

THIRD MEETING: 31st July, 1895.

Mr. T. Kirk, F.L.S., President, in the chair.

The President: Before entering on the formal business of the meeting I wish to draw your attention to a subject in connection with which the various societies affiliated with the New Zealand Institute appear to have been slightly remiss, if I may venture to say so. A recent mail brought news of the death of Dr. David Lyall, R.N., at Cheltenham, in his seventy-eighth year. Many present will be familiar with his name as the medical officer in charge of the botanical collections on board the "Terror," one of the ships of the British Antarctic Expedition, 1839-43. I have no intention of giving a full account of his work, as that is being done by Sir Joseph Hooker, with whom he was so closely associated in botanical explorations on the Auckland and Campbell Islands, the Bay of Islands, Falkland Islands, Magellan Straits, Kerguelen Land, &c.; but I may remind you that when, in 1847, Admiral Stokes commissioned the "Acheron" for survey work on the west coast of the South Island, Dr. Lyall was appointed medical officer, and for three years lost no opportunity of engaging in botanical exploration in the South Island and in Stewart Island; and it was not until Sir James Hector's adventurous exploration of the western portion of Otago that any additions were made to the mass of information collected by Dr. Lyall with regard to the phytology of that district. Full testimony to the value of Dr. Lyall's work is borne by Sir Joseph Hooker throughout the "Handbook of the New Zealand Flora." To my mind, the additions made by him to the cryptogamic flora of Dusky Bay show his keen power of observation to great advantage, following as he did such excellent collectors as Forster, attached to Cook's second expedition, and Menzies, who accompanied Vancouver's expedition. It must also be remembered that he had high merit as a naturalist. The first account of the kakapo that reached Europe was contained in a paper prepared by him, which was read before the Zoological Society in 1852, and attracted great attention. Now, the point I wish to make is this: that, after having rendered such great service in the elaboration of the New Zealand flora, his name has not been placed on the roll of honorary members of the New Zealand Institute. Unquestionably this is simply an oversight, but one much to be regretted. We have been remiss alike in the discharge of duty and in the exercise of privilege; and I venture to suggest that, when the members are next called upon to nominate individuals for honorary membership, those who have rendered direct service to the scientific workers of the colony in past years should have preference over those whose claims, however worthy, are of a more general character. As one of the oldest members, and for some years a governor of the Institute, I confess myself blameworthy in not having drawn attention to this point at an earlier date.

Sir James Hector quite agreed with what Mr. Kirk said regarding the late Dr. Lyall, who was an old personal friend, with whom he had explored in Vancouver Island thirty-five years ago, and he felt sure that had his name been submitted he would have been elected an honorary member. It was a most unfortunate oversight, for no one could have been more worthy the honour than the late Dr. Lyall.

Papers.—1. "On Antarctic Research," by Major-General Schaw, C.B., R.E. (*Transactions*, p. 62.)

Sir James Hector thanked General Schaw for having undertaken and so well performed the duty of making an abstract of these important papers. He hoped that the efforts of the promoters of antarctic research would be more successful this time than previously. It was a blot on

our enterprise that so large an area of the earth's surface should still remain unknown. The little we did know was most interesting, and had a direct bearing on many scientific problems. For instance, it will be impossible ever to thoroughly understand and forecast weather changes throughout the world until we are acquainted with the meteorology of the south polar region, as all the great secular changes appear to originate there. It is often said that our southern seasons follow those of the Northern Hemisphere, and this year has at first sight afforded a marked instance; but the true explanation is that, owing to the North presenting such a large condensing surface, with extensive arid areas over which the sky is clear, as compared with the immense water-area with clouded sky in the South, changes that are affecting the whole globe are more rapidly developed in the Northern Hemisphere. — Again, life, especially the marine mammalia, is known to be abundant in southern latitudes, and, from the enormous migrations of penguins and seals that leave the temperate localities where they breed every year in a very poor and lean condition, but return from high latitudes loaded with fat, fish and other marine food must exist in great profusion. When we know that the distance of the great south land from New Zealand is the same as to Sydney, and that no attempts have been made to reach it since steamers equipped for combating the ice have come into use, we may feel certain that an expedition would encounter no serious difficulty. He therefore cordially supported the proposal.

Mr. Hudson said such an expedition would be most useful in settling questions regarding the distribution of plants and animals, and afford increased knowledge for those engaged in the study of biology.

Mr. Tregear, although he recognised the immense scientific results to be obtained by a south polar expedition, said the practical point was that the colony was to be asked for a grant-in-aid. This would be the difficulty.

Mr. McLeod asked if the expedition would be officered from the Royal navy, or in part from the colonies contributing.

Mr. E. F. Hadfield remarked that the bearing, as pointed out by General Schaw, of the variations of the constant of gravity upon the determination of the earth's centre of gravity was very striking. Pendulum experiments in the antarctic circle, if they showed how far the centre of gravity of the earth lay from the centre of form, and in what direction, would throw much light on the nature and amount of the motion of the earth's axis. He recalled the fact that Newton, after making laborious calculations and observations with a view of showing that the moon's motion was due to a force the same as that attracting bodies at the earth's surface, but diminished in intensity according to the law of the inverse square, found that the observed facts did not harmonise with the results of calculation; that, after a more accurate measurement of an arc of the meridian, the new data thus supplied, on being introduced into the calculation, produced the harmony sought for, and established the law of gravitation with all its intricate consequences. The way in which Newton put aside a pet theory when inconsistent with fact, instead of trying to make facts fit the theory, was an admirable instance of the honesty of the true scientist. The determination of the distance and direction of the earth's centre of gravity from its centre of form would affect, more or less, almost all astronomical observations, and might perhaps alter accepted notions of precession, nutation, and even aberration, and might have further far-reaching consequences in astronomy. This would be the more interesting in view of the light astronomy was throwing on the sister science of geology, and the inferences being drawn from both as to the time and mode of the origin of the globe. If this were realised, the practical difficulty of getting public support for an antarctic expedition might vanish. Observations of the

transit of Venus obtained support because one main object of them was to determine with greater accuracy the sun's distance from the earth, and this was easily recognised as a basic fact in astronomy. Moreover, when a new fact of widespread significance to science was discovered it was difficult to be sure that practical benefit might not rapidly ensue.

The President said that such an expedition would be of the very greatest importance and benefit. There are many questions of great interest awaiting the results of such an expedition. He mentioned the great abundance of cetacean life that would be met with: surely there must be some opening for commerce in this direction.

General Schaw, in reply, said, no doubt those in command of such an expedition would be selected from the older countries, and not from the colonies. Unfortunately, the whales met with in these parts were not the most valuable whales. He considered that the motion of the ice was caused by currents and not by winds—there were strong polar currents. A slight shifting of the pole would have a great effect.

2. "The Ultimate Problem of Philosophy," by W. W. Carlile, M.A. (*Transactions*, p. 74.)

Sir James Hector complimented the author for his interesting paper. It was difficult to discuss a subject of this kind without having carefully read the paper. There were one or two things in the paper that he could not agree with; but time would not permit of their being gone into. He supposed it was Mr. Carlile's parting shot at evolution (as Mr. Carlile is leaving the colony shortly).

Mr. Tregear said that he considered the reading and discussion of such papers perfectly futile, and that they would in no way disturb the position of the evolutionists.

Mr. Harding thought the paper a good one, and he agreed generally with Mr. Carlile; but there was nothing very new brought forward in this paper.

Mr. Hudson thought Mr. Carlile's allusions as to the origin of the sense of beauty in animals was a strong point in his paper. Although fully believing in Darwin's theory of sexual selection, he thought that that theory implied a sense of beauty in female animals that it was difficult to account for.

General Schaw said the line of argument adopted by the lecturer was somewhat difficult to follow, and required time for consideration; but he could well believe that it might convince some minds which were dissatisfied with the argument from design. The latter line of argument was, he thought, more generally useful, and, although for a time discredited, it was now reasserting itself strongly, and had been used most powerfully by Sir George Stokes in some of his recent lectures.

The President said that, although he might not agree with Mr. Carlile on many points, yet he considered the paper most lucid, and very interesting.

Mr. Carlile, in reply, said, with reference to Sir James Hector's description of his paper as "a parting shot at evolution," he must draw attention to the fact that he had treated evolution as an established doctrine. What he thought was altogether fallacious was what was called agnosticism—the notion that the world could be regarded as a watch, but without any maker. He felt sure that in twenty years' time it would be thought incredible that any one should ever have entertained such a conception of the universe.

3. "On *Cordiceps robertsii*," by H. C. Field. (*Transactions*, p. 623.)