

**Proceedings**  
OF THE  
**Royal Society of Tasmania.**

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**THURSDAY, MAY 28, 1896.**

The VICE-PRESIDENT (the Hon. Sir James Wilson Agnew, K.C.M.G. M.D., M.F.C.), in the chair.

The first monthly meeting of the Royal Society of Tasmania for the 1896 session was held in one of the art galleries of the Museum.

The VICE-PRESIDENT (Sir James Agnew) expressed his pleasure at seeing such a large attendance, and thought it augured well for the support that would be given during the session. Like all other institutions, the Royal Society had suffered by the financial depression, but which he hoped and believed was now passing away. He was, at any rate, glad to say that some who had temporarily left the society had resumed their allegiance, and it was hoped that, in addition, a number of new recruits would be secured during the present session. He felt that many more in the community might, and should, with advantage, join the society. Much of the hesitation in doing so, which unfortunately existed, was groundless. There seemed to be an impression abroad that only subjects in the more severe walks of science were discussed; but as all who belonged to the society could testify, any subject appertaining to the good weal of the community was open to consideration, and that fact should result in more support being secured. For instance, that evening the first paper to be read would have reference to the health of the community. It was a subject that had been before them on more than one occasion, it being regarded as one of the very first importance. If it could be shown, as he believed Mr. Johnston in his paper would do, that the health of this metropolis and the salubrity of the colony generally was not to be surpassed in the world, the establishing of the fact must prove one of considerable importance financially and otherwise to the colony. If that be so, if its great salubrity was so established, Hobart might be chosen as the federal capital of the Australias. If the society, through Mr. Johnston, as one of its members, spread the truth as to the healthiness of Hobart, it would deserve well of the public of Tasmania. They were brought into contact with institutions throughout the scientific world by the exchange of publications. There were five new members to be balloted for, namely, Mrs. Agnes Kenyon, of Melbourne; Dr. Arthur Clarke; Mr. W. H. Twelvetrees, F.G.S., of Launceston, who would prove a most valuable working member; Dr. G. Crosby Walch, and Dr. Gregory Sprott, the City Officer of Health.

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**“THE HEALTH OF HOBART.”**

BY R. M. JOHNSTON, F.L.S.

Mr. R. M. JOHNSTON first explained a number of diagrams placed on the boards. The first showed the mean death-rate in seven European countries for several years, and of the Australian colonies, including Tasmania. This showed that all these countries had a lower death-rate than even the most favoured European country of Sweden.

There was, Mr. Johnston said, a superterrestrial influence in addition to other influences that affected the death-rate in certain years, and which interfered with the death-rates independent of such local influences as sanitation, accidents, war, etc. The next diagram showed what affected the health and the death-rate, independently of other matters that pertained to artificial arrangements. This demonstrated the necessity for having death-rate tables prepared which did not merely show the total death-rate of a city or country. The total death-rate was in itself an uncertain index of the comparative health, because, primarily, it concealed the true cause or causes which produced a high or low total death-rate, mixing up deaths from non-preventable causes (old age, or the natural termination of a healthy life) with deaths from preventable causes; it ignored the influence of migration, which, introducing a large proportion of young people, may lower the total death-rate by as much as 3 or 4 per 1,000 persons living without the slightest alteration in the percentage dying at each age, or of any cause affecting preventable disease. The normal natural death-rate varies extremely with age in every place and country. In young lives under 5 it varied in Australasia in a favourable year—1893—between 26·96 and 41·45 per 1,000 living, with a mean of 37·37 per 1,000 living. The death-rate for ages between 5 and 65 years ranged from 5·90 to 8·84 per 1,000 living, with a mean of 6·84 per 1,000 only. On the other hand the death-rate of lives 65 and over ranged from 69·42 to 80·44; with a mean of 76 per 1,000 living. It therefore followed that it entirely depended upon the proportions of people living at each age, whether the total death-rate is high or low, even where the specific rate at each age-group is the same, and where the health-rate for each specific cause is equal. A high total death-rate is simply inevitable, therefore, if the proportion of old ages in any country or town be abnormally large, even if it were the healthiest country or city in the world. This is the true reason why Hobart suburbs have invariably a much higher death rate than the Hobart city, and why the death-rate of Hobart and suburbs is a little higher than Sydney, Brisbane, and Wellington. A diagram was presented showing the typhoid death-rate in Hobart. It rose in 1887 to an extreme point, due to causes which could not be explained, whilst during the last three years it had been very low. Then came the diagram showing the mortality from preventable diseases, and indicating a great fall in the numbers during the past 10 years. Then came a table showing how there was the same rise and fall in the number of typhoid cases in the other colonies, proving that there were other unknown influences at work irrespective of anything local. Mr. Johnston referred in detail to the typhoid fever epidemic of 1887. It led to a keen inquiry as to the sanitary condition of the city, many believing it was due to local causes, such as defective drainage, but there was something beyond that. During the last three years, fortunately, the city had been very free from typhoid. Indeed, the death-rate from preventable causes had never been so low before, and had had the effect of raising the city into a healthier state than that of any other period in its history, and had constituted it pre-eminently as among the healthiest cities in the world. Yet, there was no doubt the sanitary provisions had had very little to do with it, for there was a similar decline, correspondingly, in the other Australian cities. The cause of this decline must be common to all. In regarding the healthfulness of Hobart they must make clear the difference between a total death-rate and a health standard, as already indicated; as over 20 per cent. of the total death-rate of Hobart is composed of the numbers of those who die of old age it may be seen how misleading it would be to compare its health with the other cities named on the basis of total death-rate from all causes, including

preventable and non-preventable. Indeed, if there be anything to fear in our death-rate statistics, it is that anyone who comes to reside in this city has the chance of one in five that he will prolong his life to extreme old age. The rate of 12·81 per 1,000 persons living is a remarkably low death-rate for any city in respect of all preventable causes of death. It is lower than the average of the preceding 10 years by 26 per cent., and lower than that of the epidemic year by 33 per cent. Statistics were quoted to show the favourable position taken by Hobart as contrasted with 65 principal towns in Great Britain and Australasia, and it was shown that its infantile mortality is by far the lowest of all, as in all deaths from every preventable cause. The official statistics quoted conclusively established the fact that the present health condition of Hobart has never been so good, and that it is pre-eminently one of the most healthy cities in the world. Every care had been taken to make a particular and thorough contrast of all the principal causes of preventable diseases, and the results shown are so obvious that even the most ignorant or the most sceptical who gives the matter any attention cannot fail to be convinced by them, and that figures logically, carefully, and consistently arranged are most eloquent agents in support of truth is not in any way affected by the vulgar platitude that "figures may be made to prove anything." The inhabitants of this beautiful city, instead of unreasoning expressions of discontent with their present local condition, should be indeed grateful to God that there are few, if any, cities of the world that enjoy such highly favourable health conditions and so genial a climate. Those who praiseworthy endeavour to increase and maintain the good health of the city, by care and improvement of all sanitary provisions, should not mar their good work by giving any encouragement to unwarranted alarmist statements regarding the good fame and health of the city we live in, and which, at present, is the most healthy of any city he knew of.

It was agreed to postpone discussion on the paper till next meeting.

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Mr. J. Douglas Ogilby, of Sydney, read a paper on "Some Tasmanian Fishes." Having had occasion some time ago to compare certain Tasmanian fishes with their New South Wales representatives, Mr. Ogilby applied for assistance to Mr. Alex. Morton, curator of the Tasmanian Museum, who, the writer of the paper said, "with a commendable promptitude and liberality which, with advantage to Australian biology, might well be imitated, forwarded unreservedly a number of the required species," with the suggestion that Mr. Ogilby should embody the result of his researches in the form of a paper to the Royal Society of Tasmania. This paper was the outcome of that suggestion, and dealt with several of the more interesting fishes received from Mr. Morton, special attention having been given, as requested, to the *Mugilidæ*, or mullet family.

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## MICROSCOPICAL STUDIES OF TASMANIAN ROCKS.

BY MR. W. H. TWELVETREES, F.G.S., LAUNCESTON.

The writer referred to the delicate methods of modern microscopical petrology having added greatly to our knowledge of igneous rocks. The efforts of the writer in connection with the Launceston Microscopical Club have been entered upon in the hope of throwing additional light upon the genesis and intimate structure of our eruptive rocks. It is

purposed to continue the descriptions from time to time as materials and opportunity permit. The paper first dealt with the dolerite ("debase" of authors) of the Cataract Gorge, Launceston, the samples of rock selected for slicing having been taken from the quarry near the Cataract Bridge. The essential mineral components are a plagioclase felspar, augite, and a little iron oxide. The felspars are mostly turned out on the albite plan, and belong to the labradorite-anorthite group. The augite is a group of large, ill-defined crystals moulding themselves, as it were, upon the felspars. With regard to the genetic history of the rock, its microscopical structure shows that it cannot in any sense of the word be described as a lava poured out at the surface in ancient times and cooled under atmospheric conditions. The crystallisation indicates its formation below the earth's surface. The rock agrees thoroughly with what is called the intrusive type, intermediate between the plutonic rock masses and volcanic lavas emitted at the surface. The Zeehan white rock (a vesicular basic lava—melaphyre) varies in appearance according to the degree of decomposition, and to its condition as an ancient ash or a tuff or lava flow. The stone tested was obtained from the Silver Queen mine through Mr. W. F. Petterd, who is quite satisfied that the rock embedded with the schists. The reader of the paper described how they were led to include the stone among the glassy melaphyres. Melaphyre is regarded by English petrologists as altered basalt, and in this sense the Zeehan stone is the vesicular form of old basaltic eruptive material altered into vesicular basalt—vesicular melaphyre. The microscopical characters teach us that it is an old lava, and Mr. Petterd has stated that he has been able to satisfy himself that it is interbedded with the slates; that in one of the adits of the Oonah mine it can be distinctly seen lying between the slates and following their stratification. Picrite from Mount Horror was the next class of rocks considered. This is a small class composed of the ferro-magnesian silicates, and containing little or no felspar. These are the ultra-basic rocks. The most important mineral is augite. The purple colour results from the presence of titanitic acid. Having given a full description of the nature and affinities of Mount Horror picrite, the writer concluded that its structure is coarser than that of a dolerite, and by its constitution it is an augite-olivine felspar rock. Its relations are evidently with the olvine-dolerites, and connected with the ultra-basic rocks. The paper may serve to direct attention to this instance of a picrite in Tasmania, and elicit the communication of further occurrences.

Hon. ADYE DOUGLAS (the President of the Legislative Council) moved a vote of thanks to the Vice-President, speaking most highly of Dr. Agnew, with whom he had been friendly since 1840.

His Honor the CHIEF JUSTICE (Sir Lambert Dobson) seconded, and included the gentlemen who had contributed the three papers. According to Mr. Johnston, Tasmania was the best country in the world for babies and old men. We had no right to be alarmed at the report of diphtheria that spread some time ago, and he was satisfied that Mr. Johnston's paper would do Tasmania a great deal of good, for in Tasmania we were too apt to decry what we ought to praise and value—our climate and situation.

The resolution was passed with acclamation, and the meeting terminated.