

for the manufacture of sugar. He obtained an abundant crop last season near Auckland, and has supplied me with canes for analysis, and a small quantity of seed, of his own raising, for experiment. Owing to his absence from Auckland the manufacture of sugar was not attempted last season; but there is no doubt that the canes were raised to perfection. The machinery that has been specially invented is exceedingly simple, and can be made on a small scale, or for the requirements of a large establishment. It comprises a crushing-mill and evaporator and tanks. A complete portable set of the machinery of the smallest size, for use on a single farm or for experimental purposes, allowing for the freight and the cost of fitting up, would be under £70. A mill of the most complete kind and largest size would cost about £6,000, including engines, boilers, centrifugal drier, tubs, tanks, and all necessary appliances. One of the great advantages of sorghum is that there is no waste. The seed-tops and cuttings form excellent food for cattle, and the syrup that remains after granulating out the sugar is valuable for the brewer. This is very different from the beet-sugar, as the uncrystallized syrup is acrid, and must be thoroughly removed from the sugar, reducing the yield and making it comparatively flavourless. The important point is that it seems beyond doubt that beet and even cane-sugar will be displaced by sorghum-sugar in temperate climates. The averaged yield of crystallized sugar from the tropical cane is 15 per cent., of beet 12 per cent., and in the best varieties of sorghum it reaches from 16 to 17 per cent. In 1874 samples of the common sorghum, grown in different parts of Auckland, were analyzed, and gave from 5 to 13 per cent of sugar. (See Laboratory Report, 1874, page 28.)

22. *The Chairman.*] How far south would sorghum grow?—It grows in Minnesota, and can survive during a severe black frost. In one case there the thermometer went down to 20° Fahr., and they suspended operations for several days, yet, after resuming, they could not find any difference in the juice.

23. Could it be grown in Otago?—Yes, I think so.

24. Does it require a hot sun to ripen it?—In Minnesota they find it better to get the seed from a hotter climate. I am going to get some seed from Auckland.

25. Is there sufficient sun in Canterbury and Otago?—Yes; in the interior of Otago it is hotter than in any other part of New Zealand.

26. *Mr. Macandrew.*] Would the irrigation in the Dunstan Plains grow them?—Yes.

27. *Hon. Major Atkinson.*] I should like to know whether there is a plant in New Zealand?—Judge Gillies brought one out. He is going to lay out some acres. He is going to put in a lot more this year. [Witness explained the machinery used, from a sketch on the table.]

28. *The Chairman.*] It has been proposed by the Committee, "That, with a view to the extension of the practical usefulness of the Geological Department, the name should be changed to that of the Department of Science and Industries; and that the department should be charged with the duty of collecting information, and reporting to the Government from time to time on the best means of establishing and encouraging the agricultural, mining, and manufacturing industries of the colony. That the Government be requested to place a sum of £1,000 upon the estimates towards giving effect to the above resolution"?—It would be only a change of name. That is what we have been doing all along. It is an extension of the name only, not the duties, as there are none of those branches that I have not been always willing to report upon. If we are to be put in charge of collecting information, it is a question of money: what funds will be at the disposal of the department for doing it.

29. *Mr. Ballance.*] That suggests a very much larger sphere to be engaged in. You do not report upon the various industries?—I think we have done so to a very large extent, as the various reports show. Is it intended that we should have to collect the statistical work relating to the industries of the colony? For instance, to control the Wardens' reports relating to the statistics and working of the gold fields. I do not know whether the Committee recommend that.

30. *Mr. Ballance.*] What department takes charge of that now?—Gold Fields, Crown Lands, and the Mines Department. The material is gathered in all these departments, so there is a great deal of overlapping of work.

31. *The Chairman.*] You would not require to keep separate officers to get the information. You would get all the information?—The official way to do it would be to get all these departments under one Minister, and then there would be no friction in applying to other departments for material. At present I do not see how we are to collect that information, unless the Gold Fields Department supply it. I would have to wait until the annual reports of the departments are out to provide the material, and then use it for special reports. But, perhaps, I do not quite understand the scope of the proposal. It seems to me that the work of collecting it would involve more expenditure than I have under my control just now. It could only be done by curtailing expenditure in another direction.

32. *Mr. Ballance.*] The olive. A great deal of information on that subject might be diffused, after collecting it, by hand-books. I presume that expenditure would be allowed if you reported such expenditure necessary. You would apply to the head of the department, and it would be for the Minister to say what vote it should come under: it would be for the Minister then to say whether it should be submitted to Parliament or not. If the vote is not submitted to Parliament, then, of course, you could not go further; but, after the amount was voted by Parliament, you would produce the information, and give it to the public in the report as I have said?—I have a great deal of material already that wants opportunity of publication. It must be always understood that, if there is more work to be done, there must be additional assistance provided for the department.

33. *Mr. Landon.*] Would it be better to put a vote on the supplementary estimates, so as to buy the machinery. To my knowledge there is a great deal of sorghum grown in the North?—These machines are portable; they could be taken to any place necessary. The cost would be in giving the experiments such certainty as to yield results to be of use to the colony afterwards. It would not do to take sorghum from the Natives without knowing the circumstances of its growth. The Government should obtain land by lease, rent, or otherwise, and grow a crop of sorghum under special conditions.

34. *Mr. Macandrew.*] Would it not be better for the Government to offer a bonus?—Yes; but these bonuses have not done much good towards the rapid extension of any industry.