

Statistical Register of the Colony of Victoria for the year 1885, Pt. 1, Blue Book.—From the Government Statist.

Verhandlungen der Gesellschaft Für Erdkunde zu Berlin, Band XIII., No. 5.—From the Society.

Victorian Naturalist, Vol. III., No. 3, July 3.—From the Society.

#### PAPERS.

1. On the Australian *Pectens* confounded with the New Zealand. *P. laticostatus*, Gray. By Professor Ralph Tate, F.G.S., F.L.S. In his paper Professor Tate states that though not indifferent to the opinions of certain conchologists, yet in this particular instance he considers their identifications incorrect, and surmises that they have been made without comparison of authentic specimens. Accompanying the paper is a table of dimensions of convex or right valve of *Pectens*, *laticostatus*, *exoptandus*, *albus*, and *fumatus*.

Lieut. Beddome stated, in reference to the Tasmanian *Pecten*, that Mr. Brazier of Sydney had last year given the name *Pecten Meridionalis*, to our *Pecten*, and therefore he (Mr. Beddome) was under the impression that Mr. Brazier's name would take precedence of Professor Tate's *P. exoptandus*.

2. A paper entitled "Is Jupiter Self-luminous?" by Mr. A. B. Biggs, was in the absence of the author, read by the assistant secretary. The subject was one that the author had been paying particular attention to of late. In the opening part, Mr. Biggs stated that it was with some diffidence that he submitted the paper, partly because he was doubtful of its being a subject of general interest. Perhaps, however, the fact that the question which the author had set himself to solve is intimately connected with that of the physical condition of Jupiter, and inferentially also of all the giant planets may lend an additional interest to the subject.

3. Mr. R. M. JOHNSTON read the following paper entitled:—"Note on the Discovery of Plant Remains in the Tertiary Marine Beds at Table Cape, Tasmania." "In making excavations at Table Cape for the new breakwater, Mr. Bell, the local engineer, at my request, very kindly made up a collection of the fossils which he met with, and forwarded them to me. In this collection I found a number of very interesting leaf impressions, associated with *Turritella Warburtonii*, Woods, and other well-known marine forms obtained from the calcareous sandstones, described by me in the proceedings of the Royal Society of Tasmania for 1876 as "The *Turritella* Zone." In one of the leaf specimens I recognised the well-known form *Sapotacites oligoneuris*, Ettingshausen, which occurs in the leaf beds of the Derwent, notably at Pipe Clay Bluff and One Tree Point. The importance of this discovery is very great, as it now enables us to determine more accurately the relationship of the *Palæogene* (infra-basaltic) leaf beds of Tasmania with the Tertiary marine beds in South Australia, Victoria, Tasmania, and New Zealand. The *Turritella* zone at Table Cape from whence the leaf impressions were obtained forms the uppermost series of beds of the formation at that place. It is characterised chiefly by the prevalence of the shell *T. Warburtonii*, Woods, and *Panopæa Agnewi*, Woods, although the common forms of the lower beds are also found in abundance. In all, I recognised 12 distinct species of leaves, somewhat resembling forms occurring in the leaf-beds of the Derwent and Tamar basins. One of the impressions is undoubtedly a species of *Pteris* which I propose to name *P. Belli*, in honour of Mr. Bell, who has added several novelties to the list of Tasmanian fossils.

In addition to the specimens of leaf impressions, Mr. Bell also collected a fine series of marine fossils, including corals and molluscs.



The most of these have already been described, but there are two forms new to Tasmania of great interest.

The first is a fine specimen of the well-known Cephalopod, *Aturia zic-zac* J. Sowerby, hitherto only found in Australia and New Zealand. The second is undoubtedly *Pecten lucens*, Tate, a species only recently described by Prof. Tate, from Aldinga, and the Murray Cliffs, S. Australia.

With respect to the occurrence of the plant remains among marine forms, it is most probable that the calcareous sandstones were formed at the mouth of an estuary or river, and that the leaves and other land organisms were washed down and included with the marine forms. This interpretation also throws some light upon the discovery of the almost complete skeleton of the species of *Halmaturus* already obtained from this same calcareous sandstone. The specimen referred to is still in the Tasmanian Museum.

In conclusion, Mr. JOHNSTON said he hoped that Mr. Bell would continue to make observations in this interesting locality.

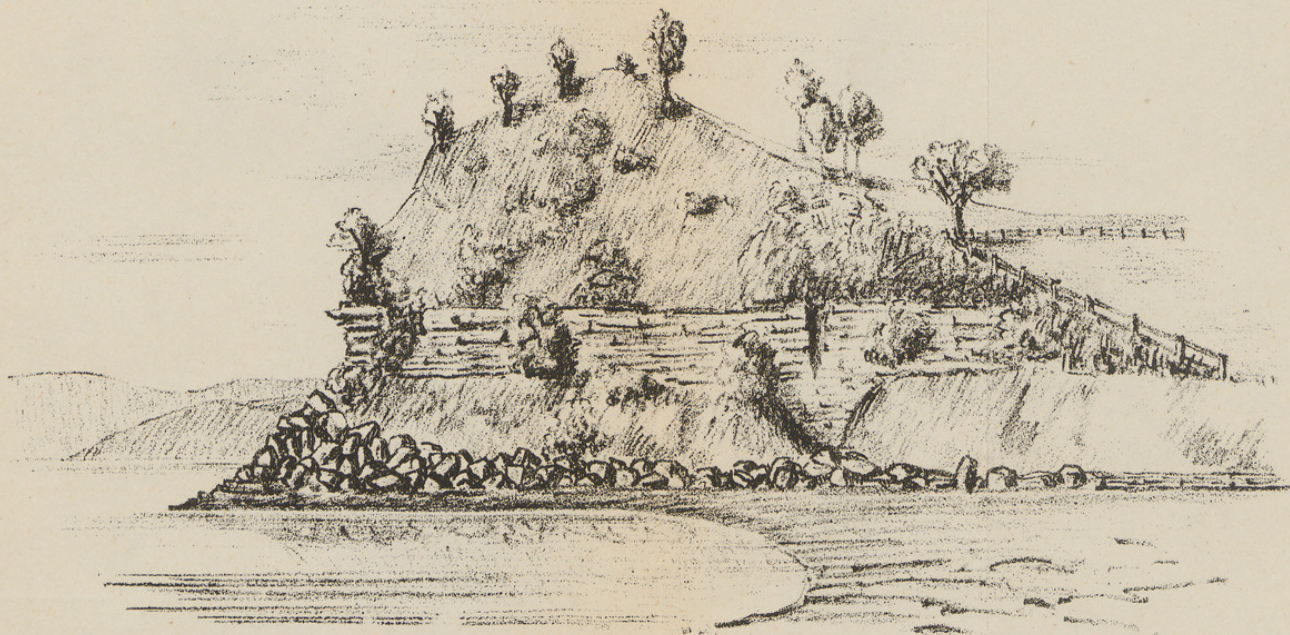
In submitting a new catalogue of Tasmanian tertiary fossils, Mr. JOHNSTON stated that it was now about eight years since a comprehensive catalogue of the tertiary fossils of Tasmania had been given to the world, and since then a great deal of work had been done, and very great additions had been made to the list then given. It was very desirable, in order that workers might ascertain what had been done, that a comprehensive and specific list should be given directing where distinct information might be gained. Accordingly he had prepared a descriptive list embracing what was known of the tertiary fossils, including some 380 species, and presented it to the Society in the hope that it would be found of service. He also presented the Museum with a number of rock types from which the interesting plant fossils had been obtained at Table Cape, and a fossil nautilus shell from the same locality, which was frequently found in Victoria, but had not previously been recorded in Tasmania.

4. Mr. A. MAULT read a long and able paper upon the "Drainage and Sewerage of Hobart," in which he contrasted the relative merits of surface drainage with underground drainage. He found that to complete the system of surface drainage and make provision for effectively carrying it out would cost a further outlay of £20,000, and the annual cost of keeping it in order would be—after providing £9,000 annually for emptying pails and interest on £20,000—£16,300. Against this, a system of underground sewers to receive water closets, and carry the drainage system right out into the tideway of the estuary, could be constructed for £60,000, and the annual expense, including interest on that outlay, would be only £7,000. Under the latter system, provision could be made for mechanical or chemical purification of the sewerage before it reached the outlets; and it could be discharged at half ebb tide so as to ensure its being carried out clear of Sullivan's Cove and Sandy Bay, though this would only be necessary in the case of the Battery Point sewer. Hobart was peculiarly favoured for such a disposition of its sewerage as fifteen million tons of fresh water flowed down the Derwent daily, and the  $1\frac{1}{2}$  tons of solid faecal matter that would be carried away in the sewerage by the institution of a general system of water closets would not be appreciable in this immense body of continually moving water. The whole question was the disposition of the liquid excreta and house-slops, as the addition of the solids was nothing in comparison with this. In Liverpool, with a population 26 times that of Hobart, and where the area of land drained by the Mersey was much smaller than the Derwent, notwithstanding these adverse circumstances, the system he advocated was found to work well, and though the rate of mortality was high there it was a densely packed town,









TERTIARY BEDS, SANDY COVE, TABLE CAPE. B.



Johnston, Robert Mackenzie. 1886. "Note from the Discovery of Plant Remains in the Tertiary Marine Beds at Table Cape Tasmania." *Papers and proceedings of the Royal Society of Tasmania* 1886, xx-xxi.

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