JULY, 1870.

The monthly evening meeting of the Society was held on Tuesday, the 12th July, J. Barnard, Esq., in the chair.

The following gentlemen, who had been put in nomination, were, after a ballot, declared duly elected members of the Society, viz. :—G. Wilson, Esq., J.P., Hobart Town; C. Hazell, Esq., J.P., Carlton; R. V. Legge, Esq., J.P., Cullenswood; and Hon. J. Aikenhead, Esq., M.L.C., Launceston.

The Secretary submitted the following returns :—

1. Visitors to Museum during June, 629.
2. Ditto to gardens during June, 1208.
3. Plants, &c., received at gardens.
4. Ditto sent from gardens.
5. Times of leafing, flowering, &c., of a few standard plants in Botanic Gardens.
6. Books, &c., received.
7. Presentations to Museum.

Meteorological Returns :—

1. Hobart Town—From F. Abbott, Esq., Table for June.
2. Port Arthur—From J. Boyd, Esq., ditto.
3. Westbury—From F. Belstead, Esq., ditto.
4. New Zealand—From the Government, ditto for May.
5. Adelaide—From C. Todd, Esq., ditto for January.

The presentations to the Museum and Library were as follows :—

1. From Mr. H. Turner—A Persian or Hindoo copper coin.
2. From Mr. W. Maum—A copper medal (apparently Masonic), found at Clarence Plains.
3. From Rev. H. D. Atkinson—A Spider Crab from Three Hut Point.
4. From Mr. Ikin—12 specimens Crustacea.
5. From Mr. A. Wood—A curious Crustacean from Blackman's Bay.
6. From Mr. Brand, Oatlands, per the Hon. J. Whyte, Esq.—A fœtal wallaby.
7. From R. C. Read, Esq , New Norfolk—A native devil (*Sarcophilus ursinus*) with three young in pouch.
8. From Mr. W. Pelham—A curious fish from beach at Kangaroo Point.

[This fish belongs to the *Lophiidæ*, and is figured and described under the name of *Chironectes politus* in the Zoology of the Erebus and Terror (*Plate IX., page* 16.) Of the genus *Chironectes* Cuvier remarks :—"These fishes, from the peculiar conformation of their pectoral fins, can creep on land almost like little quadrupeds. The pectorals, by reason of their position, perform the office of hinder feet. They can live out of the water for two or three days."

9. From H. M. Hull, Esq.—Shells and corallines from Warrnambool.

The Secretary, after referring to the visitation of caterpillars with which various parts of the colony were afflicted about six months ago, mentioned that he had placed several of them under observation for the purpose of determining their future development. He now brought under the notice of the meeting the empty case of a chrysalis which formed on the 18th of January, and a moth which was produced from it on the 14th of the month following. The moth was apparently an Agrotis, and therefore the of the same genus, but probably not the same species, as the one *(Agrotis vastator)* the caterpillar or larva of which was so destructive to the crops and pastures of N. S. Wales in 1867. From the chrysalis of our caterpillar one observer (Mr. H. Nelson) has expressed his conviction that flies have in some instances been produced. If this was the case it must have been due to the parent fly depositing its ova in the chrysalis, the sub-

stance of which would afford nourishment to the strange larva, though of course it would itself be destroyed.

A paper by Mr. Legrand, on "The Land Shells of Tasmania," with a list of new species recently discovered by him was read by Mr. Stephens. At the conclusion of the paper Mr. Stephens passed a high eulogium on Mr. Legrand, for the great zeal and devotion with which he had pursued this branch of natural history, at a cost he could ill afford, and with little, if any, direct benefit to himself. If they had some kindred spirits to work out other branches of natural history, valuable specimens would rapidly accumulate, and their museum would soon be rich indeed.

Mr. Barnard read the following letter from Mr. John Walker to Mr. Nowell, the Government statistician, and its enclosed communication from Mr. Arnold Baruchson, on the manufacture of beet-root sugar:—

32, Lansdowne Road,
Notting Hill, W., London,
19th March, 1870.

My Dear Sir,—I suppose that long ago you heard of my intended trip to Tasmania, and my unfortunate voyage, as the vessel was wrecked about 100 miles from Rio de Janeiro, and eight of the passengers lost and my wonderful escape, without any serious detriment to my health. I am, however, at present determined not to attempt to take another voyage at my period of life.

I see by the newspapers the subject of beet-root sugar has engaged the attention of some of the colonists, and that James Barnard, Esq., has taken an active part, so that the members of the House of Assembly have voted a gratuity to any one who would first produce 200 tons of sugar from beet-root grown in Tasmania.

In some of the letters I wrote on the subject, I took a different view, and stated that an Act should be passed to protect the producers from any duty for a stated number of years. I think I sent a letter from Mr. A. Baruchson, of Liverpool and Magdeburg, from whom I received part of the seed I sent out, but I regret to say few tried it, and as it was a very dry season, those who did, did not succeed. I tried a little in my garden here, and it answered well. I let some grow, and it went to seed better than I expected.

I now send you a letter which I received from Mr. Baruchson on the 7th instant, and you can use it as you think best. I see by an Act of Council distillation is to be allowed. I do not think it would pay if made from malt, as one bushel of malt would cost from 8s. to 10s., and would only produce two gallons of proof spirit; and the price of the rum exported from London is from 2s. 2d. to 2s. 4d. per gallon.

As there is a considerable quantity of molasses from beet, as well as from other sugar highly refined, it might be used for distillation; but when I wrote I was aware that no distillation was allowed. I suggested that the molasses should be mixed with hay, made into chaff, as all kinds of cattle are very fond of it.

I was at Mr. Duncan's beet-root manufactory on the 3rd March, 1869, and saw his machinery at work, but as it was the first season, and the machinery not ready in time, the root was deteriorated, it should have been all used in January. The machinery was very inferior to what I saw in France and Germany.

At one "fabrick," as they call it in Stuttgart, in Germany, they rent land, and produce all, or nearly, the beet-root they require, and never dispose of the pulp, but keep it in large pits, 150 feet long and 20 feet broad, and cover the pulp with the stalks of maize, and then with earth sloped like the flat roof of a house, and sow maize on the earth, as the pits are all adjoining each other, and as the pulp ferments, the heat forces on the maize, and they get an excellent crop at an early season. They keep 200 bullocks and about 140 milch cows, and feed them with the pulp and maize stalks, and get a large quantity of excellent manure to keep the land in good order. When five or ten of the bullocks are fit for the butcher, they are sold, and their places filled up with lean beasts, purchased at a low price. The milk is sold to milkmen in the town, and as Stuttgart is a large place, there is a good demand.

It is a noble "fabrick," and the owners, Germans, remarkably civil. As my daughter lives near it, I can see it whenever I go there. (See page 5.) At Stuttgart, when I was there last year the concern was so successful that they, for an increase of capital, then formed it into a company, and all was going on prosperously. They have to pay duty on all the sugar they make, both in Germany and France, and seem to be very prosperous. At and about Douay, they have all the means and appliances in the best order, and wherever you travel you see little but crops of beet-root, and they get a full supply, and dispose of the pulp instead of keeping it to feed cattle.

You will see by the letter I enclose, that the machinery is very elaborate and expensive, and for many reasons the manufacture could not be commenced on a small scale with any prospect of success, nor is there any person in Tasmania able to make the attempt, it would require at least ten Germans who thoroughly understand the process, and as the work can only go on in the winter months, say in November, December, and January, there must be a relay of competent men for boiling and the other operations night and day for three months, as any delay would probably be at a loss of at least £500.

On the Continent they have this advantage, that the men, women, and children employed, could not procure any other work in the winter months, as the climate is far more severe than in England, and they get people at very low wages. There may be employed in large manufactories about one hundred and fifty persons in cutting off the tops, washing, and other parts of the work. A large quantity of water is required, and at least two steam engines of, say from twenty to thirty horse power, and at least four steam boilers, as the whole system is carried on by steam. The so-called coppers have copper spiral tubes in them, three inches in diameter, and are very expensive.

There must be a proper kiln for burning the limestone used in the process, and the fume from the kiln is utilised in order to cause the lime which has been added to the extract to subside to the bottom. When this has all been deposited, it is thrown out and makes excellent manure. There is also a very considerable quantity of animal charcoal (burnt bones), used to discolour the extract, and make it as pure as clean water. This is used in all sugar houses, even if the sugar is from the canes. It should be made on the premises, and reburned there also. This can be seen at Sandridge, and on a small scale at our brewery in Hobart Town.

I fear I will not ever see or hear of a beet-root sugar manufactory, during my few remaining months or years, in Tasmania.

Make any use you please with this and Mr. Baruchson's letter.

I am, my dear Sir,
Your's truly,
JOHN WALKER.

In the enclosed letter Mr. Baruchson calculates that from £60,000 to £100,000 would be required to establish in England a manufactory and distillery on a scale large enough to ensure success.

Mr. Justin Browne doubted if the beet could compete in these colonies with the cane sugar, and it was to the disadvantage of the former that it was only used in the form of lump, or refined, not as brown sugar.

Mr. Barnard stated that on his visit to New South Wales, he had seen some very good brown sugar from the beet, and had presented a sample to this Museum. He knew that Dr. Coverdale had grown a quantity of the root at the Queen's Asylum, and was now, and in order to produce the sugar, only waiting to be supplied with a machine which was found to work successfully in New South Wales, and the cost of which would be about £50. A friend of his in Sydney who has been engaged in the manufacture, was about to write on the subject, and they would probably hear something of it on the occasion of the approaching great agricultural meeting.

Mr. Stephens thought if the sugar could be manufactured profitably at all, they were in a better position than the New South Wales producer, as his climate was not equal to this for the growth of root crops, and he had

a rival in the cane at his very door. It was to be recollected that they could not hope to have any market for the sugar out of the colony.

Dr. Agnew, considering the risk and uncertainty incidental to the establishment of this industry, requiring, as it appeared to do, such a very large amount of skill, capital, and experience for its successful conduct, thought as it was being tried apparently in a very economical manner, on a small scale, in New South Wales, it would be better to wait and observe the result of that experiment. If it succeeded at all in that colony, no doubt the great superiority of this soil and climate for the growth of root crops, would make its success in Tasmania still greater in a financial point of view.

Mr. Justin Browne observed, as apropos to the present discussion on colonial enterprise, that he had received by last mail a letter from a merchant in Madras, directing his attention to the tenders just issued by that Government for Australian preserved meat for the Indian army, &c. The opening up so vast and profitable an industry as this, both in the Home, and Indian markets, was one of the happiest omens for the future of these colonies.

The proceedings closed with the usual vote of thanks to the donors of presentations.