SEPTEMBER, 1881.

The monthly evening meeting of the Society was held on Monday, the 12th September; His Excellency Sir John Henry Lefroy, K.C.M.G. (the President), in the chair.

Messrs. William Crosby, jun., of Hobart, and S. H. Wintle, F.L.S., of George's Bay, who had previously been nominated by the Council, were balloted for, and declared duly elected as Fellows of the Society.

The Hon. Secretary, Mr. Barnard, called attention to the following returns, received since last meeting, viz. :—

1. Number of visitors to Museum during August:—On Sundays, 462; on week days, 700; total, 1,162.
2. Ditto to Gardens, August :—3,985.
3. Plants received at Gardens :—From Messrs. Shepherd and Co., Sydney, 70 plants. From Mr. C. F. Creswell, Melbourne, 10 plants. From Messrs. J. N. Verschaffelt, Ghent, Belgium, 45 Rhododendrons. From Captain Fisher, of the "Loongana," 12 Ferns.
4. Plants, etc., sent from Gardens :—To Mr. C. F. Creswell, Melbourne, one case of plants and seeds. To the Horticultural Society, Melbourne, 12 Peony plants. To Mr. G. Brunning, Melbourne, one case containing plants and seeds. To Mr. John Smith, Riddell's Creek, Victoria, one box of plants and seeds. To Mr. J. Sangwell, Melbourne, one case of plants and seeds. To Botanic Gardens, Melbourne, Pine seeds. To Messrs. Shepherd and Co., Sydney, 12 papers of seeds. To Messrs. Purchase, Parramatta, 12 papers seeds. To Messrs. Vilmorin and Co., Paris, seeds of various Eucalypti. To Messrs. Huber and Co., Hyeres, France, seeds of Eucalypti. To Baron Ferd. von Mueller, Melbourne, a collection of seeds.
5. Books and Periodicals received.
6. Presentations to Museum.

Meteorological Returns:—

From the Marine Board, Tables from Bruny Island, for August; Mount Nelson, for August; and Goose Island, for July and August.

Time of leafing and flowering of a few Standard Plants in the Botanic Gardens, during August :—

20th. Gooseberries commencing to break.
22nd. Horsechestnut ditto.
25th. Elder ditto.
26th. Apricots ditto.
27th. Lombardy Poplar ditto.
30th. Common Elm ditto.

The presentations to the Museum were as follow:—

1. From Mr. C. H. Glover, Franklin. Specimens of Swainson's Antechinus *(Antechinus Swainsonii)*, and the White-footed Antechinus *(Antechinus leucopus)*.
2. From Mr. D. Lewald. Specimen of Molybdenum, crystallised on fire-brick at the Tin Smelting Works, Hobart.
3. From Mr. Justin Browne. Specimen of Silver-Lead ore from Mount Claude.
4. From Mr. Carson, Sandy Bay. A Starling *(Sturnus vulgaris)*.
5. From Mr. E. Lipscomb. A Satin Bower Bird *(Ptilonorhynchus holosericeus.)*
6. From Mr. J. McDonald. Specimen of Iron ore, from Campania.
7. From Mr. T. Stephens. Specimens from the Pink Terrace, Lake Rotomahana, New Zealand.
8. From His Excellency the Governor. A curiously perforated Rock Specimen from Table Cape.

In reference to this presentation, His Excellency remarked, "I place before the Society two specimens of a compact fine grained sandstone from

the beach at Table Cape, which have interested me by their curious condition of perforation, which I have attributed to the action of dropping water.

"These pieces are broken off the dividing walls of an assemblage of shallow, more or less circular basins, which occurs below high water-mark, and covers some hundreds of square feet. The perforations in their original position are vertical. The basins are quite smooth within unless where there is a mound of the same character in the centre, and they remind me of what we always find on the floor of caves where there is much dropping of water charged with carbonate of lime. Pools form on the floor. The water is sent off in circles from the centres of drip. The lime is deposited where it meets a check, and there ridges are built up. In the case of a floor of fine sand, the sand itself would be driven off from centre of drip and deposited in the same way—to be itself, as it consolidated, acted upon by other drip.

"If my conjecture is correct, the land at Table Cape once extended considerably to the eastward, and contained at this spot a large cave, the floor of which remains. I am aware that opinions I much respect attribute the perforations to the action of boring animals; all I can say is, that looking at the isolation of the effect, and its general character, that explanation does not satisfy me.

"The absence of a stalagmitic character about the specimens would be accounted for by the absence of lime in the formation."

His Excellency the President read a paper "On the Magnetic Variation at Hobart, and its change in amount since last determined."

Mr. C. H. Grant observed that this Society, and the public generally, were under a deep obligation to His Excellency for bringing under their notice the very practical matter now occupying their attention. Owing to the system of survey of properties now adopted in this colony, it is certain that the variation in the magnetic deviation must lead to errors and confusion, resulting in much annoyance and litigation. In settled districts where the boundaries were kept well defined on the ground, their correct compass bearings at any time was a matter of comparatively small importance; but in some cases such lines had been originally marked in a very temporary manner, and a surveyor now running them afresh must take different directions, and therefore quite alter the character of the property. As a matter of fact, great difficulty is now constantly felt in reconciling new surveys of separate properties with those made formerly, or with the district maps; and, in despair, the attempt to do so is often abandoned, causing serious loss both of time and money. Now that property had become more valuable and divided, it was time, he thought, that a special survey department should be organised under a Surveyor-General, who would insist upon all surveying operations being conducted on a strictly scientific basis, both in the field and office, and that all the work done should be thoroughly checked and corrected with known points. One of the first matters to engage attention should be the careful determination and official record of the magnetic deviations from year to year in different localities.

Captain Stanley remarked, that in order to determine with accuracy the variation of the compass, a good azimuth compass was a matter of great importance; it was also very necessary to take magnetic bearings on numerous points of the compass; he had made observations while conducting the Marine Survey of Victoria with what was considered a splendid instrument, and yet on certain portions of the arc the bearings were as much as 5 5min. in error. The only way to obtain the variation with accuracy was by a multiplicity of observations, or by what was known as a "Mean of Errors." In this way it was that Captain Flinders succeeded in fixing his Astronomical positions; he would observe perhaps one hundred lunars, and though various of his results were much in error, the mean was surprisingly exact. In taking observations for the variation of the compass, it was a matter of importance that a situation should be chosen from which all-round observations could be obtained: he had observed the variation at Swan

Island and found it to be (speaking from memory) 10deg. 30min. E. In Melbourne the variation was 8deg. 43min. E., and increasing 1½min. annually. It was most important that the variation of the compass should be accurately determined in different parts of Tasmania, because there certainly was a difference, and the land surveyors always used the Magnetic North, which was likely to lead to inextricable confusion hereafter. He believed that the trigonometric survey of Tasmania had never been completed, and felt certain that a great deal of the work would require to be gone over again, because he knew from experience that the points had not been preserved. In Victoria, stone towers, or strong wooden structures, preserved a centre over which a staff was erected. He was quite sure that all the members present felt grateful to His Excellency for the trouble he had taken in preparing a paper for the meeting, and for calling attention to a manifest deficiency.

Mr. J. M. CLARKE, while thanking His Excellency for calling attention to so important a subject, could add but little to what had been said by such practical men as Mr. Grant and Captain Stanley. His experience in the field was very limited, but speaking from more than 20 years' experience in office work, collating surveys made from the early days of the colony to the present time, he could say that the discrepancies which are perpetually arising must tend to litigation, and are gradually causing great and increasing confusion in the charts of the colony.

Mr. STEPHENS said that though he could not lay claim to much practical or theoretical acquaintance with the business of surveying, or the question of magnetic variation, it had been impossible for him to avoid seeing something of the difficulties which are a necessary consequence of a system of survey conducted on magnetic lines ; and he had been informed upon good authority that serious complications were continually occurring through the want of accord between the representation of surveyed lines on the county maps, and their actual position. If the trigonometrical stations established by the late Mr. Sprent had been carefully maintained, like those of the geodetic survey of Victoria, the difficulty of reconstructing the system of surveys would have been greatly lessened ; but many of them have been utterly destroyed, and probably in no single instance would it be possible to determine accurately the central point of the original station. The prominence given to the subject in the paper read by His Excellency, than whom we could not have a more competent authority, would probably lead to some satisfactory result.

Further discussion followed, in which Mr. Justice DOBSON took part, with the CHAIRMAN and the previous speakers.

Mr. Stephens read "Notes on the proposal for establishing a 'Class Ground' for typical plants, in the Society's Gardens."

Mr. F. ABBOTT stated that the question of the formation of a class ground of typical plants had been before the Council of the Society on previous occasions, the late Rev. W. W. Spicer having been deputed to confer with him on the subject. He (Mr. Abbott) pointed out the difficulties in the way here, and, after going fully into the matter, it was considered that the time had not arrived for commencing such an arrangement. When writing on this matter some years ago he had expressed his opinion that however valuable natural arrangement might be for educational purposes, it was of but little interest to the general public, and except in places where it was utilised for the advancement of botanical science, it had better not be undertaken. In this opinion he was strengthened by a recent visit to the class ground of the Melbourne University, which is claimed as being one of the best kept in the colonies, and must confess to a feeling of disappointment at the appearance of the grounds, which were certainly the reverse of attractive. Not only were plants the most incongruous brought into juxtaposition, but many of them were languishing and others had died out. From Dr. Schomburgk

he also learned that the amount of popular appreciation bestowed on the Class Ground in the Adelaide Gardens is very limited indeed. In making the foregoing remarks Mr. Abbott did not wish it to be understood that he was averse to the formation of a class ground when the proper time arrived for so doing. He inclined to the opinion that such an arrangement should always be in connection with a good herbarium, botanical library, and lecture room, as it is only under these conditions that the real utility of a Class Ground becomes apparent. The maintenance of an efficient Class Ground, covering about three acres, would cost at least from £100 to £150 per annum, a much greater expenditure than could possibly be met by the present resources of the gardens. The formation of a collection of Tasmanian plants he considered of primary importance.

Mr. Justice Dobson spoke in favour of forming a class ground, but on a limited scale, by merely selecting characteristic and typical plants well adapted to this climate; and with regard to the suggestion that a collection of plants indigenous to Tasmania should be formed in the Gardens, he pointed out that it would be impossible to do so owing to the dissimilar conditions of soil and climate, especially in regard to alpine plants.

Mr. Abbott explained that he did not object to the formation of class grounds when they could be made of practical utility, but he wished to point out that, as a rule, they were little appreciated by the general public, and that he did not consider the present the proper time to initiate the matter. With regard to size, he could only say he had asked Dr. Schomburgk's opinion as to what he considered essential, and that gentleman had replied that the Adelaide class ground covered two acres, but that the plants had not room to develop, and that he considered three acres little enough for the purpose. The proposal could not be carried out without additional expenditure, for it would be necessary to place the ground in charge of a man having at least some knowledge of the plants contained in it; the staff now employed at the gardens would be too limited to allow the work to be undertaken. In speaking of a collection of Tasmanian plants he referred only to those amenable to cultivation.

Mr. C. H. Grant believed that the time had hardly arrived for the consideration of the planning out of a class ground after the manner adopted in the Adelaide gardens, the chief difficulty being the already too numerous demands upon Mr. Abbott's time and the want of skilled assistance. However little attention such a ground might require, it would be in addition to what was already far more than fully engaged, and it would be better to devote any available time to subjects of a more popular nature. From his experience of these gardens, at Kew and other places in the Old World, they were of most limited general interest, and this in communities deeply permeated with a taste for scientific subjects, and numbering amongst their members many persons eminent for researches in botany and similar studies. He was not, therefore, surprised to hear Mr. Abbott state that in Melbourne these class gardens were entirely neglected, since neither the educated nor the popular bent of these colonies can be said to be in the direction of science. He felt sure that for one person who would cast a second glance at beds of plants arranged according to their natural orders, at least twenty would examine collections of general native plants, such as ferns or grasses, etc., on a rockery or other convenience made for growing them; and that such collections, if made as complete as possible, would be both interesting and instructive to visitors. He would, therefore, greatly prefer Mr. Abbott's suggestion, rather to procure and grow specimens of the Tasmanian Flora than to spend the same time and resources on a strictly botanic garden. Students of Botany generally commenced their studies in the class room, from Herbaria or readily obtained specimens, and, when imbued with an interest in the science, take up special groups of plants for more attentive consideration, rather than extend such throughout the whole of the

orders. The object should be, he thought, (at least in this community) to popularise the love of flowers, and the knowledge of their characters and habits. It was, therefore, to be regretted that the Gardens did not possess an ordinarily good greenhouse, much less a large stovehouse, both of which were really necessary to exemplify the growth and beauty of plants either having their habitat in warmer climates, or produced under such artificial encouragement. It was not creditable to the Gardens, or to the colony, that such an urgent want remained unsatisfied. What he had seen of botanic, or class gardens, showed them to be most uninteresting. The plants could not be grouped for pleasing effect, and many, if not most, were difficult to grow in proper vigour side by side, when in nature they affected very different localities. Therefore the effect of the work was disheartening, and to those engaged in it would seem a waste of time as compared with what could be done with the same attention in a more popular direction. On the whole, therefore, he concluded that the time was inopportune for forming the class garden under consideration, but the subject might be advantageously reconsidered when there were greater facilities for giving it effect.

Dr. PERKINS said, speaking from experience in the Edinburgh Botanical Gardens, the division of plants into their classes did not render the gardens unsightly or unattractive, for they were visited by hundreds of people who had no desire for the acquirement of scientific information. In the interests of those who wished to know something of the nature and habits of plants, it was desirable that a portion of the Royal Society's Gardens should be reserved for botanical studies. It had often been difficult to ascertain the correct name and species of shrubs and trees in the gardens, but owing to the recent efforts made by Mr. Abbott the writing could in many instances be deciphered, and a visit to the gardens rendered additionally interesting.

Captain STANLEY remarked that he agreed with Mr. Grant as to the probability of the public not taking much interest in class gardens after they had been formed, but agreed with Dr. Perkins in the advisability of endeavouring to educate the people. He had only visited the class gardens at Kew once, and then had been unfortunate enough to find himself the only person there, but for all that he considered that such gardens were great educators. However, the subject seemed to him to hinge entirely on the question of money, and he did not think Mr. Abbott could be expected to do more than he did with the funds at his disposal.

Further discussion ensued, eliciting a diversity of opinion on the adoption of the proposal, in which His EXCELLENCY, Mr. SWAN, and others, took part.

In reply, Mr. STEPHENS said that the chief objections which had been stated appeared to be that the proposal would involve increased expense, and that the cultivation of the plants would entail much additional care and trouble; but these difficulties he thought were imaginary ones. So far as he was aware, it had never been contemplated to occupy more than two or three roods of ground, where it could best be spared, and that it was chiefly a question of transplanting a limited number of plants, which are already doing well in the gardens with ordinary care, and arranging them according to their natural affinities. If a few square yards of such a class ground could be completed year by year it probably would be as much as was expected. It was not advisable to attempt to hurry anything of this kind, and as the matter was now placed on record, it would no doubt receive consideration.

The proceedings closed with the usual vote of thanks to the authors of the papers read, and to the donors of presentations.