capable of being elongated 7 per cent. without breaking, the whole to be covered with two coatings of Stockholm tarred hemp, and Bright and Clark's compound. The above to compose the shore ends, including two taper ends of 100 fathoms each, to meet the No. 4 wires of the main cable.

And for the main cable 32 nautical miles of the same description of core, to be served with wet tarred jute, and further protected with twelve No. 4 B.W.G. "best best" galvanized iron wire, the whole to be protected with two coatings of tarred hemp and Bright and Clark's compound, as before stated, and kept under water until shipped.

2. For a cable of forty-six nautical miles, containing two insulated conductors similar to the above, two twisted yarns of wet tarred jute, to be laid on longitudinally with the conductors, so as to make a perfectly central bed for the further coating of wet tarred jute; the whole to be sheathed with twelve No. 1, Birmingham wire gauge, "best best" galvanized iron wires, and further protected with hemp, and Bright and Clark's compound, as before stated.

For a cable of forty-six nautical miles, containing three insulated conductors similar to before stated, having three twisted wet tarred jute yarns laid on longitudinally with the conductors, the whole making a central bed for the further coatings of wet tarred yarn, twelve No. 1 "best best" galvanized iron wire, and the two coatings of hemp and Bright and Clark's compound. The sheathing to be commenced, at latest, fourteen days after signing the contract, and the cable to be shipped within sixty days after signing, under penalty of one hundred pounds per day.

The tenderer to include, in each case, the price free on board; including all necessary fittings, to keep the cable in a secure state, both electrically and mechanically, during transit to New Zealand, and ready for submerging on arrival. Also, to add a separate note of the probable cost of all necessary apparatus for laying one of these cables, and also for repairing the same, if requisite. This would be subject to further details on receipt of list and plans, according to the vessel employed for laying the cable, but would have to be supplied by the contractor within the time specified for shipping the cable.

4. The tenderer to add a further note, stating for what sum he would be prepared to ship to New Zealand, submerge, and keep either cable in working order for one year from the date of its being successfully laid; and then to deliver cable in as perfect electrical condition as when accepted by the consulting engineer in England. The vessel containing cable to be ready for sea sixty days after signing contract.

All excess cable to be the property of the New Zealand Government, and landed at Wellington.

John Morrison, Esq., 3, Adelaide Place.

I have, &c.,

J. R. FRANCE, Acting Engineer.

Enclosure 2 in No. 6.

COOK'S STRAITS ELECTRIC SUBMARINE CABLE.

Specification and Conditions upon which Manufacturers are invited to tender for a Submarine Cable for the Government of New Zealand.

1. Fourteen nautical miles of cable, containing a single conductor of seven stranded copper wires, equalling one of No. 14 Birmingham wire gauge, and weighing 107 lbs. to the nautical mile.

The interstices being filled with Chatterton's compound, and then insulated with three alternate coatings of Chatterton's compound and gutta percha, all of the best description, to No. 1 Birmingham wire gauge, and weighing, exclusive of the copper conductor, 166 lbs. to the nautical mile, making a total of 273 lbs.

The copper to possess conducting power at 75° Fahrenheit equal to at least 85 per cent. of pure copper by Mathieson's standard, and the insulator tested at 75° Fahrenheit to equal a resistance of not less than 150 millions of Siemon's units per nautical mile.

All core to be kept under water until made up. This core to be then served with tarred jute yarn (wet) and further served with Stockholm tarred jute yarn to a sufficient thickness to take a covering of twelve No. 1 B.W. gauge "best best" galvanized iron wires laid on spirally, each wire capable of being elongated 7 per cent. without breaking; the whole to be covered with two coatings of Stockholm tarred hemp and Bright and Clark's compound.

The above to compose the shore ends, including two taper ends of 100 fathoms each to meet the No. 4 wires of the main cable.

And for the main cable, thirty-two nautical miles of the same description of core, to be covered with wet tarred jute, and further protected with twelve No. 4 B. W. gauge "best best" galvanized iron wire; the whole to be protected with two coatings of tarred hemp and Bright and Clark's compound, as before stated, and kept under water until shipped.

2nd. For a cable of forty-six nautical miles, containing two insulated conductors similar to the above, two twisted yarns of wet tarred jute to be laid on longitudinally with the conductors, so as to make a perfectly central bed for the further coating of wet tarred jute; the whole to be sheathed with twelve No. 1 B. gauge "best best" galvanized iron wires, and further protected with hemp and Bright and Clark's compound, as before stated.

3rd. For a cable of forty-six nautical miles, containing 3 insulated conductors similar to before stated, having three twisted wet tarred jute yarns, laid on longitudinally with the conductors, the whole making a central bed for the further coatings of wet tarred yarn, twelve No. 1 "best best" galvanized iron wire, and the two coatings of hemp and Bright and Clark's compound.

The sheathing to be commenced at least fourteen days after signing the contract, and the cable to be shipped within sixty days after signing, under penalty of £100 per day. The vessel containing the

cable to be ready for sea, and to proceed on her voyage sixty-five days after signing the contract, under penalty of like amount.

All excess cable to be the property of the Government of New Zealand, and landed at Wellington.

An inspecting engineer will be appointed who shall be entitled to inspect every and any stage of the process of manufacture of the cable, and at all reasonable times to have free access to all such parts of the works of the said manufacturer as may be necessary for the purpose of such inspection.

The manufacturer at the same time shall supply means of testing the iron wire, and of electrically testing the core and the cable at each stage of its manufacture; but such inspection and examination shall not in any way commit the Government of New Zealand to the approval and acceptance of any cable which shall not be strictly in accordance with the specification, or which, when submerged, shall be in any way defective.

The tender is required to state for what sum the contractor would be prepared to ship to New Zealand, submerge, and keep either cable in perfect working order for twelve months from the date of its being successfully laid, and then to deliver the cable to the Government of New Zealand in as perfect electrical condition as when approved by the inspecting engineer in England; but such twelve months is to be exclusive of any period that may be occupied in repairing the said cable, and to be prolonged for an equal period.

Payments for the cable will be made to the contractors in the Colony, by the Government of New Zealand, by instalments, viz.:—First instalment: On the cable being submerged, and the electrical condition proved perfect. Second instalment: In six months from date of laying the cable, it being at that time in perfect working order. Third, and last instalment: At the expiration of twelve months, the cable being in as perfect electrical condition as when approved by the Inspecting Engineer.

Interest will be allowed to the contractor from the date on which the cable is reported to the Government as being in perfect working order, and during the time it continues so; but will cease on payment of last instalment, or for such time, or times, during the twelve months that the cable is not in perfect working order.

Tenders, with specimens of the cables Nos. 2, 2, and 3, will be received until the 17th instant.

Enclosure 3 in No. 6.

Mr. JOHN MORRISON to the SECRETARY, Telegraphic Construction Company.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 11th November, 1866.

SIR,—

Referring to your communication of the 19th ultimo, addressed to me upon the subject of a Submarine Cable for Cook's Strait, New Zealand, for which I beg to tender you my thanks, I now do myself the pleasure herewith to enclose for your information specification for the Submarine Cable which is to adapted for that service, to which your attention is requested; and I beg to invite you to tender for its construction and the submersion of it in New Zealand on the conditions therein named.

It being desirable that the cable should be constructed without delay, it would be convenient to you I trust to send in your tender, accompanied with specimens of the cables, on or before the 17th instant.

A plan of a portion of Cook's Strait, showing the soundings taken on the line propose for the cable can be inspected at this office; and should further information or explanations be required, I shall be prepared at any time convenient to you to see you upon the subject.

I am, &c.,

JOHN MORRISON,
Agent.

The Secretary Telegraphic Construction Company,
Old Broad Street, E.C.

Enclosure 4 in No. 6.

Mr. J. W. WILLANS to Mr. JOHN MORRISON.

The India Rubber, Gutta Percha, and Telegraph Works Company (Limited),
London, 23rd November, 1865, 2, Bishopsgate Within, E. C.
Cook's Straits Cable.

SIR,—

At our Executive Committee to-day the specification for the above cable, with which you have been good enough to oblige us, had the fullest consideration; and even in the light of the observations with which you favored Mr. Silver and myself yesterday, the conditions were still found to be so exceedingly onerous, that unless they can be very materially modified, I regret to inform you we could not feel justified in submitting a tender. If, under these circumstances, we may hear further from you, we shall be happy to have the opportunity of offering a tender to you which we feel sure could not fail to be satisfactory.

We are, &c.,

India Rubber, Gutta Percha, and Telegraph Works
Company (Limited),

John Morrison, Esq., &c.,
New Zealand Government Agency, 3, Adelaide Place, E.C.

JOHN W. WILLANS.

Enclosure 5 in No. 6.

Mr. J. W. WILLANS to Mr. JOHN MORRISON.

The India Rubber, Gutta Percha, and Telegraph Works Company (Limited),
London, 27th November, 1865.

SIR,—

Cook's Straits Cable.

In pursuance of our letter of the 23rd instant, and our subsequent communications with you

we beg now to tender as follows for the three forms of cable set forth in the specification which accompanied your letter dated 10th November instant, viz. :—

(A.) No. 1. Fourteen nautical miles, and thirty-two ditto ditto, in all forty-six nautical miles, one conductor	£11,300
No. 2. Forty-six nautical miles, two conductors	15,800
No. 3. Forty-six ditto, three conductors	19,000

These prices being for delivery of the cable free on board in the Port of London, and a net cash payment or payments in London, at a date or dates to be agreed between us.

(B.) For the same cables carried to New Zealand, submerged, and maintained for twelve months, the following sums, viz. :—

No. 1	£33,000
No. 2	41,500
No. 3	47,500

Payment of the same being made as follows:—For the first two-fifths of the total sum, upon certificate by your engineer of delivery of the cable on board ship in the Port of London (or other agreed part of the River Thames), testing at the time up to the standard required by the specification; for a further one-fifth portion of the same sum on the arrival of the ship at Port Nicholson (New Zealand), and certificate by your Government's engineer that the cable still tests up to specified standard; for the fourth one-fifth portion one month after the successful submergence of the cable, it being at the time in working order; and the last one-fifth portion twelve months after the laying of the cable, it being then also in working order; but this Company shall be free of all liability in respect of damage by ships, anchors during the twelve months, except to the extent of placing the Company's servants at the service of the Government for the repairs of such damages.

The payment of two-fifths in London to be by draft on a London banker; payments in New Zealand by drafts at par, also on London.

This tender is subject to acceptance within one month, and to certain modifications which, we have no doubt, will be mutually arranged without difficulty.

We beg herewith to hand you samples, &c., sketches of the three forms of cable, and

We remain, &c.,
The India Rubber, Gutta Percha, and Telegraph
Works Company (Limited),
JOHN W. WILLIAMS.

John Morrison, Esq., &c.,
Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street, London, E.C.

Enclosure 6 in No. 6.

Mr. R. A. GLASS to Mr. JOHN MORRISON.
Telegraph Construction and Maintenance Company Limited.
Offices, 54, Old Broad Street,

SIR,— London, E.C., 21st November, 1865.

In answer to your favor of the 11th instant, enclosing a specification of 46 miles of Submarine Telegraph Cable required by the New Zealand Government, I beg to inform you that this Company will undertake to supply and coil the cable or cables into a ship in the Port of London at the following net prices, viz. :—

14 nautical miles, containing one conductor as per specification ...	£317 per naut.
32 nautical miles of cable, containing one conductor, and secondly specified by you	£230 per naut.
Or, 46 nautical miles of cable, containing two conductors, as thirdly specified	£381 per naut.
Or, 46 nautical miles of cable, containing three conductors, as fourthly specified	£445 per naut.

I have also to inform you that this Company will undertake to deliver the cable or cables within the time specified by you.

But that, in consequence of the short length to be laid and the great distance from this country, where the work is to be carried out, this Company cannot undertake the operation of submerging the cable and taking the risk of maintenance, but if there is anything in which the officers of the Company can render you any assistance, either in shipping the cable, obtaining proper machinery for laying it, engaging competent hands to superintend the work, or in any other way, I shall be most happy to give such instructions as shall secure all necessary aid and attention.

In my letter of 19th ultimo I gave you an estimate of the cost of machinery and staff.

I am, &c.,
R. A. GLASS,
Managing Director.

P.S.—The terms of payment to be net cash on shipment.

R. A. GLASS.

J. Morrison, Esq., Agent to the New Zealand Government.

Enclosure 7 in No. 6.

Messrs. SIEMONS Brothers, to Mr. JOHN MORRISON.
3, Great George Street, Westminster,

SIR,— 14 November, 1865.

Thanking you for your invitation to us to tender for the submersion of the Cook's Straits Telegraph Cable, we beg to say that we have looked carefully through the specification and conditions,

and regret to find that the mode of payment proposed is such as would make the contract of a too speculative nature for us to entertain.

John Morrison, Esq.,
New Zealand Agency,
3, Adelaide Place, E.C.

We remain, &c.,
SIMONS BROTHERS.

(G. 66-93.)

No. 7.

Copy of a Letter from Mr. A. SHEATH to the Hon. the POSTMASTER-GENERAL.

SIR,—

Electric Telegraph Department, Wellington, 21st March, 1866.

I had this morning a conversation with the Harbour Master of this place. He strongly objects to the telegraph cable being landed in Worser's Bay, as proposed. He considers that the laying of the cable through Chaffer's Passage will not only be inconvenient for the small vessels entering the Port, but will also be attended with great danger to the cable itself owing to the liability of fouling of anchors. He considers it impossible to prohibit vessels anchoring in the channel, and he very justly observes that no ship will attempt it excepting when in danger of fouling the rocks, and in a matter of life and death such a prohibition could not be carried out.

* Island Bay.

He is likewise of opinion that Lyall's Bay, or the next bay to the west (I forget the name),* are more fitting and more convenient places for landing.

The small bay to the west of Lyall's Bay he shows to be well sheltered, and protected from the sea and weather by a small island and reef of rocks which serve as a breakwater.

The Harbour Master is of opinion that the place of landing, considering the route chosen, should be fixed at one of the latter places, and not in Worser's Bay, for the reasons assigned above.

The construction of the land line would be easier from the bay to the west of Lyall's Bay, and it would be easier from Lyall's Bay than from Worser's Bay. I find Mr. Balfour recommends Ocean Bay as the landing-place in Port Underwood. This will carry the line farther up the Port, and so may render it easier and better to carry a land line to Picton instead of across the Wairau Plains. Of this, however, I shall be better able to judge when I have made a personal inspection of the locality, and see the nature of the difficulties to be contended with.

The Hon. the Postmaster-General,
Wellington.

I have, &c.,
ALFRED SHEATH,
Telegraphic Engineer and General Superintendent.

(G. 66-97.)

No. 8.

Copy of a Letter from Mr. A. SHEATH to the Hon. the POSTMASTER-GENERAL.

G. 66-93.

SIR,—

Electric Telegraph Department, Wellington, 27th March, 1866.

Since writing my letter (quoted in the margin) referring to a conversation I had with the Wellington Harbour Master, I have visited the different localities I there alluded to. A personal inspection of the localities proposed as landing places for the Cook's Straits Submarine Telegraph Cable, tends to confirm me in the recommendation I first made to the Government of landing the cable in Lyall's Bay. I visited Lyall's Bay on the 21st, the 22nd, and 23rd instant. On the 21st, it was moderately calm weather, and I then thought it a most favorable locality for landing a submarine cable. On the 22nd, I found a fair breeze blowing from the south-east, but the surf was moderate, and could not have affected a submarine cable, though only slightly buried in the sandy beach. On the 23rd, a strong wind was blowing from the south-east, and the waves were running tolerably high, creating what I should suppose to be a fair average amount of surf. Even on this occasion I saw nothing to fear from the surf then breaking, which although tolerably high could not affect a cable buried some three or four feet in the fine sandy beach of this bay. I feel sure that I have seen worse seas breaking on the Dutch coast of the North Sea than ever break on the beach of Lyall's Bay, but in no single instance was the shore-end of the cable of the International Company interfered with.

On the 22nd instant, the pilot, Captain Scott, kindly took me in his boat through Chaffer's Passage up to Worser's Bay. In the course of conversation, Captain Scott expressed very great fears for the safety of the cable should it be laid along Chaffer's Passage, and he justly remarked that circumstances will transpire when vessels are absolutely compelled to let go their anchors as a means of safety while beating through this passage. Captain Scott also states that not only is Worser's Bay an anchorage much used at the present time, but that this bay is likely to become a favourite and extensive anchorage ground. I feel bound to express my apprehensions on the points above alluded to, and again to recommend Lyall's Bay as a more fitting and more secure landing place for a cable. Mr. Varley, the Electrician to the department, a gentleman of considerable experience in submarine telegraphy, shares my opinion in this matter.

Pilot Bay was indicated to me as a locality uninfluenced by any weather. It appears to me far too rocky at the entrance, and as soundings were not taken there, I should, from general appearances, judge it to be very rocky, and therefore unfitted for receiving a cable.

On the 24th instant, I visited Island Bay, the landing place suggested by the Wellington Harbour Master. This bay, however, I could not recommend, owing to its rocky indications and general rugged aspect.

I would suggest that the engineer entrusted with the laying of the cable, and who will doubtless accompany it on the voyage out, should finally decide the landing place on this coast. I hope in a few days to visit the South Coast, and I will then communicate my opinions on the landing place there chosen.

The Hon. the Postmaster-General.

I have, &c.,
ALFRED SHEATH, Telegraphic Engineer.

No. 9.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. E. W. STAFFORD.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 24th March, 1866.

(No. 109.)

SIR,—

Herewith I have the honor to transmit to you Bill of Lading for two cases by the "Weymouth," which contain the instruments provided for Government for testing the Cook's Straits Submarine Cable.

Mr. Henley expected to obtain permission from me to make use of these instruments, and at first did not intend to supply a set of his own; but having pointed out to him that the instruments in question are provided to furnish the Government with the means of testing the cable independently of him, and as a duplicate set in case his become defective; I trust the Government will concur in the view I have taken and retain them for the use of their officers only, more especially for checking the contract at its termination.

I have, &c.,
JOHN MORRISON.

The Hon. the Colonial Secretary,
Wellington, New Zealand.

INSTRUMENTS for Testing the Cook's Strait Submarine Cable.

Marine galvanometer	Condenser
Shunts for do.	Double contact key
Astatic galvanometer	Single do.
Shunts for do.	Resistance coil
Mirrors, Magnets, Silks, &c.	

No. 10.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. E. W. STAFFORD.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 24th March, 1866.

(No. 131.)

SIR,—

I do myself the honor to transmit to you copy of a letter received from Mr. Henley, informing me that he had appointed Mr. E. Donovan to act as his representative, at Wellington, during the period of his contract with the Government for the submersion and maintenance of the Cook's Straits Submarine Cable; also copy of Mr. Henley's agreement with Mr. Donovan; and copy of my letter to you, which will be presented by Mr. Donovan, on his arrival at Wellington.

I have, &c.,
JOHN MORRISON.

The Hon. the Colonial Secretary,
Wellington, New Zealand.

Enclosure 1 in No. 10.

Copy of a Letter from Mr. W. T. HENLEY to Mr. JOHN MORRISON.

27, Leadenhall Street,
London, E.C., 24th March, 1866.

DEAR SIR,—

With reference to the contract between us, dated 16th January, 1866, for the manufacture and laying down of a submarine cable in Cook's Straits, New Zealand, it was therein specified that I should send out in charge of same, a properly qualified agent or representative, to carry out the laying and maintenance during the period of guarantee. I now have the pleasure to inform you that I have appointed Mr. Edward Donovan to fill this post, and that the Government may be acquainted with his powers, I enclose a copy of my agreement with him. You will oblige me by informing the New Zealand Government of this, and procuring Mr. Donovan the necessary introduction to the Colonial Secretary.

I have, &c.,
W. T. HENLEY.

John Morrison, Esq., 3, Adelaide Place, London.

Enclosure 2 in No. 10.

Copy of an Agreement made between WILLIAM THOMAS HENLEY and EDWARD DONOVAN.

ARTICLES OF AGREEMENT made this twenty-second day of March, one thousand eight hundred and sixty-six, between WILLIAM THOMAS HENLEY, of North Woolwich, in the County of Kent, Telegraph Engineer of the one part, and EDWARD DONOVAN, of the same place, Telegraph Engineer, of the other part.

Whereas, by Articles of Agreement dated the sixteenth January, one thousand eight hundred and sixty-six, made between John Morrison, agent for the New Zealand Government, and the said William Thomas Henley, a copy of which Articles of Agreement has been delivered to the said Edward Donovan, the said William Thomas Henley, did, for the considerations therein mentioned, contract to construct a Submarine Telegraph Cable, and submerge and lay the same across Cook's Straits, between the two Islands of New Zealand, and also to maintain and keep the said cable in proper working order and electrical condition for the period of twelve calendar months as therein mentioned; and whereas, by the sixth clause of the said Articles of Agreement, the said William Thomas Henley agreed to send a properly qualified representative agent with the said cable; and whereas the said cable is now coiled on board the ship "Weymouth," and it is intended that the said ship shall sail to-morrow for New Zealand; and whereas the said William Thomas Henley has engaged the

said Edward Donovan to be his representative agent in accordance with the said Agreement; it is hereby agreed between the said parties hereto as follows:—

1. The said William Thomas Henley hereby engages the said Edward Donovan, and the said Edward Donovan agrees to be in the service of the said William Thomas Henley, as agent and engineer, as from the eighteenth day of January last until the end of the said period of twelve calendar months, on the following conditions:—

2. The said Edward Donovan shall proceed to Wellington, in New Zealand, by the said ship "Weymouth," and shall there devote the whole of his time and attention to the service of the said William Thomas Henley, and shall faithfully, diligently, and exclusively employ himself therein.

3. The said Edward Donovan shall superintend the submerging and laying of the said cable, and also (in case of need) the picking up and repairing the said cable, and also the maintaining and keeping the said cable in good and proper working order and electrical condition, in accordance with the terms of the said contract, and shall punctually and diligently perform all the duties required of the agent of the said William Thomas Henley in the said contract, and do all such other things as are necessary for the purposes aforesaid or any of them.

4. The said Edward Donovan shall have control over Henry Stafford, Robert Pentney, and Thomas Mattison, and also over all other engineers, workmen, mechanics, and labourers employed by the said William Thomas Henley in and about the execution of the said contract, and he shall on arriving in New Zealand, engage such engineers, mechanics, workmen and labourers as shall be required for the purpose of carrying out the said contract, at such wages and on such terms as shall seem to him expedient, and he shall be at liberty to dismiss any such engineers, mechanics, workmen, and labourers, but his powers of control and dismissal over the said Henry Stafford, Robert Pentney, and James Mattison, shall be limited by the Agreements bearing even date herewith, and entered into with them respectively by the said William Thomas Henley.

5. The said Edward Donovan shall use his best endeavours to obtain for the said William Thomas Henley orders and contracts in New Zealand, or elsewhere, in Australasia, for the manufacture and supply of electric telegraph cables, telegraphic instruments and stores, and galvanized or other iron wire and wire ropes.

6. The said William Thomas Henley shall provide the said Edward Donovan with a passage to and from New Zealand, with the ordinary rations for first class passengers, and shall provide such rations so long as the said Edward Donovan shall remain on board the "Weymouth" or on board any other vessel employed in picking up and repairing the said cable.

Proper arrangements will be made for supplying the said Edward Donovan with the funds necessary for the payment of the said Henry Stafford, Robert Pentney, and James Mattison, and all other engineers, workmen, mechanics, and labourers as aforesaid, and of all other necessary expenses.

The said Edward Donovan shall keep true and correct accounts of all receipts and expenditure by him on behalf of the said William Thomas Henley, and shall on demand produce the same to him, with all vouchers and accounts for the balance (if any) due to him thereon.

In witness whereof the said parties to these presents have hereunto set their hands the day and year first above written.

W. T. HENLEY,
E. DONOVAN.

No. 11.

Copy of a Letter from Mr. JOHN MORRISON to the Hon. E. W. STAFFORD.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 22nd March, 1866.

(No. 110.)

SIR,—

Mr. Henley having informed me that Mr. Donovan has been appointed by him to act as his Superintendent in laying the Cook's Straits Submarine Cable, I have the honor to inform you of that, and to furnish Mr. Donovan with this letter, which I have requested him to present at your office, on his arrival at Wellington.

The Hon. the Colonial Secretary,
Wellington, New Zealand.

I have, &c.,
JOHN MORRISON.

No. 12.

Office of the New Zealand Government Agency,
3, Adelaide Place, King William Street,
London, E.C., 26th March, 1866.

(No. 133.)

SIR,—

I have the honor to advise that the Submarine Cable for Cook's Straits has been completed, and shipped on board the "Weymouth," together with the machinery for paying out and picking up, &c., &c., and the staff of workmen.

Enclosed will be found a certificate from Mr. J. R. France, the Inspecting Engineer, to the effect that the whole is in conformity with the specification, and a letter from the same gentleman, reporting upon the character of the cable, and its electrical condition, which is of a highly satisfactory nature.

The test sheets (which are unusually large and heavy) with the "two sets of notes" referred to, and all other documents, shall be forwarded by the Southampton portion of the ensuing mail.

The cable was completed at the beginning of this month, but, owing to a defect in the tank, which was detected and remedied, prior to its shipment, there has been some unavoidable delay.

The Hon. the Colonial Secretary,
Wellington, New Zealand.

I have, &c.,
JOHN MORRISON.

Enclosure in No. 12.

Copy of a Letter from Mr. J. R. FRANCE to Mr. JOHN MORRISON.

Submarine Telegraph Company between Great Britain and the Continent of Europe,
(Incorporated by Royal Charter.)

58, Threadneedle Street, London, E.C.,

Engineer's Department, 22nd March, 1866.

DEAR SIR,—

I have forwarded to Mr. Henley a certificate of which the enclosed is a copy.

The cable is everything that could be desired, and I do not hesitate in saying no better cable has ever left England.

The insulation is about three times as high as specified for, and will most probably improve with age. At present the resistance of the dielectric is over 2,200 millions at 50° Fahr. and at the end of the contract will have to be accepted if at 800 millions at that temperature; but I anticipate it will not be below 3,000 millions at that time.

I have carefully inspected all the gear, &c. The instruments manufactured by Elliott Brothers have all been proved by me and found perfect.

I herewith also forward you the test sheets, showing how closely the manufacture has been watched on behalf of the New Zealand Government. I have also added two sets of notes—one on the manufacture and testing of the cable, and one on the use of the instruments.

Trusting the cable will meet with the approbation of the authorities in New Zealand.

John Morrison, Esq., Agent to the New Zealand Government,
3, Adelaide Place, E.C.

I have, &c.,

J. R. FRANCE,
Acting Engineer.

Sub-Enclosure to Enclosure in No. 12.

Copy of a Letter from Mr. J. R. FRANCE to Mr. HENLEY.

Submarine Telegraph Company between Great Britain and the Continent of Europe,
(Incorporated by Royal Charter.)

58, Threadneedle Street, London, E.C.,

Engineer's Department, 22nd March, 1866.

I hereby certify that Mr. Henley completed the shipment on board the "Weymouth," lying off his works at North Woolwich, of forty-five nautical miles 1729 yards of cable, on the 17th instant.

I also certify that Mr. Henley has this day completed the shipment in the East India Docks of the gear, buoys, chains, and ropes as mentioned in the contract. The whole in conformity with the specifications.

J. R. FRANCE,
Acting Engineer.

No. 13.

Copy of a letter from Mr. W. GISBORNE to Mr. JOHN MORRISON.

SIR,—

Colonial Secretary's Office, Wellington, 13th June, 1866.

Mr. Stafford has desired me to express to you the strong sense he entertains of the zeal and ability which you have displayed in the arrangements made by you for the supply of an electric telegraphic cable across Cook's Straits.

The original instructions on this subject to you were necessarily vague, and left a large latitude to your discretion in carrying them into effect, and, as far as Mr. Stafford is able to judge, you have evinced great judgment in the fulfilment of that duty, and spared yourself no trouble with a view to its successful accomplishment.

John Morrison, 3, Adelaide Place,
King William Street, London, E.C.

I have, &c.,

W. GISBORNE,
Under Secretary.

No. 14.

Copy of a letter from Mr. J. BALFOUR and Mr. A. SHEATH to the Hon. the POSTMASTER-GENERAL.

SIR,—

Wellington, 13th June, 1866.

We have the honor to report that, as arranged, we, accompanied by Captain Sharp, the President of the Marine Board, and Dr. Hector, Director of the Geological Survey, steamed to the south side of Cook's Straits in the s.s. Lady Bird, leaving about 2 a.m. on the morning of the 9th instant, for the purpose of ascertaining whether White's Bay would form a suitable landing place for the telegraph cable.

The weather was very unfavorable, the wind strong from the north-west, and the land obscured by fog and driving showers, which occasioned considerable loss of time, but we at length succeeded in finding the Bay, and by steaming as close as the captain could be persuaded to venture we managed to examine it, and take the necessary soundings from one of the ship's boats.

The result of our examination was satisfactory to all of us, the bottom consisting of fine sand, on which the cable can be laid in the line of the only swell which can affect the place, and thus be almost secure from injury.

Outside the Bay the bottom is also excellent, as proved by soundings which were taken at short intervals, until on our return the steamer intersected the line formerly surveyed.

Owing to the other engagements of the steamer and the time lost from the unfavorable state of the weather, we were obliged to return to Wellington at once without examining Lyall Bay, but on the

following morning we walked over to Worser Bay and made arrangements with the pilot, who kindly placed himself and crew at our disposal for completing our work on the first favorable opportunity.

On the 11th, as the wind was blowing from the south-east so as to prevent our working in Lyall Bay, we walked over to study the effects of the swell.

Yesterday, the morning being fine, we were met by Captain Scott in the pilot boat, and with his efficient assistance were enabled, in spite of a considerable ground swell, to procure the information required.

The result is again satisfactory, the bottom of the Bay being sandy and regular, and the exposure somewhat similar to White's Bay so that the cable can here also be laid in the line of the only dangerous swell, and thus run but little risk.

The total length of cable required will not be altered by the proposed terminal changes—or if altered at all it will be shortened—it will now be entirely free from any but very exceptional risk from ship's anchors, it will lie throughout on an excellent bottom (it is proposed to follow the surveyed line except near the ends); and, though somewhat more exposed to surf in shoal water than it would have been on the original line, it will be directly in line of the break so as to run a minimum risk of damage; and we have in consequence no hesitation in recommending that the proposed changes should be made, and that the cable should run from Lyall Bay on the north side of the Straits, to White's Bay on the south side.

We have, &c.,

JAMES M. BALFOUR,
Marine Engineer;

ALFRED SHEATH,
Telegraphic Engineer.

The Hon. the Postmaster-General, Wellington.

No. 15.

Copy of a Letter reporting attempt to lay COOK STRAIT TELEGRAPH CABLE.

SIR,—

Wellington, 30th July, 1866.

We have the honor to report that every preparation being made, and the weather promising well, the "Weymouth" left Wellington Harbour in tow of the s.s. "Taranaki," about 10 p.m., on Friday, the 27th instant, towing the "Wild Duck" cargo-boat, attended by the p.s. "Sturt."

We came to anchor in Lyall's Bay about 11.30 in five fathoms of water, and commenced coiling the shore end of the cable into the "Wild Duck" and the "Sturt."

Shortly after 3 a.m. on the 28th, the "Sturt" with the "Wild Duck" lashed alongside steamed towards the Beach paying out the shore end of the cable.

By 3.50 a.m. the end was landed and connection made with the instruments in the cable-house at 4.5 a.m.

On the boats coming off we proceeded to weigh anchor and make other preparations for the start, and at about 5.10 a.m., the "Taranaki" commenced steaming dead slow with the "Weymouth" in tow, everything working satisfactorily, the ships steering well, and very little slack being paid out. About 6.30 a.m. after fully three and a half miles of cable were paid out, being still in slack water, the speed was slightly increased.

As we got into the tide the number of revolutions of the paying-out drum gradually rose from twenty-three and a half, and signals were made to slow the engines of the "Taranaki," but in spite of this the revolutions increased to thirty-four (equal to paying out at a rate of fully six nautical miles per hour,) when a few minutes before 7.20 a.m., the cable fouled in the tier, and at 7.20 a.m. the strain had become so great that it parted from forty to fifty fathoms outside the ship, Seal Rock bearing from the "Taranaki" N. by E. and Tourakira E.

A buoy was immediately slipped from the "Weymouth" to mark the spot, and the machinery being broken by the foul cable overriding the drum and so jamming the cogs as to rupture the gear, it was found impossible to pick up the overhanging part of the cable, which was in consequence cut away, and the expedition returned to harbour to repair damages.

On passing close to the buoy, bearings were again taken from the "Taranaki," Seal Rock bearing N. $\frac{1}{4}$ E., and Tourakira E.

Causes of Accident.

As the tides round Sinclair's Head were considered the main danger—as tending to drag out too much slack of the cable, it had been decided, after consultation, that it was advisable to reach that point about the period of slack water which on Saturday morning ought to have occurred about 8 a.m., and the starting time was arranged to suit this on the closest calculation of the probable rate of paying out which could be made.

Owing however to the remarkable fineness of the weather, the smoothness with which everything worked, and the attention and dexterity of the detachment of seamen from H.M.'s s.s. "Esk," who were stationed in the cable tier, we overran our calculated speed and arrived at the difficult part just forty minutes too soon.

Owing to this, we were carried along by the flood tide at a much more rapid rate than was safe, in spite of the fact that the "Taranaki" was going quite slow, and were deceived by the smoothness of the water and the absence of the usual rip, and led to imagine our rate of speed to be much less than it really was.

It seems probable that the flood tide ran longer on Saturday (from local causes) than it should have done, or at least that it carried its strength to the very last; at all events it was so strong at the time of the accident that, combined with the way on the vessel, it rendered it impossible to bring up in time to prevent a breakage.

The proximate cause of the accident was the fouling of the cable in the tier, owing to the rate of paying out being faster than the men could attend to.

The cable is stowed in flakes or spiral coils, and is paid out from the inside of the tank outwards.

When one flake is off, the line runs back to the inside nearly in a radius, and then repeats its travel on a new flake from the centre to the outside.

With this explanation, it can be at once understood that the cable almost delivers itself, and only requires a slight help from time to time, (especially at the fore and aft parts of the oval tank, where there is a risk of the outer coating of the coils adhering.)

When a coil or flake has been paid off the greatest caution is required to insure a fair start for the next, and it was here that the accident occurred, as is indisputably proved by an inspection of the present state of the cable in the tank.

When a flake had been paid out nearly to the last coil, an inexperienced man lifted the wrong coil, which was the one below and immediately connected with the radiating line passing out under the next flake. In a moment the cable passed under this coil, fouled it, dragged it up through the hawse pipe, thus putting a heavy strain on the radiating line, which came away, bringing the next flake *en masse*, causing an inextricable jamb.

One of Mr. Donovan's experienced hands noticed this mistake, and was hastening to rectify it, but unfortunately slipped and fell, and before he could recover himself the mischief was done.

Suggestions.

It has been suggested that the accident would not have occurred had the towing steamer been lashed alongside the "Weymouth."

This is very much doubt, as the vessels would have had just as much way or momentum whether they were together or separate, and it is extremely doubtful whether even a steamer could have been stopped in time. But even were this the case, it would be impossible so to tow in Cook's Straits, as the vessels roll even in the finest weather.

Another suggestion has been that the steamer behind the paying-out ship should be as heavy as the towing ship, so as to be able to pull against her at once.

This idea seems founded on a fallacy, for even were this "brake steamer" turning against the towing steamer the whole time, she must still be going with her at the same rate, and she must neutralize her own way or momentum before being able to check the other vessels. Consequently, the lighter the checking ship is the more speedily will she act, provided she be of sufficient power.

We are however of opinion that it would be well to have a more powerful brake steamer than the "Sturt," which latter vessel would be of better service if free, as she could make fast to either the towing or the checking steamer if required,—could carry messages,—assist to land the other shore-end,—and be available for any unforeseen contingencies.

If the "Southland" can be borrowed for the time from the Provincial Government of Southland, we know of no other vessel in this Colony which so well fulfils the necessary requirements, by combining considerable power and a comparatively small weight.

There do not seem to be any other changes required on the part of the Government; but we have decided that arrangements shall be made on board the "Weymouth" for immediately cutting away from the towing steamer as a precautionary measure should an emergency arise, and we have determined so to time our starting as to pay out the cable over the difficult part of the course against an ebb tide.

We have had under consideration a suggestion for an arrangement by which the cable might be instantaneously severed at the afterpart of the ship in the event of an accident; but the difficulties involved in the instantaneous severing of a moving body of such a strength seemed so formidable that we have been compelled to abandon it.

After a close examination of the gear, we think that such changes in the arrangements of the parts could be made as would (even in the event of a similar accident recurring) suffice to save the machinery by keeping the over-riding part of the cable clear of the cogs.

Time required for Repairs.

We are glad to be able to report that the Wellington workshops are fully equal to the necessary repairs, and, so far as a judgment can be arrived at before the parts are taken asunder, we think that everything may again be in working order within a fortnight from this date, by which time the cable will also be tested, restored, and arranged in readiness for another attempt; and we are confident, that notwithstanding the present most vexatious failure, the operation will be eventually successful, and the Cook Strait Telegraph Cable become a complete success.

We have, &c.,

E. DONOVAN, Electrician and Engineer,
for W. T. Henley, Esq., Contractor.

ALFRED SHEATH, Telegraphic Engineer.

JAMES M. BALFOUR, Memb. Inst. C.E., Marine Engineer.

WM. NORRIS, Commander ship "Weymouth."

H. B. FRANCIS, Master s.s. "Taranaki."

The Hon. the Postmaster-General, Wellington.

No. 16.

Copy of a Letter from Mr. ALFRED SHEATH to the Hon. the Postmaster-General.

General Government Electric Telegraph Department,

Wellington, 28th August, 1866.

SIR,—

I have the honor to report that at 5 a.m. on the 25th instant the s.s. "St. Kilda" left Wellington Harbour for the purpose of picking up the portion of the telegraph cable first laid, and lying between Lyall's Bay and Sinclair's Head, and also to relay the same, if found in a satisfactory condition, between the main portion of the submerged cable and White's Bay.

At 7 a.m. the cable was secured to the drum of the picking-up machinery, and the coiling on board immediately commenced. This work continued to be performed in a most satisfactory manner till we arrived off Sinclair's Head, when the tide became too strong, and the ground too foul to continue

operations. We therefore, at 4 p.m., cut the cable, after buoying it, and proceeded with the four miles we had picked up to Port Underwood to anchor for the night.

At 5 a.m. on the 26th instant we started in search of the buoy which was attached to the end of the cable that had been previously paid out from the "Weymouth," and so accurate were the observations taken by Captains Kennedy and Mundle, and Mr. Balfour, that we run right upon the buoy at once.

The cable was quickly secured by Messrs. Donovan and Stafford, with their assistants, brought on board, and the splice made.

At 12 noon the paying-out machinery was put in motion, and after everything progressing most satisfactorily and smoothly, we anchored in White's Bay (having paid out about three miles of cable) at 1.35 p.m.

At 2 p.m. I went on shore with Mr. Smith, the Mechanician, to lead the line wires into the cable house, when, at 4.30 p.m., just as all the instruments were fixed, the cheers of the workmen announced that the cable was on shore.

At 5 p.m. the cable was carried along the trench and fixed in the cable house, and in a few minutes more I had signalled the first telegram congratulating His Excellency the Governor and his Ministers on the safe landing of the Cook's Straits Cable.

After watching for some time with satisfaction the successful working between Wellington and Blenheim, we proceeded with our instruments to the steamer, in hopes of reaching Wellington that night.

No sooner, however, were the engines started than they were brought up and stopped, and it was evident that something was foul of the screw.

Mr. Donovan, being an excellent swimmer, volunteered at once to go down and examine into the cause of the stoppage, and his examination resulted in his reporting that the telegraph cable was foul of the screw, and consequently must be cut.

It was, however, decided not to cut the cable till after low water, when a further examination was to be made by Mr. Donovan and Captain Mundle conjointly, in the hopes that the cable might be removed, and the screw set free without the necessity of cutting.

This further examination, however, proved the accuracy of Mr. Donovan's first examination, and the correctness of his impressions that the cable must be cut, and another splice made.

This decision once arrived at not a moment was lost, and Mr. Stafford and his assistants again went to work with the utmost willingness, notwithstanding their previous fatigues and unremitting labors.

At 7 a.m. the cable had been grappled, and the splice completed.

Our telegraphic instruments were again transferred to the cable house and fitted up, and we commenced alternately calling Wellington and Blenheim till 7.40 a.m., when the telegraphist at Wellington announced his presence in the office.

The cable was now found to be all right and as good as ever, and when, at 9.10 a.m., we connected Wellington and Blenheim, we watched them working satisfactorily for a short time, and then took our instruments again on board to return to Wellington.

The fouling of the screw must have been caused by the floating of the piece of line which was attached to the cable when it was cut away from the ship, and which, being very light, and the water very shallow, was drawn up by the screw, and carried the cable with it.

The cable has tested well all through the operation of paying out; and after all the difficulties the contractors have had to contend with, the laying of the Cook Strait cable may be regarded as a signal success.

Before concluding this Report, I would urge upon the Government the desirability of retaining in its possession the s.s. "St. Kilda," which has proved herself admirably adapted for picking up and re-laying the cable.

She might be usefully employed for lighthouse and survey purposes, and should accident happen to the submarine telegraph cable, she might then be called at once into requisition.

I have, &c.,

ALFRED SHEATH,
Telegraphic Engineer.

The Hon. the Postmaster-General, Wellington.

No. 17.

REGULATION for the management of the Electric Telegraph in New Zealand.

G. Grey, Governor.

Order in Council.

At the Government House, at Wellington, the fifth day of September, 1866.

Present: His Excellency the Governor in Council.

Whereas by "The Electric Telegraph Act, 1865," it is enacted that it shall be lawful for the Governor, by Order in Council, to make regulations for the transmission and delivery of all despatches, messages, and communications by the Electric Telegraph Lines referred to in that Act: And whereas it is further enacted by the said Act that it shall be the duty of all officers and others employed in the working of any such Telegraph Lines, to transmit all messages which may be lawfully transmitted under any such Regulations: Now therefore, His Excellency the Governor, with the advice and consent of the Executive Council of New Zealand, in pursuance and exercise of the above recited power and authority, doth hereby make the following Regulation:

Regulation.—No message or communication relating to the Customs shall be transmitted by any officer or other person employed in working any Telegraph Line belonging to the New Zealand Government, or be allowed by him to be transmitted by such line, during any period which shall be specified in any order from the Honorable the Commissioner of Customs, unless under the written authority of the said Commissioner, or of some person authorized under his hand in that behalf.

FORSTER GORING,
Clerk of the Executive Council.