ABSTRACT OF PROCEEDINGS, MAY, 1903.

The monthly evening meeting of the Royal Society of Tasmania was held in the evening of the 12th May, 1903. The president, His Excellency Sir Arthur E. Havelock G.C.S.I., presided.

Apologies.

The following telegram from Senator Macfarlane was read:—"Launceston. Kindly express to your meeting to-night my regret engagement here prevents my presence to hear and discuss such important paper as Tasmania's manufacturing developments." Sir Elioth Lewis and Mr. R. C. Patterson also sent apologies.

Election of New Fellows.

The following new members were elected Fellows of the Society: The Right Rev. Dr. Delany (Bishop of Laranda), Drs. A. J. J. Triado and E. J. Roberts, and Mr. A. G. K. Money.

Royal Medals.

The President read a letter from Lord Francis Knollys, Private Secretary to His Majesty the King, announcing that His Majesty had been pleased to present to the Royal Society a medal which was struck in commemoration of the Coronation. The medal was inspected by the members of the society. Also a medal commemorating the vist of Mr. Chamberlain to South Africa, presented by Mr. A. Butterfield, jeweller.

Exhibits.

On the table was an interesting specimen of slickenside ore, from South Lyell mine; also some of the fish referred to in the secretary's notes.

Papers.

A geological excursion to Port Cygnet in connection with the Australasian Association for the Advancement of Science, 1902.

By W. H. Twelvetrees, F.G.S.

The author describes the visit of members of section C (geology) of the A.A.A.S. to Port Cygnet in January, 1902. The special object of the excursion was to examine the elæolite syenite, tinguaite, and allied rocks of the alkali division, which have aroused interest in geological circles in Australia. The rocks occur as a zone traversing the country near Lovett in a N.E.—S.W. direction, and emerging on the shores of d'Entrecasteaux Channel at Oyster Cove. They are broken through by the mesozoic diabase, which is prolonged southwards from Mount Wellington, and in their turn they intrude into sedimentary strata of Permo-carboniferous age. Their probable age is the close of the Permo-Carboniferous. At the regatta ground, Port Cygnet, a projecting headland was found to consist of elæolite and alkali syenite, with dark differentiated margins of jacupirangite, essexite, and nephelinite. These marginal varieties are not separated from the main mass of syenite, but are produced by imperceptible variations, the result of differentiation of the magma. As affording illustrations of differentiation, the Port Cygnet area is destined to become classic. A type collection of the rocks was forwarded to the great German master in petrology, Professor H. Rosenbusch, who has furnished, with his usual kindness, valuable identifications of the rarer varieties. The porphyries of Mount Livingstone were recognised by him as elæolite syenite porphyry, and the basic differentiation products of the elæolitic magma of the regatta ground received from him their proper diagnoses, though he confesses that some of the varieties do not exactly correspond with any of the alkali rocks known to him. The presence of hauyne or nosean in the Mount Livingstone elæolite syenite porphyry is confirmed. In the mica sölvsbergite south of the regatta ground Professor Rosenbusch detected a mineral of the pyrochlore group, and he suggests that the sand of creeks flowing over the jacupirangite syenite at Regatta Point be examined for the interesting mineral, baddeleyite (dioxide of zirconium). These intrusive rocks carry pyrites, and along the lines of their contact with the sedimentary strata some silification has taken place. Some of the contact stone assays 5oz. to 6oz. of silver, and from ½dwt. to 2dwt. or 3dwt. gold per ton. The district has yielded about 3,000oz. alluvial gold, most of which was won on the small flats near Lymington. The variations which distinguish the Port Cygnet rocks from alkali rocks elsewhere may be appealed to in illustration of the theory of petrological provinces. Possibly new names may be required for some of them. The study of the group is not complete, but at present the author arranges it as follows:—

Family 1.—Alkali Granite: not represented.

Family 2.—Alkali Syenite: Quartz augite Syenite. Alkali Syenite.

Family 3.—Elæolite Syenite: Elæolite Syenite, Elæolite syenite porphyry. Mica sölvsbergite. Sölvsbergite porphyry. Tinguaite porphyry. Jacupirangite.

Family 4.—Essexite: Essexite.

Family 5.—Theralite: Mica-nephelinite.

Family 6.—Ijolite: not represented.

To complete the enumeration of alkali rocks in Tasmania, occurrences in other parts of the island are given, viz.:—

Family 4.—Essexite: (a) Trachydolerite at Table Cape and Circular Head; (b) Melilite basalt on Shannon Tier, Sandy Bay, and near Rokeby; (c) Limburgite near Burnie.

Family 5.—Theralite: Nephelinite on Shannon Tier.

The author favours two primary divisions of eruptive rocks, viz., one comprising granites, syenites, diorite, gabbro, and the ultra basics. All these at times blend with each other, and give birth to passage rocks between them. The other division consists of the alkali rocks. The latter, though not so abundant as the former, show a great aptitude for differentiation in the alkaline magma, hence numerous variations from type forms and increasing additions to the nomenclature. The Tasmanian occurrences are consequently of distinct interest.

Mr. P. M. Johnston explained the features and great importance of the paper to the mining and geological world.

TASMANIA FROM A MANUFACTURING AND IMMIGRATION POINT OF VIEW, AND HER NATURAL ADVANTAGES.

(A. O. Green.)

When we read of twenty thousand immigrants arriving in the north-west of Canada in a single month, it seems hard to acount for the very slow increase of the population in Tasmania, especially when her many advantages are considered.

It is the object of this paper to enumerate these advantages. In doing so, it will be necessary to state some things that are self-evident to us; but it is good to recognise the advantages of the land we live in, and, if the knowledge can be communicated to others, it may tend to the success of the object in view, namely, to increase our present population of about one hundred and eighty thousand people very considerably.

Our small population has been one reason of our fewness, as in the past, owing to artificial divisions among the States of what is now the Commonwealth of Australia, our produce was shut out from the markets of the mainland, so that practically we could only deal with the small population of the island. Now our local customers, owing to the Federation of Australia, number nearly four millions, and a great impulse has been given to the trade of the island, which, if taken advantage of, may lead to Tasmania becoming a manufacturing and distributing centre for Australia.

POSITION.

Tasmania is very favourably situated geographically, being only a short distance to the south of the mainland of Australia, and, roughly, in a central position with regard to the coast line of that country. It is also in the direct line between New Zealand and South Africa. Its shore line is considerably broken by deep inlets of the sea, and the greater part of the country is near water carriage, thus bringing the markets of the world within easy reach, at a small cost for carriage.

CLIMATE.

The climate is equable and temperate, and the rainfall is regular, so that extremes of drought and heavy floods are unknown; in favoured situations, oranges and lemons can be ripened in the open air; geranium hedges are common, and snow only lies in the elevated districts. The days are usually bright and pleasant, and the nights, even in the hottest summer, are cool and bracing.

The central parts of the island are at an elevation of 1,000 to 3,000 feet, and it is easy to get a considerable change of climate by travelling a short distance. Upon these upland districts are large lakes, supplying quickly falling streams, from which ample power can be obtained.

Soil.—The soil is of good average fertility, and in some districts exceptionally fertile. The average crop for the island is over 20 bushels of wheat to the acre, and 5 tons of potatoes. In some districts the average is considerably higher, and potato crops of 12 tons to the acre are not uncommon. In well-managed orchards three to five hundred bushels of apples are picked.

NATURAL ADVANTAGES.

The present year is the one hundredth since Tasmania was first colonised, and on every side there are indications that in the near future Tasmania will become one of the most prosperous States of the Empire. The towns, though small, have most of the conveniences of large European cities, in the way of water supply, well-paved streets, good buildings, telegraphs, telephones, gas, electric light, and electric trams. The country districts are connected with the ports by lines of railway, and good macadamised roads; the

country has been opened. The effect of climate and soil on the growth of crops and the rearing of cattle and sheep is well known. The method of dealing with fungi and insects inimical to cultivated crops has been put upon the solid basis of experience, and there is every prospect of remunerative employment for a very much larger population than Tasmania has at present. While Victoria was passing through the first excitement of the gold diggings, Tasmania supplied a very large portion of the food of that colony, and, owing to the facilities of water carriage, can still place produce in Melbourne and in other capital cities of Australia at a lower rate for freight than mainland districts that are very much nearer to those capitals.

Freetrade.—In the past, the transfer of produce was very much hindered by intercolonial duties, but these are now all done away with.

The advantages of the climate and soil of Tasmania have been brought into great prominence by the dry seasons that have obtained upon the mainland, culminating in the severe drought of last year, and many mainland farmers are coming to Tasmania to farm, where the land laws are liberal, the horrors of drought, extremes of heat, and devastating floods are unknown, and in many places grass is green all the year round. Also, owing to its position, its available water power, and that factory legislation in Tasmania places less restriction upon trade than other States of the Commonwealth do, it is certain that factories will be set up in Tasmania in preference to other parts of the Australian mainland, and there is already a noticeable increase of activity in agriculture, trade, and manufacture.

SMALL INDUSTRIES.

It is undoubted that in the first place the prosperity of new countries must depend largely upon agriculture, especially upon what are termed small industries—industries where profits are derived from the economical working of the soil, and which enable large families to live comfortably on small acreages. The growth of fruit and potatoes meets this requirement, and by them it is quite possible to have a population of as much as one to the acre. In this, these industries differ widely from what until recent years has been the staple industry of the colony, the rearing of sheep and export of wool. In rearing sheep, people strive for loneliness, so that the sheep may not be disturbed, and in many cases efforts are made to keep population away; but with small industries supporting families of ten, upon ten to fifty acres of ground, well tilled, it is quite possible to support a population of one to the acre, as subsidiary mechanical industries, such as sawmills, wheelwrights, carpenters, blacksmiths, tailors, shoemakers, tinsmiths, casemakers, all follow just as water fills up a hollow.

During the past twenty years the fruit export industry has been developing, and in 1902 fruit and jam were exported to the value of nearly £450,000, being an increase of about 30 per cent. on the preceding year. This industry has been growing at an increasing rate for some years past, and has been the cause of widespread prosperity, great increase in the value of land, and has brought several trades to Tasmania previously unknown in the island.

Potato growing has become another large industry. During last year potatoes were exported to the value of £325,000. Both these industries need only small capital and small holdings, and the benefit from them is very widespread, tending more to the general prosperity and activity than industries in which only a few are benefited. They also are bringing other industries in their train, in the canning, drying, preserving, and packing for distant markets.

Canning and Drying.—These trades of canning, preserving, and drying are as yet in their infancy, but when they are fully developed fluctuations and gluts in the markets will be largely done away with. There is very little done in drying potatoes, for which there are splendid opportunities, and the making of starch has not been touched.

Starch.—On some occasions during recent years large quantities of potatoes that have missed the markets have been spoilt, thus causing great loss.

Spirits.—The making of starch entails the making of spirits, which would be another item of profit.

Cider.—Cider also could be made very largely, and besides being a source of profit in itself would help to steady the fruit trade. Cider is made in a small way at present, with very fair success, but not as a large business. In some of the fruitgrowing districts in England, the cider press comes round to the farmers just as the chaff-cutter, threshing machine, and straw baler, do here.

Oats and Barley.—The northern parts of the island are especially suited for the cultivation of barley and oats, both for the home market and for export. In 1902 about £140,000 worth of oats were exported.

Hops.—Hops also do well, and are cultivated successfully to a limited extent.

The exports for 1902 are valued at about £33,000. This business could be considerably extended.

Beer.—Owing to natural conditions, better beer can be brewed in Tasmania than in other parts of the Commonwealth of Australia.

Weaving.—Small beginnings have been successfully made in the weaving of blankets, flannel, and tweed, and in the making of biscuits. Under the new Customs regulations all these industries are likely to grow.

Steam Communication.—One of the results of the growth of the above industries has been an increase in the tonnage of steamers calling at the ports of Tasmania, not only from the other colonies, but from Europe. The tonnage for 1903 (the present year) entering the port of Hobart alone is estimated to reach about six hundred thousand tons net, or a million tons gross. This port is a fine open sheet of water, completely landlocked. The wharves, situated 12 miles from the open sea, can berth the largest ocean going steamers, and during the past season single vessels have been loaded with up to twenty thousand tons of cargo, and have left the wharf without trouble, drawing thirty-one feet of water. At present the steamers from London via the Cape to New Zealand make Hobart a port of call; also a new line from New Zealand to the Cape, and besides this, the P. and O., Orient, Pacific, White Star, Holt's Blue Funnel, and intercolonial steamers of several companies call at various ports in the island. The new line of steamers about to be started from New Zealand to the Cape, making Hobart a port of call, besides increasing the facilities of transport, will be likely to lower the cost of living.

There are prospects of several other trades, that are at present minor industries, growing, in the near future, to a large volume.

Butter, Cheese, and Poultry.—The climate and soil of the island are exceptionally good for the production of butter, cheese, bacon, eggs, and poultry. Large cool storage works are being erected both at Hobart and at Launceston, and by their help there will be every opportunity for developing a large export trade in these commodities.

Fish.—Not only do the large lakes and rivers abound with salmon and trout, as well as native fish of several kinds, but the sea round the coast, and the estuaries, are abundantly supplied with fish. At present the fishing industry is without organisation, and is carried on upon a small scale. Freezing works and cool storage are only just being established. Canning, drying, and salting are also in their infancy. Owing to the lack of these conveniences in the past little could be done with large catches, but fish of many varieties are abundant upon the coast at different times of the year; and with the advantage of cool storage, and, with the development of canning and salting, and the present facilities of communication, there is every probability that the fish trade will become a large industry. Now the boats are small, and the men get a precarious livelihood; but when freezing, salting, and canning are established the effect will be to cause the industry to settle down upon reliable lines, and there will be no difficulty in preserving catches of any size, and in distributing them amongst the markets of the world.

TIMBER, TAN BARK, PERFUMES, ETC.

The acacia (known as wattle bark), a tree which is common all over the island, produces a bark rich in tannin, and would well repay systematic cultivation. The bark is collected in a somewhat wasteful and primitive way from the natural growth, but the cultivation of wattle in plantations is unknown, although it is probable that if systematically carried out it would be a very profitable industry; wattle bark to the value of £40,000 was exported during 1902. A large extent of the country, especially the eastern half of the island, where land is to be had at a reasonable price, will grow wattle bark to advantage. Flowers of many kinds for perfume, and honey, would do well; fruit also could be grown to advantage, and would probably ripen earlier than in the districts already planted; would realise good prices, and would enable the present output to be very largely exceeded without increasing the difficulty of disposing of the crop. The East Coast, though settled in the early days, has been lying dormant for many years; but it can be recommended to persons wishing to acquire land which would not involve the very heavy labour of clearing. The climate of the East Coast is remarkably equable and salubrious, even for Tasmania; the rainfall is regular, and the soil is of good average fertility. The East Coast appears an ideal place for the production of fruit, honey, and perfumes. Neither honey nor perfumes are made as an industry in Tasmania, although in other countries less favourably situated, incomes amounting individually to thousands of pounds are made from these industries.

At the present time large districts in Tasmania are covered with forests, growing trees of immense size, and there are great possibilities in the systematic devel-

opment, not only of the timber trade, but also of the allied industries. The seeds of Tasmanian trees have been planted all over the world, and it would be safe to say that there is a larger trade in utilising the timber grown from Tasmanian seed in foreign countries than in utilising the timber of the island itself.

There are also great possibilities in the distillation of the essential oils contained by a large proportion of the leaves and flowers of the Tasmanian flora. Of these, the oil of the Eucalyptus globulus is exported, and is known widely for medicinal purposes, and for the making of varnish. Very little is done in the small industries, such as brushware, cooperage, hurdles, baskets, tool handles, walking sticks. The drying and seasoning of timber for the better class of work by artificial means, the making of potash, pyroligneous acid, and wood pulps are all untouched. And neither the conservation of the forest nor the planting of native or foreign trees for profit is practised. There are very large possibilities in turning to account the great forest wealth that exists in Tasmania, and when it is thought that of the £26,000,000 that is paid annually in England for imported timber none is paid to Tasmania, it is evident that full advantage has not been taken of this great natural source of wealth.

In the foregoing especial stress has been laid on the number of businesses that can be successfully carried on in Tasmania. In each and all of these businesses large capital can be profitably invested; but they have the further advantage that it is equally possible for men of small means to make a comfortable income, and special attention has been called to them, as they may form the sources of wealth for a large resident population.

PASTORAL AND MINERAL.

Another industry of Tasmania is the breeding of stud sheep and the production of wool. Tasmania, from its cool climate, is capable of producing the very finest sheep, and it is a necessity that the warmer colonies should constantly replenish their stock from a cool climate like Tasmania, in order that the staple of the wool may be preserved. Tasmanian stud sheep are celebrated all over Australia, and bring in large incomes to those who carefully observe the conditions that are required for success. Wool was exported in 1902 to the value of over £263,000.

The last industry to be mentioned is the winning of metals. Tasmania is so rich in so many kinds of ore that the island has been called a casket of precious stones. The value of mineral exports is about one and three-quarter millions annually, with every prospect of an increase, both by improved methods of winning and the discovery of fresh mines; as large parts of the country, although known to be metal bearing, have never been prospected.

GENERAL.

The present is a good time to bring under public notice the many advantages possessed by Tasmania. The benefits of intercolonial freetrade are already noticeable. New businesses are springing up; land is increasing in value, and people of other colonies are coming to Tasmania. In the present days of competition it is not sufficient to possess a good thing, but it is absolutely essential that the advantages of this possession should be made known. There are so many parts of the world, less blessed than Tasmania, with large populations, hardly able to make a living, while in Tasmania there is room for a very much larger population. It should be our endeavour to make known the advantages possessed by Tasmania. This subject has been mentioned on many occasions, and was especially referred to at our last meeting. It is not wise to indiscriminately invite all sorts of people to come to Tasmania, or to any other part of the world. It has also to be borne in mind in coming to a new country that new experience is necessary. Experience gained in large communities or other countries may be of value, but before launching out in a new country it is absolutely essential to obtain a knowledge of local conditions. In agricultural pursuits, for instance, climate and soil must be thoroughly understood. The assistance of Government to newcomers is not essential. There are plenty of opportunities in Tasmania for the newcomer, who is determined to make his home here, and to succeed. This they will do without assistance, either from the Government or from anyone else. But it appears eminently a thing that the Government can do through an Agent-General or other means; namely, to disseminate reliable information as to the many advantages that Tasmania possesses—in position, climate, soil, water power, civilisation, and in growing industries. Streams of emigrants are going to many countries from England. Very few of them are coming to Tasmania. In the other colonies, at the present time, many people are looking for a new home, undecided where to go. From the prominence given to South Africa in the papers many have decided to go there, who might have come to Tasmania at less risk, less expense, and with good chances of success had the advantages of Tasmania been more widely known.