

Journal of the 1st August, 1894, as follows: "A most remarkable and valuable calculation has been achieved by a competent, unprejudiced, and distinguished investigator as to the accuracy of Major-General Drayson's discovery, described in previous issues of the *Journal*. Admiral De Horsey took the recorded positions of a star, found by observation at various dates, and calculated by geometry the position of the pole of second rotation, the annual movement of the pole of the heavens, the position of the pole of the ecliptic, the decrease in the obliquity at various dates, the period during which an entire revolution of the equinoxes would occur, the amount of extension of the arctic circle during this revolution, and other items of very great importance. The results obtained by this original process differ only $\frac{1}{3}$ rd of a minute of arc in two cases, and only $\frac{1}{400}$ th of a second and $\frac{1}{100}$ th of a second in other cases, from the results given by Major-General Drayson." The President observed that, so far as he was aware, this was the only real criticism of Major-General Drayson's discovery which had yet been made, and it was gratifying to learn that this searching mathematical criticism so perfectly confirmed the discovery, and its astronomical and geological consequences, which he had the honour of bringing to the notice of the Society.

New Member.—Mr. Percy E. Baldwin.

Papers.—1. "Myths of Observation," by E. Tregear, F.R.G.S. (*Transactions*, p. 579.)

Sir James Hector thought the paper very interesting, and deserving of thoughtful consideration. At the same time we must be careful, in interpreting such traditional myths, not to strain observed facts. Evidences of former great changes wrought by ice, water, and fire are found in all parts of the world; but there is no evidence that the action of these agencies was simultaneously exercised over distant areas. Even during the last year we have had evidence of local deluges and local fires, local volcanic outbursts, and local excesses of cold, all of which might have originated myths among savages; but these would not universally apply, although they might spread even among nations that had not experienced the phenomena that gave rise to them, nor is there any proof that the similar myths referred to the same events, or to universal catastrophes. He also protested against mixing up widely-distant geological epochs, such as the extension of a Cretaceous and Miocene temperate flora into the arctic circle, with the Pliocene glacial extinction of the mammoth and the origin of myths in the human period, these having been events separated by vast periods of time.

Mr. Maskell said it was difficult to discuss a large question like this without carefully reading the paper; but he had very little sympathy with what Mr. Tregear had said. We should think more of facts than of theories. He should not like to see this paper in the *Transactions*, because it is not original; everybody has read it over and over again, and the deductions have all been given in various works. Professor Sayce was called by Mr. Tregear "the champion of orthodoxy," and it is unfortunate that such sneering allusions should be made in a professedly scientific paper.

General Schaw said that, as Mr. Tregear had alluded to the mammoths preserved in foreign mud in Siberia, as indicating a more sudden change of climate than would have resulted from the second rotation of the earth described in his (the President's) inaugural address, he felt called upon to make some observations on the subject. It must be noted that an increased obliquity of the axis of the earth's diurnal rotation to the plane of the ecliptic would not only have caused an arctic winter to extend further towards the equator, but also would have increased the

summer temperature in those latitudes. This would doubtless have caused great annual migrations of such animals as the mammoth, which would have found their feeding-grounds nearer the poles in the summer, and would have been obliged to travel away from the poles in the winter. We may well imagine that irregularities in the seasons would have been even more marked during the glacial period than they are now, and that herds of migrating animals might be overtaken and destroyed by a sudden setting-in of winter, or by great floods caused by melting snow in summer and autumn. Darwin, in his Voyage of the "Beagle," mentions the destruction of great numbers of animals overtaken by an early setting-in of winter on the eastern slopes of the Andes when migrating towards the pampas, their winter habitat. Some such vicissitude may probably account for the frozen mammoths now found in Siberia. We know that within the arctic circle the ground is now frozen so deeply during winter that only the surface is thawed during the short summer, and yet this surface supports vegetation. Animals may have been overwhelmed by and buried in floods of liquid mud during the glacial age, and so deeply embedded that the mass would have been frozen up and preserved until a river, cutting through the deposit, exposed the entombed animals in the river-banks, where they are now found.

Mr. Tregear was sorry his paper had provoked such bitter comment. The paper, he considered, was as original as most papers of the kind are. He disclaimed any intention of annoying any one, and especially any desire to sneer at Professor Sayce. Sir James Hector had the right to discredit myths, but he must surely allow that myths are valuable in imparting a knowledge of history, and if the subject is worthy of human thought it is worth bringing before the Society.

2. "Some Curiosities of Bird-life," by Sir W. L. Buller, K.C.M.G., D.Sc., F.R.S. (*Transactions*, p. 134.)

3. "On the Wetas, a Group of Orthopterous Insects inhabiting New Zealand: with Descriptions of Two New Species," by Sir W. L. Buller. (*Transactions*, p. 143.)

Mr. Travers said, in regard to Sir W. Buller's remarks about the injury done to the native birds, &c., by the introduction of polecats, stoats, and weasels, it was not so much the fault of the Government—they were introduced as the natural enemy of the rabbit, and no doubt it was a mistake to bring them here. The ferret is not so dangerous, and is really not much objected to, but the destructive habits of the stoat and weasel are well known. They have left the districts where rabbits abound for places where they can get the birds and birds' eggs. In Nelson they did considerable damage. With regard to the weta, there was one that he did not see among the collection on the table: he had obtained one himself, and the antennæ were 11 in. long, and this was, perhaps, because their sight was so defective.

Mr. Harding agreed with what the author said regarding stoats and weasels. He had seen in Mr. Colenso's collection a much larger weta than any now exhibited. He did not think they were quite harmless.

Sir W. Buller, in reply, said he agreed with Mr. Travers that the remarkably long and sensitive antennæ possessed by the different species of *Macropathus*, all of which, so far as he was aware, inhabit caves, were specially useful as feelers to those dwellers in the dark. He had carefully examined the specimens, and, although the visual organs were, perhaps, imperfect, it could not be said that those wetas were blind, as is undoubtedly the case with some other cave insects. The eyes, however, have a very different appearance from those of the tree-wetas, *Deinacrida* and *Hemideima*. There are probably other species not yet described—for example, the alpine form exhibited by Mr. Hudson that evening, and

another much smaller one in his son's collection; and it seemed to him that this was just one of those groups which ought to be worked out on the spot. It was an endemic group of Orthoptera, being entirely restricted to New Zealand, and did not therefore call for comparison with forms inhabiting other countries and not readily accessible to collectors here. It was, of course, possible that we might make mistakes in discriminating new genera and species; but, on the other hand, specimens sent to our great centres of learning did not always receive the attention we looked for. He might mention that in 1886 he found in a cave at Rotorua a beautifully-banded species of *Macropathus*, which he believed to be new. He took to England with him a bottle full of specimens in spirits, and sent them to one of the museums, where there was a specialist for such work, hoping to have the species named and described. But to this day, so far as he could learn, the stopper had remained in the bottle, and he would probably have to investigate the subject for himself on his next visit to Europe.

Sir James Hector exhibited some fine specimens of British and New Zealand birds, mounted by Mr. Yuill; and Mr. Hudson exhibited specimens of the weta to compare with those submitted by Sir W. Buller.

NINTH MEETING: 17th October, 1894.

Major-General Schaw, President, in the chair.

Papers.—1. "On some Peculiar Cases of the Reflection of Light," by Major-General Schaw, C.B., R.E. (*Transactions*, p. 535.)

2. "On a Peculiar Appearance in a Cloud during the Daylight," by A. J. Lichfield.

ABSTRACT.

The author described an iridescent cloud from which the spectrum rays were diffused, and not arranged as in a rainbow. The sky was clear, with passing clouds, but no other cloud presented the same phenomenon.

Sir J. Hector considered the President's paper most interesting; and such accurate observations were of great use. With regard to the light in the cloud, it might have been caused by ice, it might have been an electrified cloud discharging hail, or it was possibly due to smoke in the atmosphere from a bush fire.

Mr. Tregear had observed similar lights in clouds, but could not account for it.

The President thought it must have been produced by ice, and that it was a portion of a halo formed where a frozen cloud was in the position required to produce the effect.

3. "A Synoptical List of Coccids reported from Australasia and the Pacific Islands up to December, 1894," by W. M. Maskell. (*Transactions*, p. 1.)

The author read extracts from the paper, and made some remarks upon the manner in which new species were made. He said that the majority of scientific workers were more anxious to have their names attached to specimens than to apply themselves to any real work of the