PHILOSOPHICAL INSTITUTE OF CANTERBURY.

FIRST MEETING. *6th March*, 1872.

His Honour Mr. Justice Gresson, President, in the chair.

The President delivered the following

ADDRESS.

GENTLEMEN,—

He who has to address *ex cathedrâ* persons who are much better acquainted with the subject than the speaker, must always find himself placed in an embarrassing position. Such is the position in which your kindness in electing me as your president has placed me this evening.

My first impulse was to decline the honour, solely from a conviction that many whom I address are much better qualified for the office than I am. But further reflection convinced me that in a new country like this he best discharges his duty towards the colony who, putting aside considerations of a personal nature, undertakes and performs to the best of his ability the task assigned to him by his fellow colonists. Moreover, he must remember that in a colony every person, however limited his acquirements, has more influence and consequently greater responsibility than he would have in an old and populous country.

I congratulate you on the progress which the society has made during the past year. The number of members continues to increase. Part of the income of the society has been devoted to the purchase of scientific works of reference, the want of which was much felt, and as several donations of books have been received from scientific societies, and from individuals, we already possess the nucleus of a library. If, in addition to this, we could obtain the Provincial Council library, from which at present the public derives but little benefit, we should have made some progress towards the acquisition of a library, which, if thrown open to the public, as has been done at Melbourne for years with most beneficial results, would confer a great boon upon the community.

You are aware that in February, 1871, an ordinance of the Provincial Council was passed, incorporating a Board of Trustees by the name of "The

Trustees of the Canterbury Museum and Library" for establishing a public library and a school of technical science, and for the safe custody of the books and other valuable property deposited in the Museum. In furtherance of the objects contemplated by the ordinance, a resolution was passed by the Provincial Council during its last session, for reserving 100,000 acres of pastoral land as an endowment. In addition to this valuable endowment we have to acknowledge the liberal gift of one of our members, Mr. Gould, who has ordered casts of statues of the old masters, which will not only be a source of much enjoyment, but will be most useful in furnishing models for a School of Design. Great advantages are already experienced from the enlarged space afforded by the new building for the contents of the Museum. The various objects of interest have been arranged and classified by the director, Dr. Haast, with great care, and with a view to their being used for advancing the cause of science. The collection is now a very considerable one, and contains many valuable specimens, including the complete skeletons representing seven different species of *Dinornis*. It has been the endeavour of the trustees to obtain type collections from the various centres of learning in the Northern Hemisphere, as these are exceedingly valuable for the purposes of teaching and study. Through the zealous exertions of Dr. Haast, the trustees have succeeded in obtaining such collections representing all orders and classes of Zoology. A microscope has been ordered, and also an aquarium, and a laboratory will soon become necessary. The number of visitors of all classes proves abundantly the interest felt by the public in the collection, which could not before be exhibited for want of space.

The enlargement of the building which the trustees are making through the liberality of the Provincial Council will afford rooms for the reception of the additions to the collections which are being received continually, and also for lectures on scientific and technical subjects, which we may hope will become general now that the New Zealand and Otago Universities have been established. The experiment is already being tried here by a course of lectures on Natural History delivered weekly at the High School by one of our members. The unflagging interest exhibited by the pupils, as well as by several other persons who are permitted to attend, proves that lectures on scientific subjects will be thoroughly appreciated. The great advantages that would result to the youth of the community from scientific and practical training have been truly and clearly stated by his Excellency Sir George Bowen, the President of the New Zealand Institute, and by the presidents of several of the affiliated societies; it is therefore unnecessary for me to dwell upon them.

Gentlemen, I congratulate you heartily on the proceedings which have lately been taken for the establishment of an observatory in this province.

Some of our members have had this object at heart for a long time, and the approaching transit of Venus made them the more anxious to take steps towards the accomplishment of their wishes. The 16th December being the twenty-first anniversary of the arrival of the Canterbury settlers was deemed a suitable time for moving in the matter. Accordingly, at a most influential meeting held on that day, resolutions were passed, and a committee appointed for carrying out the desired object. The committee has since had the satisfaction of learning that while the subject was under consideration here the Imperial Government was communicating with the Colonial Government at Wellington on the same subject, and suggesting Canterbury as the probable site, and that Dr. Hector is of opinion that Canterbury, from its position and climate, is the most suitable place for the observatory. In furtherance of the object the Provincial Council has voted a sum of £1,000 for the establishment of an observatory, and £200 for providing a suitable site, on condition that the Colonial Government will undertake the maintenance of the institution. A further sum of £200, contributed by subscribers, has been placed at the disposal of the Astronomer Royal, to be used by him as he may think expedient for promoting the object of the subscribers. We have good grounds for hoping that our efforts will be liberally supported by the Colonial, and perhaps also by the Imperial Government.

I need not point out the great advantages to the cause of science that must result from the establishment of an observatory, and from the residence amongst us of a professor whose observations and lectures would extend the knowledge of the oldest and grandest of the sciences, and who would moreover indirectly benefit the colony by bringing us into friendly relationship with other scientific bodies. Another very important consideration connected with the subject is the incalculable advantage that may be derived by our youth from having access at all times to means of information and assistance in the study of this most attractive science, comprehending as it does a knowledge of mathematics, without which no great advance can be made in that or any other of the higher departments of science.

The actual amount of work done during the session has not been large. Thirteen papers were read—some of them of considerable interest. I should be encroaching on the privilege of his Excellency Sir George Bowen were I to enter into a detailed consideration of these papers. They, as well as the papers read before the other affiliated societies, will, doubtless, be adverted to by his Excellency in his annual address. One of them, a very clear and practical paper, by Mr. Dobson, upon "The Influence of Railway Gauge upon the Constructive Cost and Working Expenses of Railways," will form a supplement to an interesting paper on "The Political Economy of Railways," by his Honour Mr. Justice Chapman, read before the Otago Institute, in

August, 1870, and published in the third volume of the *Transactions*. Another paper, by Dr. Barker, entitled "Continuous Creation *versus* Darwinian Evolution," evidently the result of much reading and thought, naturally excited a good deal of discussion, as it treats of a subject of the deepest interest, which at present engages the attention of some of the profoundest thinkers of the day.

Whatever opinion may be formed of the theory propounded by Mr. Darwin, most persons will agree that science is indebted to him for the facts which he has collected, and for the great amount of information which he brings to bear upon his subject, as well as for his candour and fairness in stating and supporting his views.

We must always bear in mind that two classes of workers are necessary for the advancement of science, namely, those who collect facts and those who deduce general conclusions from those facts. It has often been said that fact is worth more than theory, and it is of course true that the value of theory depends on the extent to which it is founded on fact—but both have important uses in the elucidation of truth. An ingenious theory, though not altogether sound, may be the means of attracting and setting to work minds of different schools of thought, and by the help of the light thus let in from various sources, truths may be arrived at which otherwise might have remained long undiscovered. To quote the eloquent language of Sir John Herschel, in his "Introduction to the Outlines of Astronomy," "No grand practical result of human industry, genius, or meditation, has sprung forth entire and complete from the master hand or mind of an individual designer, working straight to its object, and foreseeing and providing for all details. As in the building of a great city, so in every such project the historian has to record rude beginnings, circuitous and inadequate plans, frequent demolition, renewal, and rectification, the perpetual removal of much cumbrous and unsightly material and scaffolding, and constant opening out of wider and grander conceptions, till at length a unity and a nobility is attained, little dreamed of in the imagination of the first projector. * * * No man can rise from ignorance to anything deserving to be called a complete grasp of any considerable branch of science without receiving and discarding in succession many crude and incomplete notions, which so far from injuring the truth in its ultimate reception, act as positive aids to its attainment by acquainting him with the symptoms of an insecure footing in his progress. To reach from the plain the loftiest summits of an alpine country many inferior eminences have to be scaled and relinquished; but the labour is not lost. The region is unfolded in its closer recesses, and the grand panorama which opens from aloft is all the better understood and the more enjoyed for the very misconception in detail which it rectifies and explains."

No one need be debarred from joining our ranks from a consciousness of ignorance of scientific subjects. There are, of course, many amongst us who have been prevented by circumstances from acquiring scientific information, but all may be intelligent observers of the facts that come under their own immediate notice. It must be admitted that habit and mental training are of great value for the observation of facts, but there is no doubt that even uneducated men of ordinary intellect generally acquire a large amount of trustworthy information merely from observing the facts brought under their notice by their daily occupations. If only this faculty were more generally turned to account in the study of any one particular branch of science, according to individual taste, what a large amount of information would be accumulated.

We often hear complaints of the want of amusement and recreation in the colony, and this is sometimes advanced as an excuse for the indulgence in low and sensual gratification to which young men here often become addicted. If they would only open their eyes to the wonderful phenomena by which they are surrounded, and would choose a subject of observation, botany or geology for example, they would not only bring valuable contributions to the cause of science, but they would find fresh sources of interest constantly opened up to them, and their enjoyment of life multiplied and enhanced.

It has been well said that "the earnest naturalist is pretty certain to have attained that great need of all men, to get rid of self. He who after the hours of business finds himself with a mind relaxed and wearied will not be tempted to sit at home dreaming over impossible scenes of pleasure, or to go for amusement to haunts of coarse excitement, if he have in every hedge, bank, and woodland, and running stream, in every bird among the boughs, and every cloud above his head, stores of interest, which will enable him to forget awhile himself and man, and all the cares, even all the hopes of human life, and to be alone with the inexhaustible beauty and glory of nature, and of God who made her.

The admirable paper of Mr. Potts, "On the Birds of New Zealand," published in Vols. II. and III. of the *Transactions*,* affords one of the many striking examples contained in those volumes of how much valuable information may be acquired by habits of intelligent observation.

In reading the biographies of eminent men—Bunsen, for example—one cannot fail to observe how much their objects of interest in life are multiplied by the wise direction of their mental activity. This observation applies with increased force to the life of colonists, who, from their isolated position, are liable to become absorbed in their own petty interests, and to form narrow opinions of what is passing beyond the sphere of their own personal observa-

* See also Art. XX., p. 171.

tion. It will perhaps be objected that in a colony the daily tasks of life leave men little leisure for intellectual pursuits; but some of the busiest men have been eminently devoted to science and literature: witness Lord Bacon, and in our times Lord Brougham, the late Lord Derby, Mr. Gladstone, and many others. The fact is that such men resort to science and literature as a recreation, and the change from the active business and contests of life is found to be a refreshment. Until lately we could only look back with regret at the educational advantages which we seemed to have forfeited by leaving our homes. Happily we may now congratulate ourselves on the advancement which has been made here towards providing facilities for obtaining a superior education. However our legislators may differ on the subject which is exciting so much agitation in England as well as here, as to whether national education should be denominational, unsectarian, or secular, all are agreed that the utmost facilities should be afforded for educating the youth of both sexes and of all classes. The apathy on this subject which at first prevailed, and which was perhaps not unnatural, considering the difficulties which the early settlers had to encounter, has given place to an earnest desire, not only to place general education within the reach of all, but also to open the way, by scholarships and other inducements, for those who are desirous of advancing to the higher branches of science and literature.

Independently of the value of knowledge for its own sake, to which I have very inadequately adverted, there never was a time when eminence in science, literature, or art, was more appreciated or more amply rewarded than now. Among the many instances which will occur to you as immediately within our own time, I need only mention the names of Humboldt, Herschel, Faraday, Murchison, Playfair, Niebuhr, Carlyle, Tennyson, and Landseer. Such men are not only claimed with pride by their own countrymen, but are admired and welcomed by the most gifted men of every civilized nation.

Although I fear I have already occupied too much of your time, I am unwilling to conclude my address without saying a few words upon a subject which seems to me of very great importance. Until lately an impression, more or less general, prevailed, that the tendency of the study of science was to lead men to conclusions at variance with revelation. This fallacy is well nigh exploded, and it is indeed singular that it should ever have been supposed that anything in nature could be at variance with the revelation which proceeded from the God of nature. If the student of science should meet with difficulties which he may be unable to reconcile with God's word, surely it would be more reasonable to attribute them to his own limited and imperfect conceptions of truth than to conclude that they are irreconcileable. We do not really know the cause of anything in nature. We only know that

certain events are, so far as our experience goes, invariably succeeded by certain other events, which we popularly call consequences.

He who has studied the amazing grandeur and perfect order of the heavenly bodies disclosed by the telescope, and has, by the aid of the microscope, observed the construction of even the lower forms of organic life and the laws by which they are regulated, must have used his intellect and reason to very little purpose if he be not overwhelmed with feelings of reverence and awe for the Creator, who, at the same time, rules a universe so vast that but a small portion of its space can be comprehended by our imperfect intellects, and forms his minutest objects so delicately that their organization is incomprehensible to our grosser faculties.

A conversazione was then held, numerous objects of interest, and philosophical apparatus, microscopes, etc., being exhibited by members.

SECOND MEETING. *3rd April*, 1872.

W. B. Bray, Vice-President, in the chair.

New members.—G. B. Parker, M.H.R., W. M. Maskell.

Books presented since last meeting were laid on the table.

1. "On Darwin's Provisional Hypothesis of Pangenesis," by A. C. Barker.

2. "Note on the Size and Weight of the Smallest Particles visible to the Highest Powers of the Microscope," by Ll. Powell, M.D.

A discussion ensued in which several members took part.

THIRD MEETING. *1st May*, 1872.

His Honour Mr. Justice Gresson, President, in the chair.

Donations of books received since last meeting were laid on the table.

1. "On the Spiders of New Zealand; Part I., Genus *Salticus*," by Ll. Powell, M.D. (See *Transactions*, p. 280.)

2. "Notes on the Stridulating Organs of the Cicada," by Ll. Powell, M.D. (See *Transactions*, p. 286.)
