

AGRICULTURAL NOTES.

THE annual report of the Transvaal Department of Agriculture for 1903-4 is a volume of more than 400 pages, which contains, in addition to an introduction by the director, reports on the fourteen sections into which the work of the department falls. In discussing the *personnel* of the department, the director refers to the difficulty of obtaining expert assistants, a difficulty which, so far as agriculture is concerned, exists in all countries supplied from Britain, and even in such countries as the United States, where the training of the expert receives more attention than it does here. Many of the chief positions in the Transvaal department have now been filled up, but assistants are still required, and as the work expands it is probable that a considerable number will be engaged. The report states that men for scientific work "will doubtless best be obtained from amongst students who have had good careers at one or other of the universities, and who have done a certain amount of research after taking their degree. A thorough grounding in pure science is a *sine qua non*, and if they are not acquainted with the applied side of Science, this knowledge will have to be acquired in our laboratories whilst acting as assistants to the Chief of their particular Division."

The above named report contains many interesting paragraphs. Here is one that appears under the heading "Farmers' Cooperative Experiment Reports":—From General Louis Botha, Pretoria, "They (mangels from England sent for trial by the Department) do not grow so quickly as other sorts of root-crops, but if sown early they will grow splendidly and give a good winter crop in May; therefore I ordered a big quantity which I intend to use this year."

In papers contributed to the first four parts of the *Agricultural Journal of the Cape of Good Hope* for the current year, Mr. D. E. Hutchins, conservator of forests at Cape Town, makes out a strong case for the extension of tree planting in South Africa. The coast districts have a very favourable climate, growth is rapid, and the quality of the timber produced is good; but while native resources have not been developed, timber to the value of 1½ millions is imported annually. There is no reason why most of the wood required for building and mining purposes should not be grown in the country, and it is estimated that every *rl.* spent in afforesting suitable land would bring in an annual revenue of *rl.* in thirty-five years' time! If Mr. Hutchins can convince the financier that this estimate is correct, South Africa should soon grow its own timber; but in this branch of agriculture the sower seldom reaps, and the investor is not easily convinced. It is likely, therefore, that in South Africa, as elsewhere, the lack of capital will prove a more serious difficulty to the enthusiastic forester than either soil or climate.

In a recent number of the *Bulletin of the College of Agriculture, Tokyo Imperial University*, there is an article of considerable interest to British agriculturists. The Japanese farmer, like the English farmer of half a century ago, is given to employing lime more freely than is good for his land, and in some districts the injury done by liming has caused the authorities to interfere with the practice. Following up some work by Kellner and Böttcher on the effects of lime on the action of certain phosphates, Nagaoka investigated the results of employing a number of phosphatic fertilisers on limed and on unlimed land. Rice was grown, and it was shown that lime greatly interfered with the action of those phosphatic manures which were of animal origin, such as bone meal or fish bones; on the other hand, when the phosphates were derived from a vegetable source, the effects of lime were not very pronounced. The injury was about twice as great in manures of animal as in those of vegetable origin. The injurious action of lime extended into a second year. Nagaoka's results confirm those obtained by Kellner and Böttcher in Germany, and indicate that such manures as bone meal and fish meal should not be used on recently limed soils.

We have received from the committee of the Lawes Agricultural Trust a copy of the report of the director, Mr. A. D. Hall, on the work done at the Rothamsted Experi-

mental Station for the year ending March 31. The well known experimental fields are still continued without any essential change; in addition, a new field has been laid out to test the residual value of various manures in the second and succeeding years after their application. Other experiments deal with calcium cyanamide, the new manure containing nitrogen derived from the atmosphere, and with the various cultivations of bacteria which have been recently introduced for the inoculation of leguminous crops, with the view of making them more efficient collectors of atmospheric nitrogen. During the year in question seven papers have been issued from the station, all of which deal with investigations on the soil, methods of soil analysis, &c. The annual losses of carbonate of lime in the Rothamsted soil have been determined, both that due to natural agencies and that caused by the use of manures. Certain restorative actions have been investigated which account for the maintenance of the fertility of many soils which are almost devoid of lime. Another of the papers deals with the remarkable accumulations of fertility in certain plots of land which have been allowed to run wild for the last twenty years, and have in that time gained nitrogen to an extent not readily explicable by the accepted theories. The Lawes Trust committee continues to find its income very inadequate to the proper development of the station; only donations and subscriptions from various sources, including 300*l.* from the Goldsmiths' Company, 50*l.* from the Clothworkers' Company, 50*l.* from Lord Rothschild, &c., have prevented a serious deficit on the year's working. Mr. J. F. Mason has also promised to erect and equip a new laboratory for agricultural bacteriology, which will be the first of its kind in this country, as a continuance of the experiments carried on for many years by his father, the late Mr. James Mason, at Eynsham Hall, Oxon.

REPORTS ON SEA FISHERIES.

THE report for 1904 on the Lancashire Sea Fisheries Laboratory at the University of Liverpool and the sea fish hatchery at Piel¹ contains an introduction and general account of the year's work, written, as usual, by Prof. Herdman, the honorary director of the scientific work.

A report upon the sea fish hatchery at Piel, by Mr. Andrew Scott, shows that more than a million plaice fry and more than twelve million flounder fry were liberated, the result of hatching eggs laid by fish caught in the autumn and confined in tanks at the hatchery. The useful results to the fisheries of thus confining spawners and turning out the newly hatched fry have yet to be demonstrated.

A paper upon the tow-nettings collected in the Irish Sea, contributed by Mr. Scott, is of little value, because it is far too general, the contents of the tow-nets not having been identified. Such records as "Copepoda, medusoids, gelatinous algæ, a fish egg," are perhaps of some value, but of very little. It appears to us that had less been attempted, and some one group properly worked, the value of the paper would have been much greater. In referring to the occurrence of pelagic fish eggs, the scientific names of the various species might have been mentioned with advantage.

Bacteriological investigations in relation to shell-fish pollution by sewage matter, by Mr. James Johnstone, is an interesting paper continuing an investigation carried on during the previous year. Mr. Johnstone is also responsible for a paper upon plaice-marking experiments, and for another upon the internal parasites and diseased conditions of fishes. The plaice-marking experiments are upon a small scale, but no doubt will give results of interest in time. Dr. J. Travis Jenkins, recently appointed to the post of superintendent of fisheries of the district, contributes an interesting discussion of official fishery statistics, from which it appears that the Board of Trade returns are not always accurate. Dr. Jenkins's remarks

¹ Report for 1904 on the Lancashire Sea Fisheries Laboratory at University of Liverpool and the Sea-fish Hatchery at Piel; and Syllabus Lessons on Marine Biology. (Liverpool, 1905.)