

1874.

NEW ZEALAND.

OBSERVATION OF THE TRANSIT OF VENUS,

(PAPERS RELATIVE TO THE):

Presented to both Houses of the General Assembly by command of His Excellency.

No. 1.

The Right Hon. the Earl of KIMBERLEY to Governor Sir G. F. BOWEN, G.C.M.G.
(No. 69.)

SIR,—

Downing Street, 12th September, 1871.

I transmit to you a copy of a correspondence with the Astronomer Royal, on the subject of a suggestion made by the Governor of Tasmania, that Hobart Town should be selected as a site for the observation of the transit of Venus in 1874.

With regard to Professor Airy's proposal that a station in New Zealand should be adopted, I should be glad to receive your opinion whether there are any reasons for preferring Auckland to Canterbury.

Governor Sir G. F. Bowen, G.C.M.G.

I have, &c.,

KIMBERLEY.

Enclosure 1 in No. 1.

Mr. HERBERT to Professor AIRY.

SIR,—

Downing Street, 24th August, 1871.

I am directed by the Earl of Kimberley to transmit to you for your information a copy of a despatch from the Governor of Tasmania, forwarding a memorandum from the Colonial Treasurer, on the subject of the arrangements for the observation of the transit of the Planet Venus in 1874, with the Paper of Observations and Volume of Proceedings of the Royal Society of Van Diemen's Land, which accompany it.

G. B. Airy, Esq., M.A., F.R.S., Astronomer Royal.

I have, &c.,

R. G. W. HERBERT.

Enclosure 2 in No. 1.

Professor AIRY to the UNDER SECRETARY, Colonial Office.

SIR,—

Royal Observatory, Greenwich, S.E., 7th September, 1871.

I have the honor to acknowledge your letter of the 24th August, transmitting to me, by instruction of the Earl of Kimberley, copy of a despatch from the Governor of Tasmania, dated 15th June, and copy of a memorandum from the Colonial Secretary and Premier of the colony, dated 14th June, expressing the wish of the authorities of the colony that Hobart Town might be selected as a station for the observation of the transit of Venus, 1874, together with some printed papers (Results of Meteorological Observations at Hobart Town, by Francis Abbott; and Papers of the Royal Society of Van Diemen's Land, containing Captain Kay's memoir on the longitude of Hobart Town). I retain these enclosures until I receive your instructions for the return or other disposal of them, and I have the honor to offer, for the consideration of Earl Kimberley, the following remarks on the general subject:—

1. In order to obtain the desired results from the observation of the transit of Venus, it is necessary to secure one place of observation, or more than one, in the South Australian seas. The most favourable place, in respect of purely geographical and astronomical considerations, is Canterbury, in New Zealand; but having regard to the possible advantage of fixing on the seat of government, I had proposed to adopt Auckland. As compared with Hobart Town, there is a sensible but not very important difference in favour of Auckland: Canterbury is clearly superior.

2. It does not appear that the authorities of Tasmania have any advantage to offer, except locality and buildings (which may or may not be adapted to the wants of the expedition). It does not appear that they have an observing telescope suitable to our wants. If perfect reliance could be placed on the determination of geographical longitude, a great labour would be spared to the expedition for the

transit of Venus; but I doubt whether the longitude can thus be accepted, for the following reason:—The best part of Captain Kay's determination rests on lunar transits, and (in the absence of explanation) I suppose that these were compared with the lower places in the "Nautical Almanac," which were then computed from Buchhardt's Tables, known to be sensibly erroneous. I do not think, therefore, that the expedition, if located at Hobart Town, would be exonerated from the labour of itself determining the longitude.

3. My present impression is, therefore, that it will be best to adhere to the proposed adoption of a station in New Zealand, preferring Canterbury, but accepting Auckland if political reasons should be held sufficient for the change; but I should be glad to see Hobart Town occupied by a party of observers, its value for the astronomical purposes being not very much below that of the New Zealand stations.

I have, &c.,
G. B. AIRY.

The Under Secretary of the Colonial Office.

No. 2.

MEMORANDUM for HIS EXCELLENCY.

ADVERTING to memorandum No. 43, 1871, on the subject of the selection of a station for the observation of the transit of Venus in 1874, Ministers beg to inform His Excellency that they are advised by the Superintendent of Canterbury that a society is being formed for the purpose of erecting an observatory at Christchurch, and it is the intention of the Provincial Government to propose that a subsidy be granted to the society, for the purpose of constructing a building for the observatory, and towards an endowment, with the view of obtaining an astronomer in permanence.

The Superintendent of Canterbury telegraphs that he will be obliged if the Government will write by the outgoing mail, stating the willingness of the society and of the Provincial Government to co-operate with the Imperial Government in promoting the desired object.

Ministers have no doubt that, if the Astronomer Royal will state what is to be done by the local authorities, they will undertake to the utmost to carry out his wishes, in advance of the arrival from home of the necessary staff.

Wellington, 23rd December, 1871.

JULIUS VOGEL.

No. 3.

Governor Sir G. F. BOWEN, G.C.M.G., to the Right Hon. the Earl of KIMBERLEY.

(No. 114.)

Government House, Wellington, New Zealand,
25th November, 1871.

MY LORD,—

Adverting to your Lordship's despatch No. 69, of the 12th September ultimo, on the subject of a station in New Zealand for the observation of the transit of Venus in 1874, I have now the honor to transmit a Ministerial memorandum, with other papers.

The Right Hon. the Earl of Kimberley.

I have, &c.,
G. F. BOWEN.

Enclosure 1 in No. 3.

MEMORANDUM by Mr. FOX.

ADVERTING to the despatch No. 69, of 12th September, 1871, from the Right Hon. the Secretary of State for the Colonies, on the subject of the selection of a station in New Zealand for the observation of the transit of Venus in 1874, and to the remark in its enclosure, by the Astronomer Royal, that he would prefer Canterbury to Auckland as a station, but would accept Auckland, "if political reasons should be held sufficient for the change," Ministers are of opinion that no political reasons should be allowed to interfere with the determination of this question, which is one of a purely scientific character.

A memorandum from Dr. Hector, F.R.S., on the subject of this despatch, is forwarded, together with the printed enclosures noted in the margin.

Ministers have to express their desire to aid, to the utmost extent in their power, the Imperial authorities in the necessary arrangements for the establishment of an observatory in New Zealand for the purpose indicated.

Wellington, 24th November, 1871.

WILLIAM FOX.

Enclosure 2 in No. 3.

MEMORANDUM for the Hon. the COLONIAL SECRETARY.

THE longitude of the Government Observatory at Wellington has been fixed with considerable accuracy, as shown by the enclosed returns, which, however, are liable to the same objection that the Astronomer Royal urges against the Hobart Town observations, namely, that they are calculated from the lower transits given in the "Nautical Almanac." I have, however, just received and forwarded to Mr. Jackson the actual Greenwich observations for the period during which his lunar transits were observed, so that the longitude ascertained for Wellington will no doubt be accepted. From this place, as an initial meridian, the longitude of any other place that may be selected for the site of the proposed observatory, and to which the telegraph extends, can be readily ascertained with precision,

as was lately done for Dunedin. I might also point out, with reference to the question of longitude, that before the end of 1874 there is every probability that telegraphic communication will be completed from England to this colony, and the difference of meridians thereby absolutely determined.

No observatory accommodation suitable for the purposes of the expedition exists at present in any part of the colony, so that provision of this nature will have to be made at whichever place is selected.

The Government Observatory at Wellington is only adapted for "transits," by which the telegraph time throughout the colony is regulated.

As it appears very desirable that the transit of Venus should, without fail, be observed in some part of New Zealand, I would suggest, on account of the frequent local variability of the climate, that, in order to prevent disappointment, several stations should be relied on, all of which could be placed in communication with the chief observatory by telegraph, at the time of the occurrence of the phenomenon.

The accompanying Meteorological Returns afford information concerning the climate of the different parts of New Zealand; the average rainfall and amount of clouds, for the last six years, during the month of December, at several of the chief stations, being as follows:—

Abstract of Weather for December for Six Years.

	Rainfall.	No. of Rainy Days.	Average Cloud.
Auckland	3·742	15	6·3
Wellington	3·909	13	4·9
Nelson	5·051	9	5·9
Christchurch	1·622	9	4·9
Dunedin	3·462	14	5·8

From this it appears that Christchurch is the most favourable site, but it is necessary to take into consideration the occasional prevalence at that place of dry northerly winds, which affect the atmosphere in such a manner that it is impossible to use even a moderately powerful telescope with any degree of accuracy. These winds prevail, however, chiefly in the spring and autumn, there being only, on the average, four days of wind of this character during the month of December. I therefore think that Christchurch may be safely recommended as the site for the chief observatory; but I think it advisable that observers should also be stationed at some of the following places:—Tauranga or Waikato, in Auckland; Wellington or Nelson; and one station in the interior of Otago, as it rarely occurs that bad weather happens at all these places simultaneously.

JAMES HECTOR, M.D., F.R.S.

No. 4.

The Right Hon. the Earl of KIMBERLEY to Governor Sir G. F. BOWEN, G.C.M.G.

(No. 12.)

SIR,—

Downing Street, 23rd February, 1872.

With reference to your despatch No. 114, of 25th November, I transmit to you, for your information, a copy of a letter from the Astronomer Royal, upon the subject of the arrangements for the observation of the transit of Venus in 1874.

I have to call your attention to Professor Airy's remark with respect to the instruments which he trusts will be provided by the colony on the occasion.

Governor Sir G. F. Bowen, G.C.M.G.

I have, &c.,
KIMBERLEY.

Enclosure in No. 4.

Professor AIRY to Mr. HOLLAND.

SIR,—

Royal Observatory, Greenwich, S.E., 19th February, 1872.

Again referring to your letter of the 7th instant, on the subject of the observation of the transit of Venus, 1874, in New Zealand, I have the honor to state that I have carefully perused the documents accompanying that letter, and have arrived at the following conclusions, which I request you will be pleased to place before the Right Hon. the Earl of Kimberley:—

1. Combining the various considerations, astronomical and meteorological, on which the choice of a station for the Government expedition must depend, I fix on Christchurch as the most advantageous point; and request that it may be understood in future that the Government expedition will be located at Christchurch.

2. The principal instruments provided by the Government will be a transit instrument, an altazimuth for determination of longitude by lunar vertical transits, a 6-inch equatoreal (these, with their huts, are ready), a 4-inch telescope, a photographic heliograph (these are ordered, but not ready), and clocks and other ancillary apparatus. Possibly the assistance of the local authorities may be desired for preparing huts for the last-mentioned instruments.

3. It appears exceedingly desirable that preparations should be made for observing the phenomenon at several stations (as is suggested in one of the documents enclosed with your letter of 7th February); and unusual value will attach to these observations, in consequence of the admirable system which has been adopted in New Zealand, of connecting the longitudes of the principal settlements by the galvanic telegraph.

4. But I would remark, that it will be necessary that the instruments for these purposes be provided in the colony. The Government stores at my command will be completely denuded of moveable instruments by the supplies arranged for the several stations selected in different parts of the world.

5. It may be understood that the minimum of equipment at each station should be a good 4-inch

telescope, and a clock or chronometer referred to the local transit clock. Larger telescopes will be very valuable—the standard being taken as 6-inch telescopes.

6. As there is usually greater delay in procuring instruments than in making any other arrangements, I would suggest that the attention of colonial residents be immediately called to the necessity of hastening this provision.

H. T. Holland, Esq.

I have, &c.,
G. B. AIRY.

No. 5.

Governor Sir G. F. BOWEN to the Right Hon. the Earl of KIMBERLEY.

MY LORD,— Government House, Wellington, New Zealand, 17th October, 1872.

1. Adverting to your Lordship's despatch No. 12, of the 23rd February ultimo, and to the accompanying letter from the Astronomer Royal, upon the subject of the arrangements for the observation of the transit of Venus in 1874, I am now requested by my responsible Advisers to forward the enclosed Ministerial memorandum.

2. It will be perceived that the Government of New Zealand will gladly assist the arrangements of the Astronomer Royal, by the erection of the huts required for the instruments to be used at Christchurch, mentioned in Professor Airy's letter to Mr. Holland, of the 19th February, 1872, provided that plans and specifications of the huts required be sent out in good time, seeing that there are no means of ascertaining in the colony exactly what is required.

The Right Hon. the Earl of Kimberley.

I have, &c.,
G. F. BOWEN.

Enclosure in No. 5.

MEMORANDUM by Mr. WATERHOUSE.

REFERRING to the enclosure in despatch No. 12, of the 23rd February, 1872, from the Right Hon. the Secretary of State for the Colonies, upon the subject of the arrangements for the observation of the transit of Venus in 1874, Mr. Waterhouse has the honor to inform His Excellency that the Government will gladly assist the arrangements of the Astronomer Royal, by the erection of the huts required for the instruments to be used at Christchurch, mentioned in Professor Airy's letter to Mr. Holland, of the 19th February, 1872, provided that plans and specifications of the huts required be sent out in good time, seeing that there are no means of ascertaining in the colony exactly what is required.

Wellington, 16th October, 1872.

G. M. WATERHOUSE.

No. 6.

MEMORANDUM for the Hon. Mr. GISBORNE.

It will take some time to find out the cost of the instruments required, also what supply of them is available in the colony, or likely to be at that date, also to ascertain if amateur observers will be available.

I do not think that the New Zealand Government would be justified in going to much expense for a single observation, but in connection with the establishment of one or more permanent local observatories in the colony, such instruments might be obtained.

Chronometers can easily be had.

Of telescopes, the only one belonging to the General Government is at the Observatory in Wellington, but I think any of the following persons might be induced to furnish such instruments:— Archdeacon Stock, Wellington; Mr. Karkeek, Wairarapa; Mr. Heal, Auckland, and Mr. J. S. Thomson, Dunedin. These gentlemen would require to be communicated with; but in the event of the proposed observatory at Christchurch being established, would it not be better to leave such arrangements for future consideration. It does not appear necessary to intimate the action of Government respecting the additional stations, to the Astronomer Royal, and all that is required at present in reply to this despatch, is to state whether Government will assist the arrangements of the Astronomer Royal by the erection of the huts for the instruments to be used at Christchurch.

JAMES HECTOR.

3rd May, 1872.

No. 7.

Mr. J. G. WHITE to the Hon. the COLONIAL SECRETARY.

SIR,—

U.S. Consulate at Auckland, 18th October, 1872.

I beg the honor to address you in respect to a letter addressed to me by Rear-Admiral B. F. Sands, Superintendent of the United States Naval Observatory at Washington, U.S.A., the purpose of which is, that this institution is about to make arrangements for sending out some of its officers to occupy stations to be selected in the Pacific and Indian Oceans, for the purpose of observing the transit of Venus in December, 1874. They, with other astronomers and scientific gentlemen, will form several parties.

With the view of enabling them to select such points as promise greatest probability of clear weather at that season, I am requested to favour the Observatory with information as to the general character of the weather at divers points in New Zealand during the months of November and December, with respect to wind, clouds, fog, and temperature.

What is needed is chiefly a record of observations during November and December, 1872 and 1873, showing the fraction of sky which is covered with clouds at three different hours, say 8 a.m., noon, and 4 p.m. on each day.

If any such record is kept by any Meteorological Institution connected with your Government, the Superintendent of the U.S. Naval Observatory and myself would esteem any information addressed to the undersigned upon this subject a special favour, and it would be most gratefully received.

I have, &c.,
JAS. G. WHITE,
U.S. Consul.

The Hon. the Colonial Secretary.

No. 8.

The Hon. J. HALL to Mr. J. G. WHITE.

SIR,—

Wellington, 5th November, 1872.

I am directed by Governor Sir G. F. Bowen, G.C.M.G., to acknowledge the receipt of your letter of the 18th of October, requesting that certain meteorological information may be communicated to you for the use of the U.S. naval authorities, to enable them to decide upon the most favourable post of observation for viewing the transit of Venus, which will occur in December, 1874.

In reply, His Excellency requests me to inform you that inquiries are being made upon the points on which you desire information, the result of which shall be communicated to you at an early date.

In the meantime, I may inform you that the Astronomer Royal of England purposes to send out an expedition to observe the transit at Christchurch, where arrangements are in progress for the construction of an observatory.

I have, &c.,
J. HALL.

J. G. White, Esq., U.S. Consul.

No. 9.

MEMORANDUM for Mr. COOPER.

METEOROLOGICAL observations have been made continuously at eleven stations during the last seven years, but only recording the state of the sky at one period of the twenty-four hours, viz. at 9.30 a.m.

The average temperature, rainfall, and amount of cloud, at five principal stations, during the month of December, as shown by these observations, is as follows:—

		Temp.	Rainfall.	Rainy Days.	Average Cloud.
Auckland	... { Lat., 36° 50' S. Long., 174° 50' 40" S. }	65.6	3.749	15	6.3
Wellington	... { Lat., 41° 16' 25" S. Long., 174° 47' 25" E. }	60.5	3.909	12	4.9
Nelson	... { Lat., 41° 16' 17" S. Long., 173° 18' 46" E. }	61.4	5.050	9	5.9
Christchurch	... { Lat., 43° 32' 16" S. Long., 172° 38' 59" E. }	60.0	1.638	9	4.9
Dunedin	... { Lat., 45° 52' 11" S. Long., 170° 31' 7" E. }	56.0	3.404	14	5.8

Published abstracts of the Meteorological Returns are enclosed herewith, and extracts from the daily records for the month of December at the above stations will be copied.

Instructions have been given to the observers throughout the colony—twelve in number—to observe the proportion of clear sky, state of atmosphere, and direction of wind, at 9.30 a.m., noon, and 4 p.m., during the months of November and December.

8th November, 1872.

JAMES HECTOR.

No. 10.

Mr. J. G. WHITE to the Hon. J. HALL.

SIR,—

U.S. Consulate at Auckland, 26th November, 1872.

I have the honor to acknowledge the receipt of your communications of the 5th and 18th instant, respecting certain meteorological information in connection with the transit of Venus in 1874.

Permit me to tender to His Excellency Sir G. F. Bowen, through yourself, my thanks for his distinguished consideration of my request on behalf of the U.S. naval authorities, for certain information upon this interesting subject, and for the copy of Dr. Hector's memo., and his Meteorological Report for 1870, which you had the goodness to enclose under cover with your favour of the 18th instant.

I have, &c.,
JAS. G. WHITE,
U.S. Consul.

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

No. 11.

Dr. HECTOR to the UNDER SECRETARY.

SIR,—

Colonial Museum, Wellington, 4th June, 1873.

With reference to my memorandum of the 8th November last, I have the honor to enclose copies of further Meteorological Returns, for the information of the Astronomer Royal, being special observations taken during the months of November and December, 1872, for the purpose of making the forecast of probable weather that will be experienced in different parts of the colony during the transit of Venus in 1874.

The Under Secretary.

I have, &c.,
JAMES HECTOR.

No. 12.

MEMORANDUM for the UNDER SECRETARY.

I FORWARD a note just received from Sir George Airy, relative to the transit of Venus. There will be no difficulty in making the arrangements, which are the same as those suggested in the memorandum which was forwarded by Government to Sir George Airy eighteen months since; but it is perhaps unadvisable that he should be put to the trouble of corresponding direct with the observers and telegraph officers. The whole of the colonial arrangements should be under the control and supervision of one officer of Government in the colony. I think all these papers should be laid before Ministers for immediate consideration.

Mr. Cooper.

J. HECTOR.

Enclosure in No. 12.

Sir G. B. AIRY to Dr. HECTOR.

SIR,—

Royal Observatory, Greenwich, London, S.E., 1st November, 1873.

You are probably aware that one of the stations selected by the authorities of the British Government for the observation of the transit of Venus on December 8, 1874, is Christchurch.

Our observations will be registered, in the first instance, in local time, as determined by our own instruments; and I trust that there will be no possibility of the slightest inaccuracy in the results of these time determinations. It is very desirable that, if possible, the transit should be observed in various parts of the islands of New Zealand; and it is believed that there are observers possessing the skill and the instruments which would make such observations useful. In that case, it is of the utmost importance that their observations should be referred to the time given by our clocks; and this could probably be done, in every instance, by galvanic communication from the clocks of the observers to our clocks. Our observers will be prepared to make telegraphic connection between their temporary observatories and the Christchurch Telegraph Station.

And I venture to ask your opinion on the general practicability of this scheme; and to request you to favour me with the names and addresses of any observers to whom I could write on the subject, and also with the address of the Telegraph Superintendent, or other officer, from whom I might ask telegraphic co-operation.

Dr. Hector.

I have, &c.,
G. B. AIRY.

No. 13.

Dr. HECTOR to Sir G. B. AIRY.

DEAR SIR,—

New Zealand, 15th February, 1874.

In further reply to your note of October last, I have to inform you that Government has asked me to secure a site here for the temporary observatory, and to superintend all arrangements which you may think convenient to intrust to the Colonial authorities for the assistance of your observing staff.

I have therefore (subject to your approval) obtained the promise of a good site from the Hon. Mr. E. W. Stafford, on whose property it is situated. It is seven miles from Christchurch, in a southerly direction, close to a main road and telegraph line (*i.e.*, 400 yards distant). It is an isolated hill, on the point of a long spur, running westward from Banks Peninsula, and commands to within a few degrees of the horizon in all directions. I have selected it in preference to any place nearer to Christchurch in the hope of escaping the mirage that is so frequent on the plains in summer afternoons during hot north-west winds, as I have previously explained; and, on the other hand, in preference to any site higher up on the peninsula or on the seaward slope, in order to avoid the sea fog that covers the hills during the summer nights, but which seldom rolls over their landward slope.

I do not think of anything else I can do until more definite information is received relating to the number of your staff, their requirements for accommodation, &c.

I understand that all you expect Government here to do is to erect the observatory huts, and to make the necessary telegraphic connections; but if you can suggest any other services they can render, I feel sure you may rely on their cordial assistance.

Sir G. B. Airy.

I have, &c.,
JAMES HECTOR.

No. 14.

Sir G. B. AIRY to Dr. HECTOR.

DEAR SIR,—

Royal Observatory, Greenwich, London, S.E., 20th April, 1874.

I write at this moment principally to acknowledge your letter of the 15th February (which arrived a few days ago), and to thank you and the officers of the Government for your kind attention to the possible wants of the expedition for the observation of the transit of Venus, and for the care taken in the provisional selection of a station.

I think that it will be desirable to abstain from any positive arrangement until the party arrives. I can imagine it possible that the distance of seven miles from the city will be felt as an inconvenience. Assistance of tradesmen or workmen may be many times required in the course of several weeks; but on this and all other points the able officer who is to command the party (Major Palmer, R.E.) will probably decide at once when actually on the spot.

Dr. J. Hector.

I have, &c.,
G. B. AIRY.

No. 15.

Dr. HECTOR to the UNDER SECRETARY.

SIR,—

Geological Survey Office, 21st July, 1874.

Referring to the correspondence that has taken place relative to the observation in New Zealand of the transit of Venus across the Sun's disc on the 8th of December next, I have the honor to suggest that it will be necessary to provide funds for the purpose of affording the assistance which has been promised to the Imperial officers, and also to defray the expense of the auxiliary observations which are intended to be made simultaneously in other parts of the colony, in order to provide against the contingency of unfavourable weather.

For both these purposes I think the sum of £300 will be sufficient.

The Under Secretary.

I have, &c.,
JAMES HECTOR.

No. 16.

His Honor the SUPERINTENDENT, Canterbury, to the Hon. the COLONIAL SECRETARY.

SIR,—

Superintendent's Office,

Christchurch, Canterbury, N.Z., 19th January, 1872.

In further reference to my letter, No. 13, of this day's date, I have the honor to request that you will be good enough, if there is no objection to such a course, to supply me with any information on the subject of the intentions of the Imperial Government, or on any other matter connected with the establishment of observatories, which may come into your possession.

I understand, from a reference in a telegram from the Hon. the Colonial Treasurer, that a memorandum on the subject has been written by Dr. Hector, which would no doubt be of value and interest to the society.

The Hon. the Colonial Secretary.

I have, &c.,
WM. ROLLESTON,
Superintendent.

No. 17.

His Honor the SUPERINTENDENT, Canterbury, to the Hon. the COLONIAL SECRETARY.

SIR,—

Superintendent's Office,

Christchurch, Canterbury, 19th January, 1872.

I have the honor to enclose herewith a copy of a message sent by me to the Provincial Council during its recent session, on the subject of the establishment of an observatory in this Province, and of the reply which I received from that body.

In accordance with the terms of the resolution, a sum of £1,000 has been appropriated for the purpose of establishing an observatory, and £200 for the providing a suitable site, on the understanding that the above sums shall be expended in case the Colonial Government shall undertake the future maintenance of the institution.

The society has already a large number of annual subscriptions, amounting to upwards of 150, and a considerable sum has been received in donations. Its wish is to co-operate with the Imperial and Colonial Governments in making the arrangements necessary for the observation of the transit of Venus in 1874, and also to secure the maintenance, in permanence, of the observatory. With this object, it has taken steps to place itself in communication with similar institutions in Europe, and it has determined at once to contribute a sum of £200 towards the preliminary expenses which will be incurred in making preparation for the object which the Astronomer Royal has immediately in view.

I enclose a copy of a memorandum which was written by me, and forwarded for circulation in England by the last mail.

The principal object of my present letter is to ascertain from the Colonial Government whether it will be willing to make an annual contribution towards the maintenance of an observatory, or give

such an undertaking as will come within the intention expressed in the resolution of the Provincial Council, which I have forwarded.

I have, &c.,
WM. ROLLESTON,
Superintendent.

The Hon. the Colonial Secretary.

Enclosure 1 in No. 17.

MESSAGE.

THE Superintendent transmits to the Council a petition which has been presented to him by a number of gentlemen interested in the establishment of an observatory in this province.

As previously intimated by him, it was his intention to recommend the Council to make provision, supplementing private contributions, for the erection of the requisite building and the necessary apparatus, and also to make such appropriation for the maintenance of the observatory as will secure its efficiency in permanence.

In forwarding this petition, he has to express his cordial concurrence in its prayer, and his hope that the Council will, at an early date, take it into its favourable consideration.

In addition to a School of Science, of which so valuable a nucleus is already formed in the province, he is of opinion that the establishment of an institution of this character, having for its object the promotion of one of the highest branches of scientific study, with which the study of other branches of physical science and of the higher mathematics is so closely allied, would be of the greatest value as well to the colony as to the province, and that the locality in which the observatory was placed would derive the largest immediate benefit, in the prosecution of scientific education, from the special interest taken in it by scientific men in other parts of the world, and from the presence of more men devoted to the study and preaching of physical science.

The Superintendent would recommend that, for promoting the special object of the petition, a vote of £1,000 should be appropriated for the building and requisite apparatus, and that an endowment of 5,000 acres of land should be given, on conditions to be determined by the Council, for the permanent maintenance of the observatory.

With regard to the opinion of the memorialists, that the present is one of the last opportunities for securing endowments for educational and scientific purposes, the Superintendent proposes, in a separate message, to bring under the attention of the Council a recommendation to make an endowment for the purposes of a School of Science, in connection with which such liberal provision has already been made by it for the erection of buildings.

WM. ROLLESTON,
Superintendent.

10th January, 1872.

Enclosure 2 in No. 17.

Provincial Council Chambers, 11th January, 1872.

THE Council thank your Honor for your message No. 4, and resolves as follows:—

“This Council request His Honor the Superintendent to place £1,000 on the supplementary estimates for the purpose of establishing an observatory, and £200 for the providing a suitable site in this province, on the understanding that the above sum shall be expended only in case the Colonial Government shall undertake the future maintenance of the institution.”

Enclosure 3 in No. 17.

MEMORANDUM.

At a meeting held on the twenty-first anniversary of the Province of Canterbury, it was determined to form a society, having for its object the promotion of the establishment of an observatory in Christchurch.

The proposal originated with a number of gentlemen interested in promoting the study of astronomy, and in the belief that special facilities were afforded for the purposes of an observatory in this part of New Zealand.

The great expanse of the Canterbury Plains, together with the clearness of the atmosphere, would, it is believed, give a better horizon, and larger opportunities for observation, than exist in any other part of New Zealand.

It has since transpired that, unknown to the promoters of the undertaking, the Astronomer Royal had suggested that Christchurch was the best place for observing the transit of Venus in 1874, and that the Imperial Government were desirous of securing the assistance of the Colonial authorities in making the necessary arrangements. This assistance has been promised by the colony to the utmost extent in its power, and the Colonial Government has suggested that the object of the society would be most effectually gained by its co-operating with the Colonial and Imperial Governments in making the necessary arrangements on the spot, and contributing to the cost of the building and the requisite instruments.

Little difficulty is anticipated in obtaining the site, and in providing funds for the erection of a building. What is now principally desired by the society is to be immediately placed in communication with those societies at home which would assist it at the outset with advice as to the course to be taken by it so as to render its work most effective, and to secure its being of such value as to place it in communication with the observatories of Europe and elsewhere. It has been stated that the society may not unreasonably look to scientific societies in England for pecuniary assistance,

and also for contributions in books, instruments, and apparatus, if it so conducts its work as to be of permanent value to those societies.

A considerable number of annual subscribers has been obtained, as well as donations towards the first outlay, and it is hoped that the local government will give annual aid towards the maintenance of the observatory.

The objects of this paper therefore is to ascertain,—

1. What kind of work should be undertaken by an institution of limited means, with the view of making it as useful as possible, and of placing it in communication with the observatories in England.
2. What assistance it may expect from the scientific institutions in England.
3. What apparatus is absolutely necessary to enable it to commence on such a scale as would be of real use, and what would be the cost of such apparatus.

January 9th, 1872.

WM. ROLLESTON,
Superintendent of Canterbury.

No. 18.

His Honor the SUPERINTENDENT, Canterbury, to the Hon. the COLONIAL SECRETARY.

Superintendent's Office,

SIR,—

Christchurch, Canterbury, New Zealand, 13th February, 1872.

I have the honor to acknowledge the receipt of your letter No. 29, of the 2nd February, 1872, and to thank you for the copy of a memorandum by Dr. Hector, containing suggestions as to the site most suitable for an observatory in this colony, enclosed therewith.

I have, &c.,

WM. ROLLESTON,
Superintendent.

The Hon. the Colonial Secretary, Wellington.

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