THURSDAY, 18 *DECEMBER*, 1856.

Present:—

Mr. COWPER,	Mr. MACARTHUR,
Mr. IRVING,	Mr. PARKES.

HENRY PARKES, Esq., in the Chair.

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William G. Sprigg, Esq., called in and examined:—

1. *By the Chairman:* How long have you been in the Colony? Nearly two years.
2. You came out to the Colony as Agent for a Telegraph Company? As Agent for the Magnetic Telegraph Company.
3. Did you come out authorized to contract for the construction of Telegraphs in these Colonies? Not to contract on account of the Company, but to supply their instruments and materials to any persons willing to contract.
4. Have you taken any steps towards carrying out the intention for which you came to this Colony? I called, shortly after my arrival, on His Excellency, and shewed him the instruments I had brought out with me; was directed by him to take the opinions of the merchants upon them, and I accordingly introduced them at the Chamber of Commerce. The merchants said they were not in a position to entertain the subject, but privately stated that they thought the Commissioners of Railways would be the parties most likely to take the matter up, and I then applied to them.
5. Without success in all cases? Without success in all cases.
6. Have you ever been to Melbourne since you arrived in the Colony? I have been three times.
7. Did you go to Melbourne on business connected with the Telegraph Company? One of my visits was principally connected with that.
8. Were you in communication with the Superintendent of the Telegraph in that Colony, when you were there? Yes, repeatedly.
9. You did not transact any business with him in connexion with the Company for which you are agent? I did not.
10. Will you have the kindness te inform this Committee, which has been appointed to consider the subject generally, whether you have any instruments with you in the Colony; what is the character of those instruments,—also the character of the instruments used in Victoria;—and what constitutes the difference, if any, between your instruments and those used in Victoria? In reply to your first question, I beg to hand in a descriptive Circular of the instruments I have with me. (*The Witness handed in the same—(vide Appendix)—and produced an instrument.*) They are magnetic, and are found, by the companies at home, to be more economical and more certain than any other kind of instrument invented.
11. Will you state the difference between this instrument and the instrument generally used in Victoria? The instrument used in Victoria is that invented by Professor Morse, on the recording principle, which is used in connexion with the galvanic battery. The main difference between that and the instrument I have here is, that we get power entirely from magnets, instead of being obliged to depend upon batteries, which require continued attention. These instruments I had magnetized before leaving England, and I think I can warrant them to be ready for immediate use for the next twenty years. The current is produced simply by changing the poles of the magnet—a principle discovered by Professor Faraday. The test of time given in England proves that the magnetic instrument, working with the two needles, will transmit, in the ordinary way, about twenty words per minute more than Professor Morse's. The distance that they will carry, without further power, is of very great advantage, inasmuch as they are always ready to transmit messages to the most distant stations. The instruments used with the battery generally require a great addition of power in heavy weather. At such periods they are not unfrequently obliged to use twenty twenty-four cell batteries to convey a message from London to Glasgow. In order to propel a message so far, these instruments, without any addition, will convey their current 500 miles. If a longer distance be necessary, magnets might be increased in power, so as to carry an almost indefinite distance.
12. What number of cells are there in the batteries used at Melbourne? I believe they are twenty-four cell batteries.
13. Can the instruments be properly distinguished by calling one the magnetic, and the other the voltaic, instrument? Voltaic instruments are of many kinds; that used at Melbourne is Professor Morse's; then there are the kinds invented by Professor Wheatstone, the Messrs. Highton, and many others.
14. But the class of instruments, irrespective of the improvements? They would be so distinguished.
15. Can you state, from knowledge you have acquired since you have been in the Colony, what led to the adoption of Morse's recording instrument in Victoria? Mr. M'Gowan had used it in America, and he being the only person who brought forward the Telegraph with any energy in the Sister Colony, succeeded in introducing it, and established that instrument which he was most accustomed to.
16. You consider it decidedly inferior to the instrument we have before us now? I do.
17. This is Henley's Patent? It is Henley's Patent. I may farther state, that Mr. Charles Todd, of Adelaide, who was for a long period in England on account of the South Australian Government, having examined every kind of instrument produced in England, selected this as the best, and brought an instrument of this kind to Adelaide with him.
18. The Magnetic Telegraph established at Adelaide is the same as this? I believe that owned by the Government is the same. For the proposed line between Adelaide and Melbourne I find, however, that in deference to Mr. M'Gowan, Mr. Todd is willing to adopt the Voltaic principle, and use Morse's instruments.

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19. My question was as to the Telegraph already established—that is Voltaic? There are in Adelaide two lines. That in the hands of the Government is, I believe, magnetic. That owned by Mr. M'George is, I think, Voltaic.

20. I think you said batteries of twenty-four cells would be required? Yes.

21. I see that in Mr. Todd's Report he states:—"On the line now in operation from Melbourne to Queenscliffe, seventy-one miles, a Grove's battery, consisting of fifteen cells, is placed at each end of the line, both, (except during the transmission of messages,) in constant action, so as to be available at all stations?" My impression was, that the batteries in use were the same as those most used in England. The principle is, however, the same.

22. Supposing a line of Telegraph to be constructed to unite the Cities of Melbourne and Sydney, I apprehend that on the Victoria side the instrument used will be Morse's recording instrument? Yes; I believe so.

23. Would there not be an obvious advantage in continuing it to Sydney by the same instrument, even supposing it to be inferior, for the very reason that it is already extended to Albury on that principle? If you were bound never to substitute the line first laid down, I think it would be an obvious disadvantage to have a line composed of two sorts; but from the experience in England of the Magnetic Company, I have little hesitation in saying, that in a few years all other systems will give way to the magnetic. They have done so in England, line after line.

24. In what parts of England have the Company with which you are connected lines of Telegraph? In reply, I would like to read to you their Circular, printed in 1853, since which time many other lines have been entered upon (*Circular read as follows*):—"A Royal Charter of Incorporation has been granted to this Company, and they are at present laying their wires along the East Lancashire Line to the manufacturing towns of Lancashire and Yorkshire. The Caledonian Railway Company have adopted the Magnetic Telegraph, and contracts have been entered into with them by the above Company, and communication will then be made between the cities and towns of Edinburgh, Glasgow, Greenock, and the chief seats of industry in North Britain. The several lines from Dublin to Newtownards, taking in Drogheda, Dundalk, Newry, Portadown, Armagh, Lurgon, Lisburn and Belfast, are to have Telegraphs on this principle. The Submarine Telegraph by this Company, from Donaghadee to Portpatrick, connecting the Home Office, London, with the Castle, Dublin, will be laid down in six or seven weeks, the cable for which being now in the hands of Messrs. Newall of London; and the route towards London, Liverpool, Manchester, &c., will be shortly completed. In the tunnels on the Great Northern and Scottish Central Railways, and the line between Liverpool, Wigan, Bolton and Manchester, the Magnetic Telegraph has been in daily operation for several months past, and has afforded the highest satisfaction. On the Midland Great Western Railway of Ireland, from Dublin to Galway, this Telegraph, just completed, forms the first link in the chain between the West and the North of Ireland. Contracts have also been entered into between the Magnetic Telegraph Company and the Directors of the Ulster Railway, as well as with the County Down Railway Company; and various others of great importance are now under negotiation. The *Northern Whig*, alluding to the subject of the English and Irish Magnetic Telegraph, and to the operations of the Company, thus speaks of future proceedings:—'We have it 'on authority, that a very brief period will elapse ere Belfast be placed in direct communi-'cation with the three capitals of these kingdoms, as well as with the capitals of the 'continent. Measures to this effect are at present in progress, and will not, we are 'satisfied, meet with impediment or procrastination. The scheme of Telegraph actually 'agreed to by the Company takes in Dover, London, Birmingham, Wolverhampton, 'Manchester, Bolton, Wigan, Liverpool, Preston, Carlisle, Edinburgh, Glasgow and 'Greenock, in Great Britain; and Donaghadee, Belfast, Dublin, Galway, Limerick, 'Tipperary, Waterford, Cork, and the intermediate towns in Ireland. Lines of eight wires 'are in daily operation between Liverpool, Wigan, Bolton, and Manchester; a six-wire 'line is to extend from the latter city to London and Dover; from Liverpool to Carlisle 'the line (which is subterranean) consists of four wires; and from Portpatrick to 'Donaghadee the Company have already made the preliminary arrangements for sub-'merging a series of six insulated wires, prepared and made by the same eminent engineers 'by whom the Dover and Calais cable was fabricated. The two-wire line between Dublin 'and Galway has already given the most ample satisfaction to the Directors of that line of 'railway, and the same may be said of all the other lines which the Company have con-'structed in England and Scotland. We may state that the scheme above projected, the 'Company intend shall be carried out most fully, and, we will add, in a very short time 'hence. As a proof of this assertion, it may be added that the wires for the Irish inland 'lines are at present at the Ulster Railway Terminus; that the wires for the County of 'Down line are also at the County of Down Railway Company's Terminus; and that the 'cables for immersion across the Channel are at Gateshead, at the Messrs. Newall's works, 'undergoing the spiral laying of the iron wire which is to encase them. Inside the 'external iron wire casing is a coating of gutta percha, in which the wires were enclosed 'by Mr. Stathan, of the Gutta Percha Company, some time since. The process at the 'Messrs. Newall's must be nearly, if not already completed; and, on that being done, and 'the wires tested, it only remains to carry the rope to the harbour, and lay it across. 'That this final operation will be attended with no discomfiture that skill and ability can 'avert is sufficiently guaranteed by the success attending on the great achievement of the 'Dover and Calais Submarine Telegraph—an enduring monument of their ability in 'coping with and overcoming obstacles which, to other eyes, seem well nigh impossible.'"

25. Is the instrument at present used in Victoria used at all on the great lines in England? I believe not at all.

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26. It was imported there from America? It was; but was repudiated by all the English companies. It was manufactured in England, but the principle was from America.
27. Have you considered—I presume you have, as you have a direct interest in it—the subject of constructing the line from here to Melbourne, and the probable cost? I have.
28. Have you read the paper now before you on that subject? I have.
29. *By Mr. Irving:* Have you been over the country? I have not.
30. Have you been as far as Goulburn? No.
31. *By the Chairman:* Did you notice the plan suggested there of carrying the lines, that is, by means of posts twenty-five feet high? I did.
32. What conclusion did you come to, after reading that estimate, as to the desirableness of carrying the line by means of posts, and also as to the probable cost? I judged that the posts will be the best method of carrying. The cost, I think, is understated; I do not think it can be done for the sum stated.
33. What should you estimate would be the cost per mile of carrying out the Telegraph, as there projected, to the township of Albury? I can scarcely say what the probable expense would be, but I think they have not estimated enough for carriage of posts.
34. *By Mr. Irving:* No doubt they calculated that there was so much timber along the line that the carriage would be a mere nothing? That would certainly lessen the expense. Mr. M'Gowan ought to be in a position to tell, within a little, what it would cost; but my impression, from all I can learn of the nature of the line, is, that he has not estimated enough for building. The metal part of the line, on the contrary, might be done rather under what he states.
35. *By the Chairman:* Are you aware that Mr. Todd has estimated the construction of the line from the western part of Victoria to Adelaide, an almost untraversed country, at a much lower figure? I am; but from all I can learn of the nature of that country it is much less intersected with trees.
36. *By Mr. Irving:* It is more pastoral land? More pastoral land.
37 *By the Chairman:* I may inform you, that gentlemen have been before the Committee who would enter into a contract to construct the line according to that estimate? I judge that portions might be taken, but I think the price is scarcely fair. I have it from Mr. M'Gowan, that for the Ballarat line tenders were sent in originally at, at least, three prices lower than that at which the work is now being done, which tenders were withdrawn by the parties when there appeared to be a chance of their being accepted.
38. At what period were you last in Melbourne? In August.
39. That would be about the time that Mr. Todd was there? I was there on mercantile business, and did not see Mr. M'Gowan. I had not time to direct my attention to the then progress of the Telegraph. In May I saw him last.
40. You are aware that the question is taken up very earnestly in Victoria? I am.
41. You have no doubt about the lines, now in course of projection, being ultimately carried out? None whatever.
42. Have you sufficient material in Sydney to carry the line to any considerable distance? I have not; but I am offered the material in which I am deficient from a house in Melbourne, sufficient to carry a hundred miles.
43. You could then construct a Telegraph a distance of a hundred miles? I could.
44. Not beyond that? Not without sending to England.
45. You are not prepared to give any data for calculating the cost of constructing a line to Albury? I am not; I have tried it several times, and am the more certain that it is utterly impossible to give an honest estimate without going over every mile of the ground, inasmuch as in the short distance you may leave unsurveyed you may meet with difficulties that may very materially affect your estimate.
46. Your opinion, however, is, that the present published estimate is too low? I judge it to be rather too low.
47. And you are of the deliberate opinion that within a few years the voltaic principle in Electric Telegraphs will have to give way to the magnetic principle, upon which these instruments are based? I am; but I think it quite possible that within a few years we may have an improvement upon this particular instrument.
48. I merely speak of the principle, irrespectively of improvements? I should expect to see the voltaic principle give way, and the magnetic generally prevail.
49. In England you say the Telegraphs worked by voltaic batteries are entirely out of use? No; they are gradually giving way. Morse's Telegraph is not used in England.
50. That is, the particular instrument in use in Victoria is not in use in England? Yes.
51. Did you notice in Mr. Todd's paper an allusion to an improvement on Morse's instrument, made by Mr Siemens of Berlin? I did. I saw these instruments, which were shewn to me by Mr. M'Gowan, in Melbourne, and am quite of Mr. Todd's opinion, that they are too expensive for general use. I think, further, that they are too complicated for ordinary purposes.
52. You are aware that Mr. Todd gives a qualified recommendation in favour of these instruments for the Melbourne and Adelaide line? He does.
53. Practically the instrument sends messages that cross each other, that is to say, he transmits messages from both ends at the same time by the same wire? It is done thus:—Supposing the terminals to be North and South,—North receives an indication that a message is coming, and by that is enabled to see what strength the electrical current has, which is in that instance used by South; North accordingly adjusts his instrument to the same strength, and may then transmit messages from both ends at the same time, without interference. In the event, however, of the current being stronger at one end than the other, the weaker will be forced back.
54. You cannot advise the introduction of these instruments? I cannot.
55. You have had some experience now of the Colony, and have also commercial knowledge generally

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generally; will you have the kindness to state your opinion as to what would be the effect upon Sydney provided no movement were made to bring this Colony within a system of Telegraphic communication likely to be carried out, and to embrace the other three Colonies? That it would lose status in a degree scarcely to be calculated. The most palpable consequence would be in this way—Melbourne market being bare of goods, the merchants would immediately supply their wants from that place whence they could insure receiving them most speedily; they would not write to Sydney and wait for a week to receive the goods, while they could Telegraph to Adelaide and receive them within three days.

56. Was it not the case in England, that as soon as electric communication was established with one great seat of trade and manufacture, that other centres of commerce and manufacture had, as a means of self preservation, to adopt the same course? It was.

57. *By Mr. Macarthur:* Would a person conversant with the use of Morse's Telegraph have much difficulty in acquiring the requisite knowledge for working this instrument? It might be learned in a day; the only thing necessary is a little practice. You may learn the code, which is on the plate, in five minutes, and it is then necessary to acquire quickness of eye to detect the motions of the needles. An hour's practice would enable a man of tolerable ability to become proficient.

58. So that there would be no difficulty, on that score, in substituting one instrument for the other? None whatever.

59. Have you formed an estimate of what would be the cost of substituting the magnetic apparatus for Morse's to the extent of a hundred miles, supposing it were advisable in other respects? It would depend upon how many wires there were in that originally built. If Morse's had been constructed on the cheapest possible principle, and built with only one wire, it would be necessary to add a second; but if it were built on the usual plan of leaving a few reserve wires, no expense would be necessary beyond the cost of the instruments. The minimum number of wires for these instruments is two.

60. The same wires would be applicable to both? They would.

61. *By the Chairman:* The expense of changing the instruments would not be great? No; all that would be necessary would be to unscrew the terminals.

62. It would be very little beyond the cost of the instruments? It would be nothing. I have received from the Home Company a letter upon the subject. They are anxious to place this Colony in a position to take their instruments; and this has led them to give me a lower list than that I first brought out. I can now supply these instruments at £35 each; and I may state, in the way of explanation, that while that may seem a little higher than the sum ordinarily stated, there is a vast economy in not having the batteries to provide in addition. For instance, in the statistics given by Mr. Mann, as published in the *Government Gazette*, I find for the purchase or construction of two double needle Telegraphs, £30 each, but to that there is to be added four 24 cell batteries, £10 each, making, in point of fact, the cost of each instrument £50 instead of £30.

63. Will you have the kindness to state to the Committee whether, in the event of the line being constructed from Melbourne to Albury to be worked by Morse's recording instrument, there would be any great difficulty in the line from Sydney to Albury being constructed with Henley's patent magnetic instrument, and what would be the means necessary to connect the two lines of Telegraph? I am not aware that there would be any difficulty whatever. In the event of a message being sent from Sydney to Melbourne it would be transmitted to Albury by the magnetic instrument, and then taken down and forwarded by Morse's. This would only occupy the time necessary for the transmission of the message.

64. It would take twice the length of time? No; much less than that.

65. Would it not take twice the time, excepting the time of travelling; would it not take as long at Albury to repeat the message as it takes at Sydney to give it? It might, but I believe if the line were all constructed on the principle now adopted in Melbourne that there would be no economy, inasmuch as their battery would not carry the whole length; somewhere or other, they must have a break.

66. They could not carry the whole distance with one battery, or with the batteries at each end? I believe they have no battery that could carry a distance of five hundred miles—they must have a break somewhere. The same thing has been found at home; indeed, I have known instances where from London to Glasgow they have had four such interruptions.

67. Supposing we constructed a line from Sydney to Albury, one altogether independent of that carried by the Victorian Government from Melbourne to Albury, there would practically be no serious impediment? I believe not.

68. Certainly none as compared with the Telegraph constructed on the plan adopted in Victoria, because you say no battery would carry the whole distance without a break? No battery would carry the whole distance, and as these instruments carry a greater number of words in a minute, I consider that there would be an economy of time in Telegraphing the whole distance, by Telegraphing part with these instruments.

69. As we should not have to connect ourselves with any other Colony, whatever lines we laid down in our own Colony being altogether of an independent character, we might originate a system of our own, on any plan that might appear to offer the most advantage, without coming into contact, except at Albury, with any system adopted in other Colonies? You might.

70. *By Mr. Irving:* Would there not be danger from thunder storms? None whatever with these instruments, as you will see from the circular before you that no worse effect than the ordinary deflection of the needle can be produced by the passage of the lightning along the wires. The action of the needle being secondary, it would follow that the utmost power of the fluid would affect only the coils beneath the plate, the worst consequence being, as I have stated, the deflection of the needle. (*The witness illustrated this point by reference to the instrument on the table.*)

71. Would not a thunder storm interfere with a message travelling at that moment? It would

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would if the wires were carried above ground, hence the reason of so many English lines being sub-soiled.

72. What would be the practical effect of a thunder storm? It would be impossible to Telegraph certainly through a thunder storm with any instrument that carries its wires through the air.

73. *By Mr. Cowper:* You are not yourself contemplating to become a contractor to carry out these works? I think not; I would much rather say what the price of the materials will be, and let the construction of the line be contracted for by other parties. I felt the peculiarity of my position in first offering them to the Commissioners—that I seemed to be recommending them to enter upon works which they must apply to me to carry out. In July last I offered them a hundred miles of wire, with all the necessary insulators, screw-ratchets, winding apparatus—everything but posts and labour—for £23 a mile; that was refused.

74. Do you allude to the Commissioners of Railways? Yes.

75. At that time had they any authority to enter into the work? I do not know what their authority might be; I am aware that His Excellency wrote about that time urging their attention to the subject, and to take steps at once.

76. Between Sydney and Parramatta? Between Sydney and Parramatta. Their answer to me was that they did not consider that the time had arrived for the introduction of the Telegraph.

77. Your opinion with regard to the cost of constructing the line is not of very great value, as you are not acquainted with the cost of constructing such works in the Colony? I should not consider it worth much in opposition to such a man as Mr. McGowan.

78. Therefore, if any other person estimated the cost at a lower rate than you had done, you would not on that account think the estimate too cheap? It would depend on who the other person was. I should say, with all deference, what my opinion was, but at the same time I would admit that Mr. McGowan was in a better position than myself to give an opinion. I can merely state positively the cost of the material.

79. That is to say, such part of the material as you propose to import? Yes.

80. Not of colonial construction or manufacture? Not of colonial construction. The material imported would be what others would have to use on the line, as for instance, galvanized wire. My impression is that the Government would do the business much more economically by throwing it open to general contract, and supplying the parties with the necessary materials.

81. *By Mr. Irving:* What do you mean by the necessary materials? Imported materials.

82. *By Mr. Cowper:* Not the posts or material of colonial construction? I would leave that to the contractor.

83. You think it would be desirable for the Government to purchase the imported part of the work, and to leave the rest to the contractor? Yes, otherwise it would be a monopoly in the hands of a few men, who in other places had become acquainted with the construction of Telegraphs, while general contractors, feeling hardly safe in trusting their knowledge of the materials required, would shrink from attempting an estimate.

84. You would throw it open to competition, leaving it to any person to enter into it? Yes.

85. *By Mr. Irving:* Would you divide it? It might be let in one or in more contracts, according to circumstances.

86. *By Mr. Cowper:* You yourself have no experience as regards the interior of the Colony? I have not.

87. *By the Chairman:* Will you have the kindness to state to the Committee how many of these instruments you could supply at once? I have only two in Sydney.

88. *By Mr. Cowper:* Are there no others in the Colony? There are not.

89. They are £35 each? Yes.

90. *By Mr. Macarthur:* They may always be procured from England, I presume? Yes.

91. An instrument would be required wherever there was a station? One instrument. I may be permitted to draw the attention of the Committee to an ingeniously contrived alarum by the same patentee. (*The witness exhibited the same.*) The cost of this is £7 5s.; that estimated for by Mr. Mann is £35.

APPENDIX A.

The Magnetic Telegraph Company, (Henley's patent,) entirely dispensing with the use of the Voltaic Batteries, and always ready for instant use.

The Magneto-Electric Telegraph presents many very important advantages over all Telegraphs hitherto invented. It is extremely compact and portable, as will be seen by the accompanying sketch, which represents the whole apparatus required (except posts and wires) for transmitting a message any required distance.

The instrument is worked by Magneto Electricity, and, from the simplicity of construction, is always ready for immediate use, without the least preparation or trouble, and can, therefore, not only be used as a stationary Telegraph, *but, from its portability, is peculiarly adapted for the use of guards, on all lines of railway, who could, in the event of accident, or any emergency, immediately apply the instrument to the existing Telegraph wires on any part of the line.* It is free from any expense whatever, after the first outlay, and not only dispensing with the cost and inconvenience of chemicals, repairs, and superintendence involved in the use of the Voltaic batteries, but actually substituting, for the present uncertain