JUNE, 1899.

The monthly evening meeting was held on Tuesday evening, June 20, Mr. T. Stephens, F.G.S., M.A., presiding.

CORRESPONDENCE.

The SECRETARY read the following letters:—From His Excellency the Administrator, Chief Justice Dodds, C.M.G., regretting that, owing to his absence from Hobart, he would be unable to preside at the meeting. From the Hon. Sir James Agnew, K.C.M.G., senior vice-president, and the Bishop of Tasmania, who also forwarded apologies.

ELECTION OF NEW MEMBERS.

The following gentlemen were unanimously elected Fellows of the Society:—Rev. S. Bucknell, Messrs. W. Aikenhead, M.H.A., and Alan Walker.

PAPERS.

The SECRETARY, in the absence of the authors (Messrs. W. H. Twelvetrees, F.G S., and W. F. Petterd, C.M.Z.S.), read a paper entitled "Nepheline and Melilite Rocks from the Shannon Tier":—

This paper is descriptive of some specimens of rocks from the Shannon district, received from the Mines Department, and from Mr. Geo. Allison, of Hunterston. They have been looked upon locally as indicative of tin and gold. From Mr. Allison's outlines of their occurrence, the geological features of the locality are briefly traced. At Hunterston the Shannon Tier forms a plateau of mesozoic dolorite rising 1,000ft. above the permo carboniferous country at its base. On the slope below the Tier are small, round, or conical hills of a dark grey basaltic rock, and on the flanks of these is a coarse zeolitic rock, locally called "tourmaline rocks." Gold is said to have occurred in this pseudo tourmaline rock, but on assay by the Government Analyst did not confirm this. The locality thus yields three varieties of eruptive rock, viz., the mesozoic dolorite, the tourmaline rock, and the basalt. The authors diagnose the so-called tourmaline rock as a nephelinite, and the basalt as melilite-basalt. This age, as far as can be hazarded at present, is probably permo-carboniferous for the nepheline and melilite rocks. The dolorite is considered to belong to the close of the mesozoic era. This latter rock is the typical ophitic dolorite, which occupies the summits of the Tiers, and of numerous mountains in every part of the island. It is a holocrystalline plagioclase-augite rock, structurally diabasic, and sometimes, where the augite is chloritised, merging into diabase. The well-formed felspar crystals are cemented together by the augite mineral, and these two elements have combined to form a non-vitreous massive rock of essentially the same constitution as gabbro and basalt; but as regards grain and structure, intermediate between the two. If one could follow this rock to its deep-seated roots in the earth's crust, where the pressure was greater, and the process of crystallisation correspondingly slower, we should probably find it existing there as coarsely crystalline gabbro. Admitting the intrusive nature of the rock, there are two theories of its occurrence. Seeing that its internal structure agrees closely with that of diabasic sills, has it spread laterally from fissures as an intrusive sheet? On this hypothesis the dolorite on the Tiers and the mountain tops would be merely a capping, and shafts sunk through it would pierce the stratified sediments below. The level contours of the sedimentary beds abutting on the faces or sides of the Tiers and simulating infra-position have suggested this explanation; but no actual trial has been made. The second hypothesis is that the dolorite represents the massive intra-telluric part of an immense body of eruptive rock, which as a whole never reached the surface, but everywhere thrust out lateral dykes, parts of which can still be traced in the coal measures. Either explanation is attended with difficulties. The nephelinite is a nepheline-augite rock. The long black prisms are not tourmaline, but augite. The interstices between the prisms are occupied by yellowish nepheline, which has often decomposed into snow-white radiated aggregates of the zeolite natrolite. The nepheline forms half of the entire rock. The microscopical characters of this rock are discussed, and the rock is correlated with the nepheline dolorite of the Katzenbückel in the Odenwald. The basaltic rock, associated with the nephelinite, contains no felspar in one variety of it. Its melilite is the most interesting element. The other constituents are olivine or augite. This basalt has no relation whatever with ordinary basalts. It has proceeded from a different magma, the theralitic magma as defined by Rosenbusch, who groups nephelinite, nepheline-basalt, and melilite basalt as an integral effusive formation the product of this magma. The authors of the paper have not detected nepheline in any of the other Tasmanian basalts. The crystals formerly attributed to nepheline in the tertiary olivine-basalts of Northern Tasmania are probably apatite. Viewed from a mining point these peculiar basaltic rocks of the Shannon do not offer anything particularly encouraging. As they are unique in Tasmania there is little use in comparing them with mineral-bearing

rocks in other parts of the island. The few localities in the world where such rocks occur are not noteworthy for their mines. The rocks are altogether incongruous with the notion of tin ore occurring in them; and though gold is not intrinsically an impossible metal, yet payable gold is unrecorded from this family of stone.

Mr. W. A. McLeod, B.A., B.Sc., gave an interesting account of a fossil wood found in the tin deposits at Cox's Bight. Mr. McLeod, at the conclusion of his paper, was very highly complimented for the very able paper he had submitted to the society.

"Notes on Coral Reefs, with special reference to the Funafuti bore," by T. Stephens, M.A., F.G.S. It was decided to postpone Mr. Stephens's paper till next meeting.

DISCUSSION.

The CHAIRMAN spoke in very complimentary terms on the excellent work being done by Messrs. Twelvetrees and Petterd.

Mr. R. M. JOHNSTON said he quite agreed with the remarks of the Chairman as to the excellent work done and being done by Messrs. Twelvetrees and Petterd in the geological work of Tasmania. The recent issue of papers by these authors which had been printed, illustrated with sections of the rocks, reflected the highest credit on the Government Printer (Mr. J. Vail). He (Mr. Johnston) could say that the plates now laid on the table were better than had ever appeared in the society's journals.

The SECRETARY said he could endorse what had fallen from the Chairman and Mr. Johnston, and would add his high appreciation of the kindly interest Mr. Vail, the Government Printer, was taking in assisting the society to get such excellent plates reproduced.

LIGHTNING FLASHES.

The SECRETARY said he had been furnished with some interesting photographs of lightning sketches that had been taken at West Devonport by Mr. Aikenhead, M.H.A. Mr. Aikenhead very kindly furnished the following interesting notes:—

"Malunnah, West Devonport, Tasmania, June 19, 1899. Alex. Morton, Esq., Secretary Royal Society, Tasmania, Hobart. My Dear Sir,—The photographs of the lightning flashes which I gave you last Thursday are prints from negatives taken by myself on the night of Friday, the 19th November, 1897, with a Vanneck hand camera from the balcony of my residence (Malunnah), West Devonport, which, being situate at the Mersey Heads, commands a clear and almost uninterrupted view of the sea, into which you will observe some of the vertical flashes descended. The thunderstorm was an unusually severe one, and the atmosphere surcharged with electricity, as evidenced by the frequency and extraordinary vividness of the lightning flashes, whose brilliancy momentarily rendered objects, even at a distance, as clearly discernible as in daylight. The intensity of the "triple" flash—of which I was so fortunate as to secure a counterfeit—was so great that for some moments I was completely dazzled. I may mention that the thunderstorm lasted fully an hour, and was at its height about 9 o'clock; and it was at this period the exposures were made with my camera. —Yours faithfully, WM. AIKENHEAD."