NOVEMBER, 1897.

The last monthly meeting of the Royal Society of Tasmania, and the last of the session of 1897, was held on Monday, November 15, in their room at the Museum, when Mr. T. Stephens presided, and there was a fair attendance of members and visitors.

RETURN OF THE SECRETARY.

Mr. R. M. JOHNSTON said: Before proceeding with the business of the evening, he would like to say he was sure all very gladly welcomed back amongst them their esteemed secretary, Mr. Alex. Morton. (Applause.) Mr. Morton had accomplished good work in Western Australia, and had enriched both the Museums of Western Australia and Tasmania to a very great extent. He was very pleased indeed to see him back and looking so well and hearty, and was glad now to re-commit to him the small part of the duties he had performed during his (Mr. Morton s) absence. (Applause.)

Mr. MORTON wished to thank Mr. R. M. Johnston and Mr. Rodway for having so kindly acted in his absence. He was not going to say anything that evening about his trip, because there was a full programme already, and he would defer the subject till their first meeting next session.

NEW CORRESPONDING MEMBERS.

Mr. MORTON recommended to the meeting for election, as corresponding members, the following gentlemen of Western Australia, who had rendered him much help whilst in the colony, and took a deep interest in this society. They were:—Mr. B. H. Woodward, Curator Perth Museum; W. J. Greenard, Inspector of Mines, Cue, western division; and Mr. H. B. Walsh, Police Magistrate, Upper Murchison, Mileura Station, West Australia. Mr. Greenard helped him very considerably. Indeed, he did not know how he would have got on without him. On one trip he drove him 100 miles and helped him to get some very valuable mineral specimens. Mr. Walsh also assisted him in obtaining valuable ethnological collections.

The gentlemen were unanimously elected.

MEMORIAL TO BARON VON MULLER.

The SECRETARY (Mr. Alex. Morton) said that during his recent visit to Melbourne he had met Professor W. Baldwin Spencer, M.A., Professor of Biology of the Melbourne University, who had informed him that the United Scientific Societies of Australasia had agreed to unite in obtaining sufficient funds for the purpose of establishing some tangible form of perpetuating the memory of the illustrious deceased Baron Von Mueller.

The members present were of opinion that something in the way of a scholarship was more preferable than a monument, which, if erected, should be more of a local character, and decided to support the proposal of the Council of the Royal Society of Tasmania.

TASMANIAN FUNGI.

Mr. RODWAY tabled a list of all the Tasmanian fungi up to date.

Mr. JOHNSTON mentioned how available this list was.

OBSIDIAN BUTTONS.

The CHAIRMAN (Mr. T. Stephens) produced some further notes on "Obsidian Buttons."

Since my paper was read at the September meeting, I have received from Sydney a copy of the passage in Darwin's Geological Observations on Volcanic Islands, to which reference was made in connection with the discovery reported by him of a "volcanic bomb" in the interior of Australia. The following extract completes the early history of obsidian "buttons" in Australasia :—

"Sir Thomas Mitchell has given me what at first appears to be the half of a much flattened oval ball of obsidian; it has a singular artificial-like appearance which is will represented (of the natural size) in the accompanying woodcut.

"It was found, in its present state, on a great sandy plain between the Rivers Darling and Murray, in Australia, and at the distance of several hundred miles from any known volcanic region. The external saucer consists of compact obsidian of a bottle-green colour, and is filled with finely-cellular black lava, much less transparent and glassy than the obsidian. The external surface is marked with four or five not quite perfect ridges, which are represented rather too distinctly in the woodcut."

A POISONOUS PLANT.

The CHAIRMAN announced that Mr. Rodway had identified a poisonous plant which had killed some sheep and cattle on runs as the *Zieria Smithii* or "stink wood."

RECENTLY DISCOVERED TASMANIAN MINERALS.

Mr. W. F. PETTERD, C.M.Z.S., read valuable notes on some recently discovered and other minerals occurring in Tasmania. 1. Aikenite (sulphatio-bismuthite of lead and copper), Block 291, N.E. Dundas. 2. Analcite (hydrated silicate of aluminium and sodium), somewhat abundant in vesicular basalt at the Penguin River. 3. Bismuthinite (sulphide of bismuth), common in acicular crystals associated with tetrahedrite, from the Curtin-Davis group of mines. The tetrahedrite also contains bismuth, which possibly replaces portion of the antimony of that mineral. The associated minerals are mainly chalcopyrite and sidvute. At the East Hercules mine it occurs in chloritic schist with pyrite and chalcopyrite. At the South Mount Black P.A. it has been obtained from tourmaline and quartz in schist rock. 4. Boulangerite (sulphantimorite of lead). A mineral resembling this comes from Block 291, N.E. Dundas. It is evidently a sulphantimonite of lead with bismuth, iron, and copper, the first mentioned constituent giving strong reactions. It is largely noticed with chalcopyrite, arsenopyrite, and pyrite, and is rich in silver. 5. Chalcotrichite (fibrous cuprite) found by Mr. R. Williams at the Colebrook mine. It occurred in capillary tufts of a beautiful crimson colour, surrounded by a thin coating of native copper in the limurite rock. 6. Datolite basic orthosolicate of calcium and boron, samples forwarded by Mr. R. Williams, manager Colebrook mine, N.E. Dundas, being a recent addition to the already long list of minerals known to occur in this island. This is supposed to be the first discovery of the mineral in Australasia. 7. Fayalite (iron olivini) abundant in microscope crystals of a bright red colour in fayalite basalt from the Alexandra battery, near Hobart. 8. Idocrase (a basic silicate of calcium, aluminium, and iron) occurs in considerable quantities at the Hampshire Hills. In some rare instances the crystals are fully lin. in diameter. 9. Ilvarte (a basic ortho-silicate of iron and calcium) obtained, associated with idocrase, from the Hampshire Hills; embedded crystals sometimes measure up to ½in. in diameter. 10. Pala-

gonite (hydrous silicate of iron, etc.), obtained near Perth. 11. Pyroclore (columbato and lilanate of calcium). This rare mineral, or a species closely allied thereto, has been discovered on the property of the Shakelton mining syndicate near Table Cape. It occurs in a granular condition of a brown colour in alluvial drift with zircon, sapphire, and quartz. 12. Prosopite (hydrous, fluoride of aluminium, and calcium), abundant as a white, powdery substance at the " White Faces," Mount Bischoff. 13. Pyrrnotite (sulphide of iron) occurs in enormous quantities, Colebrook mine, N.E. Dundas, with arsenopyrite and chalcopyrite intermixed. 14. Sillimanite (a basic ortho-silicate of aluminium), recently discovered by Mr. W. H. Twelvetrees and the writer as occurring as sillimanite-schist at the Lucy River, a tributary of the Pieman, and at Mount Stuart, Heazlewood district. 15. Tetrahedrite (sulphantimonite of copper) occurs disseminated through the ore of the Tasmania G.M. Co., Beaconsfield, and at the Hercules mine, Mount Read, where some remarkably fine bunches occur. 16. Uralite (a pseudomorphous hornblende with the external form of augite). 17. Vanadinite (an orthovanadate of lead with chloride of lead), silver mine near Waratah. 18. Zinkenite (sulphantimonite of lead). At Block 291, North-East Dundas, some beautifully developed crystals of this mineral are obtained. They occur attached to siderite, with pyrite, tetrahedrite, and more lately crystals of argenite. 19. Zinnwaldite (lettia muscovile) occurs in granite, and thus forms the common white mica of the stanniferous rocks of the East Coast.

SPHERULITIC FELSITE ON THE WEST COAST.

A paper by Mr. W. H. Twelvetrees, F.G.S., and Mr. W. F. Petterd, C.M.Z.S. was read, showing that examples of this rock from four different localities had come under their notice, namely, from Zeehan, the Castray River, Trial Harbour, and Strahan, and they described the character of each.

Mr. R. M. JOHNSTON spoke in eulogistic terms of the valuable contributions to the literature and scientific information possessed by the society by Mr. Petterd and Mr. Twelvetrees. He would also compliment the proprietors of *The Mercury* upon the admirably executed illustrations prepared in connection with these gentlemen's papers.

THE GREAT LAKE AND ITS WATER POWER.

Mr. A. MAULT read a paper on this subject. He said it was the largest and highest above sea level of the more important lakes of Tasmania. It is situated on the great central plateau of the island, about 93 miles by rail and road north-west of Hobart. Its watershed basis has an area of 225 square miles, of which 44 square miles are occupied by the lake itself. " Walch's Red Book " mentions it as being 3,700ft. above sea level, but he calculated it at 3,281ft. The lake is said to be very shallow for its great size, as not more than between 30ft. to 40ft. in depth has been found. The water is more discoloured and turbid than it used to be, said to be due to the ochreous clay that results from the disintegration of the igneous rocks of the country. The writer then spoke of the enormous water-power the lake might afford, and how the supply could be regulated so as to ensure a constant and continual sufficiency. The River Shannon was the only outlet of the waters, being about 30 yds. wide at the outlet, where a rocky bottom prevents the lowering of the surface of the lake more than about 4ft. below high-water level. The Shannon has a meandering course of about 36 miles, through hilly country to the River

Ouse, of which it is by far the most important affluent. From the confluence the Ouse has a further course of about 30 miles to its discharge into the Derwent. The valley of the Shannon is a narrow one of an average width of about eight miles, and consequently the river has no large affluents. The most considerable one is the Blackman's Rivulet, bringing in the water of the Lagoon of Islands, which drains a watershed of about 24 square miles. This rivulet comes in at a point about 20 miles below the Great Lake. His observations gave the Shannon a fall of 1 485ft. in the first 21 miles of its course from the lake, or 70ft. a mile on the average. Some years ago he levelled up the Derwent Valley to the Ouse bridge and so could state that in the course of the Shannon and Ouse for the 45 miles between the place of which he had given the level and the Derwent there is a further fall of more than 1,500ft., or an average of 33ft. to the mile. The writer concluded by referring to the important results that have followed the modern system of converting by the dynamo the mechanical energy of the turbine into elctrical energy and its transmission to be reconverted into mechanical energy that can be used where the power is required—so that mills and factories need not be situated on the banks of the stream in a secluded spot at a distance from means of communication. In America the total of the larger installations is 72,000 horse-power, with the prospect of increase to 150,000 when the Niagara scheme is completed; Switzerland comes next with 32,000 horse-power, to be increased to 48,000 by further works on the Rhine ; ; France has 18,000 horse-power, to be increased to 30,000 ; Italy has 18,000; Norway and Sweden, 20,000 ; while England and Scotland have only 4,000. From all this it appears that, in connection with the Great Lake alone, Tasmania possesses capabilities that, if utilised, would put her into the front rank of industrial communities employing the most economical of all sources of motive power—water."

Hon. C. H. GRANT thought the paper was a very interesting one. The difficulty was to utilise the great water-power available. It was well to know that Tasmania had such an asset ; but he did not see the necessity at present for making the survey Mr. Mault suggested. The western part of the district would perhaps require the water-power first. But he did not think so much as some appeared to do about the enormous value of water-power, guided by his observations in various parts of America. They must not as yet think too highly of the water-power the colony possessed.

Mr. R. M. JOHNSTON thought, perhaps, Mr. Grant did not take into account the new mode for transmitting the power to great distances.

Mr. GRANT : Yes I did. It's expensive.

Mr. JOHNSTON referred to this new development in America, and believed there was an enormous field for the use of water-power in the near future.

Mr. RULE, whilst he did not think Mr. Grant did full justice to the great future for the use of water-power, on the other hand thought Mr. Mault had somewhat exaggerated in his calculation of the amount of water-power obtainable from the Great Lake, from the rainfall. He did not think Mr. Mault had over-estimated the area of the watershed. No doubt there would be an immense expense in getting the same applied. Common-sense told him that there would have to be several generating stations. Nevertheless, there was strong hope that this great power would be utilised. The transmission of electrical force over a distance was not settled yet.

Mr. GRANT : It's very costly.

Mr. MAULT said the last six years had seen a greater revelation in the method of profitably applying water-power than the whole of

the previous time put together. It was a system that had been made less expensive, and far less precarious. The electrical force thereby generated had been transmitted in America for 70 miles. On the western slopes of the Great Lake, the whole of the rainfall was carried away by rivers that had no such reservoir as the Great Lake afforded, and artificial reservoirs would have to be constructed to use such a watershed. He thought it was a very useful thing to Tasmania to publish to the world the fact that there was available such an immense store of water-power in the colony. (Applause.)

THE ABORIGINES OF TASMANIA.

Mr. J. B. Walker read a further paper on Tasmanian aborigines. He said that the estimates of the black population of Tasmania before the advent of Europeans vary very considerably. G. A. Robinson always maintained that in 1804 the number of the aborigines was from 6,000 to 8,000. Captain Kelly, in his evidence before Colonel Arthur's committee in 1830, estimated the native population at 5,000; but he supposed that the number was still very great in the unsettled parts of the colony, which we now know was not the case. On the other hand, Backhouse puts the number as low as 700 to 1,000. Dr. Milligan says:—"Assuming that the number of tribes and sub-tribes throughout the territory was about 20, and that each mustered, of men, women, and children, 50 to 250 individuals, and allowing them numbers proportioned to the means of subsistence within the limits of their respective hunting grounds, it does not appear probable that the aggregate aboriginal population did materially, if at all, exceed 2,000." A like uncertainty existed as to their tribal divisions. G. A. Robinson, in a speech made in Sydney in 1838, shortly after he had left Flinders Island, stated that he had necessarily learnt four languages to make himself understood by the natives generally. But as regarded nations, he could truly say that the island was divided and subdivided by the natives into districts and contained many nations. Neither the number of the aborigines nor their tribal divisions could be determined with any accuracy. In considering the question, it must be borne in mind that the parts of Tasmania capable of affording subsistence to a hunting people were limited in area. The West Coast is shut off from the centre and east (for long the only settled parts) by a wide region of mountain and forest, extending throughout the whole length of the island. In the dense forests covering a large part of this region, the heavy timber is tangled with an almost impenetrable undergrowth, in which very few animals or birds are found. Where the forest gives place to bare mountain peak, or to so-called "plain," the button-grass or the stunted scrub, constituting the sole growth, is not much more favourable to animal life In places wallaby and kangaroo are to be found, but as a general rule the badger (*i.e.* wombat) is the only game. It will be seen, therefore, that the native population was mainly confined to the sea coasts, where they could obtain an abundant supply of shell-fish and crayfish, and to the lightly timbered and open lands of the central valley, and of parts of the east and north-east, where opossum, wallaby, kangaroo, emu, and other game were more or less plentiful. It appeared that the blacks were accustomed to take considerable pains, by means of periodical burnings, to keep down the scrub and promote the growth of grass on their favourite hunting grounds. Many open plains, especially in the North, which were formerly known as favourite resorts of the blacks, subsequently became overgrown with forest through the discontinuance of these annuals burnings. Of the tribal organisation of the aborigines practically nothing is known. They usually roamed the country in small groups or parties, probably composed of nearly-related families living together. Their camps rarely

contained more than 30 to 40 individuals, men, women, and children. At certain seasons of the year, however, large hunting parties were formed, in which the whole tribe, or possibly more than one tribe, joined forces to surround and drive the game. Such was doubtless the gathering of the Oyster Bay natives at Risdon in 1804, which was attended with such an unfortunate result. The number of natives, men and women, then engaged in driving the kangaroo was variously stated at from 300 to 500, though it is probable that even the smaller number was an exaggerated estimate. Captain Kelly, in his evidence before the committee, says that he saw a mob of 300 at Brown's River in 1806, and about a dozen instances of mobs numbering from 150 to 300 are reported between 1804 and 1826, but all these statements must be taken with considerable allowance for exaggeration. The natives were in the habit of visiting the coast in the winter, it is said, between June and October. Though certain of the tribes in the interior may not have had access to the sea, certain tribes must have lived on the coast almost constantly. Knopwood says that he had understood that the natives crossed the country from east to west in the month of March. This would apply to the East Coast tribes only.

In 1830 Robinson stated that he had been in communication with 16 "tribes." As this was long after many of the native hunting-grounds had been invaded by the whites, and the original tribal organisation consequently much disturbed, it is probable that the number of tribes was originally greater. Milligan conjecturally puts the number at 20. Although Robinson dignifies the tribes with the name of "nations," they were known to the settlers by the designation of "mobs." This conveys a more correct idea of their numerical strength, which was often as low as 30, and probably never exceeded 250. These "mobs," or sub-tribes, group themselves into several broad divisions, more properly deserving the name of "tribes." These large divisions spoke separate languages or dialects, the vocabularies of which were widely different, as appears from Milligan's vocabulary. Minor differences of dialect must have been numerous, for Robert Clark, the catechist states that on his arrival at the Flinders Settlement in 1834 there were eight or ten different languages or dialects spoken amongst the 200 natives then at the establishment, and that the blacks had to instruct each other to speak their respective tongues. Robinson, as already cited, says that there were four main languages. Of these Milligan gives us the vocabularies of three, viz. : — (1) South ; (2) West and North-West ; and (3) East Coast. To these we may add as (4) North-East tribes.

The CHAIRMAN mentioned there were several places called "Native Tier" "Native Corners," and so on.

Mr. MAULT had found a few native flint implements in the valley of the Derwent, but of a very rude character. Probably they found very little good fruit, and used shells to a great extent as implements.

Mr. MORTON mentioned that 750 miles from Perth he found the natives using implements exactly similar to those that were used by the Tasmanian ones. They had not the slightest idea of bevelled edges. Their waddies were identical with those of the Tasmanian aboriginals, and many of the natives of West Australia had fair hair. Mr. Morrisby ploughed up some native weapons at Muddy Plains, which were in the Museum.

Mr. WALKER wished to specially mention that he would be grateful for any information that would help in the bringing out of a new book (in hand) on this subject, by Mr. Ling Roth.

In moving a vote of thanks to the readers of the papers which was duly passed, the CHAIRMAN mentioned that this was the 56th year that their venerable and respected friend, Sir James Agnew, had been connected with the Society.