

JUNE, 1890.

The monthly meeting of the Royal Society was held on Wednesday, June 11th, at the Museum. The President, His Excellency Sir R. G. C. Hamilton, K.C.B., took the chair.

NEW MEMBER.

Mr. M. W. Simmons, solicitor, was elected a Fellow of the Society.

RECORDS OF EARLY EVENTS.

Mr. MORTON read a letter from Mr. A. B. Biggs, Launceston, suggesting that something be done by the Society in collecting records of early events in the history of the colony from the few surviving old colonists, as they were rapidly passing to the majority, and the opportunity would soon be for ever lost. The letter was referred to the consideration of Mr. J. B. Walker, who is interesting himself in the ancient history of the colony.

AUSTRALASIAN SCIENCE ASSOCIATION.

Mr. MORTON submitted programme of the third annual meeting of the Australasian Association for the Advancement of Science, which will commence on Thursday, January 15, 1891, at Christchurch, New Zealand.

His EXCELLENCY asked if any of the members of the Society were going take to part in the proceedings.

Mr. MORTON said he believed that several members had forwarded their names to New Zealand.

THE MOON AND THE RAINFALL.

Mr. E. C. NOWELL, hon. member Royal Statistical Society, read a paper entitled "Do the changes of the moon affect the rainfall?" He said that the idea that the changes of the moon affected the rainfall had widely prevailed from the earliest ages. Traces of it were found in the Roman poet Virgil, while ages before the Babylonian Government Astronomers in their daily reports inserted many entries respecting the supposed influence of the heavenly bodies on the weather. Sailors especially were great believers in the influence of the moon on the weather, and the writer believed that it would be found that where ideas have become deeply rooted and widely spread, it is very seldom, if ever, that they have not some foundation in fact. The public, however, were assured by those whose opinions on such subjects carry great weight, that the popular notion was a mere delusion, and that the moon's changes had no influence on the weather. He quoted as scientific authorities on this point, Dr. R. J. Mann, vice-president of the Meteorological Society, Dr. Lardner, and Dr. Ball, Royal Astronomer of Ireland. Seeing that the statements of scientific men were at variance with the popular opinion, he resolved to investigate the matter for himself, and accordingly in 1880 he commenced to keep a meteorological journal in a rough way, and had continued it up to the present time. The results of the 10 years' observations were set forth in tabulated form, and so far as the inquiries on the subject warranted a conclusion, the only thing that could with safety be asserted was, "That there is a greater probability of having rain on the first than on any succeeding day of any of the moon's changes. He hoped the results submitted would be of some value as a contribution towards the investigation of an obscure but highly interesting subject, and also in stimulating further researches in this direction, in order to discover, if possible, what are the exact nature and limits of the influence exerted

upon the earth and its inhabitants by the moon and the remoter planets—the lesser forces—as well as by the great central source of power—the sun itself.

Captain SHORTT read a brief paper, criticising Mr. Nowell's views, in which he contended that it was not to the moon's influence alone that they should look for the effect stated, although he admitted that the moon was a great factor in the case. Though all parts of the world were not affected alike by the aspect of the sun, moon, and planets, he found that at Hobart under Jupiter and Mars' influence the temperature increased, and decreased with Saturn's; likewise the aspect of Saturn, Uranus, Venus, and Mercury produced rain and low temperature; also, that the aspect of the different planets produced more or less changes in the weather. It was also noticeable that after the tide turned to rise rain set in or fell heavier in rainy weather. Mr. Nowell, in his paper, had only notified the commencement of rain, and did not give the number of rainy days in each quarter. He submitted a calculation of rainy days for 1889, omitting those under three points, which showed that the greatest number of rainy days was on the fourth or middle day of the quarter. The results were set out in tabulated form, and showed that there were 61 days of one or two points of rain. This large number of rainfall he considered attributable to the proximity of the city to Mount Wellington, which attracted the low moist clouds, from which fell slight showers of rain.

Mr. C. H. GRANT thought it would be interesting to the Society and science generally if Capt. Shortt would give some detailed particulars of the way in which he arrived at the conclusions he had stated in regard to the planets affecting the weather, as those conclusions were not generally known or accepted. He would like also to remark, in regard to Mr. Nowell's paper, that the writer did not profess to be a scientist, and therefore his conclusions were not to be judged by the rigid rules of science. It seemed to him that he had amalgamated to a certain extent popular ideas with science, and that therefore all his conclusions must not be accepted as absolutely proved truths. In regard to lunatics for example, science had proved that there was not that affinity of the one with the other that he had indicated. They were indebted to Mr. Nowell for the trouble he had taken, and he hoped it would lead to the changes in the weather being more carefully noted. The near proximity of the city to Mount Wellington, he believed, affected the rainfall, and consequently he thought that the meteorological tables of Hobart could be said to have very little value as compared with parts of the colony less affected by the proximity of the Mountain.

Capt. SHORTT promised to read a paper on the influence of the planets on the weather before the end of the session. (Hear, hear.)

Mr. NOWELL, in reply, said it was impossible for him to deal fully with Captain Shortt's criticisms without having an opportunity to peruse his paper, but if the paper read had done nothing else, it had brought out a most interesting statement from Captain Shortt, and the promise of an interesting paper. Captain Shortt had conducted his observations on a different system, but until he had a further opportunity of studying the matter he must adhere to his own system. Mr. Grant was inclined to think that the influence of the moon on lunatics was one of the popular ideas, but he thought it had been pretty well established by the officers of lunatic establishments, and might now be regarded not as one of the popular ideas, but as a scientific fact. Of course, as Mr. Grant said, he did not profess to be a scientist, but had rather treated the subject from a statistical point of view. They did not profess to be ultimate conclusions, but merely such as the facts seemed to warrant, and he would be glad if his paper was the means of causing the matter to be more accurately investigated. In regard to the situation of Hobart and its proximity to the Mountain, he had

guarded himself on this point by explaining that the observations were only intended to apply to Hobart, but he might say that Mr. Shoobridge told him that the rainfall at New Norfolk differed but slightly from that of Hobart, and suggested that he (Mr. Nowell) should take his observations. He considered, however, that he had better confine himself to Hobart, but never for an instant suggested that the conclusions derived from observations at Hobart would be generally applicable throughout the colony.

A FOSSIL TREE.

Mr. JAMES BARNARD read the following notes on a fossil tree found beneath 100ft. of basalt, at Richmond, Victoria, by S. H. Wintle:—"In the early part of March last I received information to the effect that a fossil tree, 30ft. in length, had been brought to light by the workmen employed in the "bluestone" quarry of Messrs. Willis Brothers, at Richmond, Victoria. I immediately visited the spot, and found the bole of a tree lying in an east and west direction, partly embedded in a deposit of dark coloured sand. Portions of the trunk were in contact with the base of a basaltic flow 100ft. in thickness by measurement. The general opinion, before I examined it, among the uninitiated connected with the quarry, was that it was the common red gum of Victoria, *Eucalyptus rostrata*. I at once recognised it as belonging to an entirely different order, and if not a pine not very widely removed from it. Up to the present time, however, it has not been determined. I may, perhaps, venture to observe that in it I can see a close resemblance to *Salisburia* sp. (Mueller), which in several instances has been brought to light from under the basalt of the "deep leads" of Ballarat and elsewhere in Victoria. The tree is denuded of its branches; short stumps alone being left. This fact, coupled with the absence of twigs, leaf impressions, and seed vessels, and also the fine uniform character of the sand deposit, points to the tree having been carried to where it was found by aqueous drift agency. Although I requested the proprietors of the quarry to instruct their workmen to preserve anything in the vicinity of the tree which in the least might resemble nuts or cones, nothing in the shape of fossil fruit has been brought to light. I have been promised, however, that efforts will be made to disentomb the whole tree. The cracks and fissures of the ligneous tree are coated with minute iron pyrites; while the sand on which the tree immediately reposes is cemented to a considerable extent by the presence of the same mineral. For a depth of 4ft. from the base of the superimposed basalt, the deposit on which the tree rests may be described as an imperfect dirt bed, being charged with carbonaceous matter in a fine state of division. A well has been sunk in the compacted sand to a depth of several feet in order to catch the drainage from the joints and fissures in the basalt, but no rounded pebbles or gravel have been met with; nothing, in short, but fine drift sand, thus pointing to a depression that was filled up to a considerable extent by sand transported by aqueous agency prior to the outburst and overflow of the basaltic lava. The southern wall of the quarry is only 50yds., lineally, from the Yarra River. On the opposite bank the highly inclined Upper Silurian shales obtain, forming a precipitous bank in contradiction to a more or less gradually shelving bank wherever the basalt obtains. As the source of this newer pleistocene basalt had its origin, it is generally believed, at Heidelberg, some 10 miles distant, there is good ground for assuming that the Yarra River had not an existence at the period when the basaltic flow formed a crypt to the tree and sand bed; but that at a subsequent epoch it carved out its present channel, chiefly along the line formed by the contact of the basalt with the Silurian strata. It will be observed that the condition of the wood is that of more recent lignite, the fibres being very tough. I am strongly reminded by the occurrence of this tree beneath the basalt, and the physical change which has taken

place since it was deposited on its sandy bed, as well as by the existence of the Yarra River, of a similar change at a similar period at the site of the Geilston Bay freshwater limestone at Richmond, in Tasmania. A quarter of a century ago I published a popular description, under the title of "A Story of a Stone," of the great geological changes which had taken place since the travertine beds had been laid down by the eruption of basalt, and the subsequent formation of the River Derwent. The relation that the Yarra River bears to the fossil tree, its sand bed, and superimposed basaltic covering, is precisely the same as that which the Derwent River bears to the fossiliferous travertine deposits." Mr. BARNARD added that similar specimens had been presented to the Tasmanian Museum by his son, Dr. Barnard, while in New South Wales.

Mr. MORTON expressed regret at the absence of Mr. R. M. Johnston, owing to indisposition, as that gentleman was well acquainted with the subject, having largely referred to it in his "Geology of Tasmania."

Mr. C. H. GRANT said that the grain of the wood and general appearance of the specimens showed that the dioritic formation that poured out upon the trunk of the tree was at a lower temperature than was generally supposed.

SPECIMENS.

Mr. T. B. MOORE exhibited specimens of Eucalyptus, a variety of Risdoni, and a garnet stone from Collingwood Valley, West Coast.

Mr. MORTON exhibited two parrots, presented by Mr. F. Back, General Manager of the Government Railways. They are the Kea (*Nestor notabilis*), natives of New Zealand, and very destructive to sheep.

Mr. CURZON ALLPORT exhibited a specimen of black marble, taken from the mouth of the Gordon River, West Coast. Samples had been sent to London, and a company formed to work the same.

Mr. MORTON submitted specimens of ferns connected with limestone formations taken from the Chudleigh Caves.

On the motion of His EXCELLENCY, votes of thanks were passed to the gentlemen who contributed papers.

The proceedings terminated.