ADV. 29·9·27

At Roseworthy, under somewhat drier conditions, basic slag was not quite so good as superphosphate, and achieved best results in wet seasons. The soils of the Australian wheat belt were mostly deficient in phosphoric acid, and consequently superphosphate should be used as a basis for any fertilizer. The value of superphosphate was so well established, that the only question was as to the most profitable quantity to apply. In the Booborowie experiments, with wheat at 5/ per bushel, the most profitable dressing was 2.19 cwt. in an average season.

Use of Potassium.

The third group of important fertilizers, added the lecturer, was that containing potassium. The soils of Australia were relatively rich in potash, and all experiments so far conducted, at least in South Australia, had not given particularly promising results. The next group comprised waste products of animal and vegetable life. The most useful under local conditions to those manures was probably blood manure, which was very typical of that class. The yields of Australia's main winter cereals—wheat, oats, and barley—could all be increased with profit by the judicious application of fertilizers, and more particularly by the liberal application of soluble phosphate. In the early days it was customary to employ relatively small amounts, quantities of (say) ½ cwt., and this tendency was still to be observed in the experimental work conducted on the newer areas of the Riverina and in Western Australia. In South Australia and Victoria quantities of 1 cwt. or more were now becoming standard, and the limit of profitable application was probably more in the neighbourhood of 2 cwt. than 1 cwt. With wheat at 5/ a bushel and phosphate at £5 a ton, in no case was the most profitable amount of superphosphate less than 1½ cwt.

Topdressing for Grass.

Possibly the most important single crop in Australia was grass. There were two ways in which the productive capacity of grass lands might be improved. The first was by topdressing with a suitable fertilizer; and, secondly, by the introduction of new varieties of grass, clovers, and fodder plants of greater value than the native pasture. Topdressing was too young in Australia for the precision to have been reached regarding it; that was the case with wheat manuring, but it might be safely said that the carrying capacity of most pastures could easily be doubled.

The Commissioner of Crown Lands (Hon. G. F. Jenkins) complimented the lecturer on his instructive address, and said they had to realize that the scientist and the practical agriculturist had in future to work hand in hand to obtain the best results.

On the motion of Mr. C. Hawker, seconded by Mr. H. W. Lyons, a hearty vote of thanks was accorded Professor Prescott.

THE VALUE OF MANURES.

A FACTOR IN INCREASED PRODUCTION.

ADDRESS BY PROFESSOR PRESCOTT.

Manuring as a factor in the production of increased crops was discussed by Professor J. A. Prescott, of the Waite Research Institute, at a meeting held under the auspices of the agricultural committee of the Liberal Federation at the Liberal Club Hall, North-terrace, Adelaide, on Wednesday morning. The Minister of Agriculture (Hon. J. Cowan), who presided, said Professor Prescott hardly needed any introduction to an audience of practical farmers. (Applause.) The work the Waite Research Institute was doing in the interests of agriculture was known to them all. That work was of immense value not only to this State, but to the whole of Australia. That fact was recognised by the Prime Minister (Mr. Bruce) on his last visit to South Australia, when he made an inspection of the institute. As a result of that visit it was probable that the Commonwealth Government would make a substantial contribution to the funds of the institution. (Applause.)

Professor Prescott said there were two ways in which the yield of crops might be increased. The first was by the improvement of the soil, and the second by feeding the crop itself. It was rather an anomaly to speak of farmyard and stable manure in these days of motor traffic, but if they remembered that half the population of South Australia seemed to be directly interested in gardening of some kind the importance of securing adequate supplies of this manure was of more than academic interest. Farmyard manure had long been recognised to return to the soil something of everything that had previously been removed by growing plants, and in addition to increase the store of soil humus. The absence of regular supplies of farmyard manure might be overcome to a certain extent by the manufacture of synthetic manure. That had been made possible as the result of investigations at Rothamsted on the decomposition of straw. At the Waite Institue their experience had shown that when fermentation was successful the manurial value on potatoes was approximately equal to that of stable manure. Calcium was one of the most important elements in agriculture. Although it was a plant food, its salts were never directly used as such, but as soil ameliorants. Calcium sulphate was another important soil ameliorant which had proved its value in the irrigtation settlements and in the red Wimmera soils, more particularly at Goroke, in the Western Wimmera, where an increase in wheat yield from 16.3 bushels an acre to 27.4 bushels was obtained by treating the soil with 30 cwt. of gypsum. For the best results in crop production it was necessary to use artificial fertilisers.

Nitrogen.

Of the many on the market all would be found to fall into the following groups:—Nitrogenous, phosphatic, potassic, organic, and mixed. The most extensive of all manures used to-day were those which contained nitrogen. Nitrogen was an essential plant food, and went to the building up of soil material. In the plant it was known as protein, of which the gluten of wheat flour was an example. Sulphate of ammonia, a by-product of coal gas, was rich in nitrogen, containing 20 per cent. against 15.5 per cent. in Chilean nitrate. Up to comparatively recent times those two not inexhaustable sources formed the bulk of the supplies, and the time seemed not far distant when a world famine of nitrogen would be in sight. Modern chemical science and engineering had, however, solved the problem, and today they were able to draw on the almost inexhaustable supplies of nitrogen in the atmosphere. In 1910 about 9,000 tons of nitrogen were fixed by synthetic processes. By 1925 that had been increased to 600,000 tons, and there was every likelihood of considerable expansion. During the process of fallowing there was not only a conservation of rainfall, but there was also a substantial accumulation of nitrate in the soil, which was sufficient to supply the needs of the wheat crop. Nitrogen could not, of course, make up for a deficiency in rainfall, but where the rainfall was ample there were many indications that sooner or later nitrogen was going to find some value for cereal production in Australia. The value of leguminous crops in maintaining soil fertility, had been known since Greek and Roman times, but it was only in modern days that scientific workers had been able to explain those facts. In the irrigation areas leguminous crops were used for the double purpose of adding organic matter and nitrogen to the soils, which were notably deficient in those respects.

Phosphates.

The sources of phosphatic manures were bones, rock phosphate, and basic slag from steel manufacturing. The superphosphate of commerce was nearly all made from rock phosphate, and that used in Australia was derived from the mandated territories of Nauru and Ocean Islands. Experimental work had shown that the water soluble character of superphosphate made it the most valuable source of phosphoric acid for fertiliser purposes, although the relatively high cost had led to the use of basic slag and rock phosphate, particularly for the top dressing of pastures. Experimental work at the Waite Institute had shown that under rainfall conditions at Glen Osmond, basic slag and superphosphate were of practically equal value. At Roseworthy, under somewhat drier conditions, basic slag was not quite so good as superphosphate, and achieved best results in wet seasons. The soils of the Australian wheat belt were mostly deficient in phosphoric acid, and consequently superphosphate should be used as a basis for any fertiliser. The value of superphosphate was so well established that the only question was as to the most profitable quantity to apply. In the Booborowie experiments, with wheat at 5/ per bushel, the most profitable dressing was 2.19 cwt. in an average season.

Potash.

The third group of important fertilisers was that containing potassium. The soils of Australia were relatively rich in potash, and all experiments so far conducted, at least in South Australia, had not given particularly promising results. The next group comprised waste products of animal and vegetable life. The most useful under local conditions of those manures was probably blood manure, which was very typical of that class. The yields of Australia's main winter cereals—wheat, oats, and barley—could all be increased with profit by the judicious application of fertilisers, and more particularly by the liberal application of soluble phosphate. In the early days it was customary to employ relatively small amounts, quantities of, say ½ cwt., and this tendency was still to be observed in the experimental work conducted on the newer areas of the Riverina and Western Australia. In South Australia and Victoria quantities of 1 cwt. or more were now becoming standard, and the limit of profitable application was probably more in the neighborhood of 2 cwt. than 1 cwt. With wheat at 5/ a bushel and phosphate at £5 a ton in no case was the most profitable amount of superphosphate less than 1½ cwt.

Possibly, the most important single crop in Australia was grass. There were two ways in which the productive capacity of grass lands might be improved. The first was by top-dressing with a suitable fertiliser; the second by the introduction of new varieties of grass, clovers, and fodder plants of greater value than the native pasture. Top-dressing was too young in Australia for the precision to have been reached regarding it. That was the case with wheat manuring, but it might be safely said that the carrying capacity of most pastures could easily be doubled by its adoption.

ADV. 30·9·27

FARMERS VISIT URRBRAE.

About 100 delegates who have been attending the annual conference of the Agricultural Bureaus in Adelaide visited the Waite Institute of Agricultural Research at Urrbrae yesterday. The party was in charge of the chairman of the Central Bureau (Mr. P. H. Jones) and the general secretary (Mr. H. C. Pritchard). The visitors were met by the acting director of the institute (Professor A. J. Prescott), the plant pathologist (Mr. G. Samuels), and the field expert (Mr. H. C. Trumble). The party was divided into three sections, and a thorough inspection was made of the various operations. The visitors were particularly interested in the experiments leading to the discovery of the cause of tomato wilt, and Mr. Samuels explained that the disease was transmitted from one plant to another by thrips. An inspection was made of the chemical laboratory, and Mr. C. S. Piper, B.Sc., showed the visitors the work being conducted there. The wheat crops were inspected, and interest was exhibited in tests with regard to varieties of cereals and rotation of crops. The experiments being conducted on behalf of the Commonwealth Bureau of Science and Industry on the growth of fodder for sheep in dry areas were watched with interest. The officers were thanked on behalf of the visitors by Mr. Jones and Mr. A. J. Follett.

NEWS 29-9-27

INDUSTRIAL PRESIDENT

Dr. Hewitson Congratulated

In the Industrial Court this morning felicitations were offered by the Bar to Dr. T. Hewitson on his appointment as President of the Industrial Court.

Mr. E. E. Cleland, K.C., in congratulating His Honor, stated that the appointment had been fully expected.

Mr. R. W. Bennett, K.C., said that he wished to add his appreciation, and that of the other members of the Bar, to that of Mr. Cleland. The place of former President Dr. Jethro Brown was hard to fill, but knowing Dr. Hewitson and his past work in the court they felt that the Government had made the best appointment possible.

Dr. Hewitson, in reply, said that he was obliged to members of the Bar for their appreciative notice of his appointment and references to himself. He could only hope to do his best to follow the lines of industrial jurisprudence which his predecessor had done so much to lay down and develop.

REG. 29·9·27

TOMATO WILT.

Discovery of the Disease Carrier.

When the Council for Scientific and Industrial Research and the University of Adelaide decided last year to co-operate in the organization of scientific work on so-called virus diseases of plants, it was agreed that tomato wilt should be the first problem to be attacked. Mr. G. Samuel, of the Waite Institute, took charge of the work, having under him Mr. H. A. Pittman, an officer of the council. An elaborate, well-designed glass house was erected by the council in the grounds of the Waite Institute. Senator McLachlan (Assistant Minister) announced on Wednesday that a very satisfactory account had just reached him of the progress of this work. The puzzling point about the disease had been its mode of transmission. Some excellent work had been done by the plant pathologists in State departments, particularly in New South Wales and Victoria, and had shown that there was no casual fungal or bacterial parasite present in diseased plants. Working from this basis, investigations had been directed towards the possibility that an insect was the carrier of the disease. The required conditions of control had been available in the new glasshouse, and Mr. Pittman had now proved that the carrier of the disease was the onion or rose thrips, known technically as Thrips tabaci Lindeman. The larvae of the insect feed on the plants only for a few days and then drop off and enter the chrysalis stage. The disease does not show itself for from 16 to 20 days, and this may give the reasons why this species of thrips had not been incriminated before. Though the question of dealing with the insect and eradicating spotted wilt still remained to be dealt with, Senator McLachlan added that the Council for Scientific and Industrial Research and the University of Adelaide had every reason to feel satisfied that they had passed the first stage in dealing with what is coming to be a very serious menace to the tomato growing industry.

REG. 29·9·27

MAN'S HELPMATE.

WOMEN'S BUREAU ACTIVITIES.

The sessions of the women's branch of the Agricultural Bureau were concluded on Wednesday at the Masonic Hall, North terrace.

There was a representative attendance, including delegates from Williamstown, Pinnaroo, Saddleworfth, Kalangadoo, Wilkawatt, and Kangarilla, Mrs. J. S. Hammat was again elected to the chair. The guest of honour was Dr. Constance Davey, who chatted informally to the throng upon the possibilities of strengthening the mentality of the weak-minded child. Taking for her subject "The education of the backward child," Dr. Davey—one of the first authorities on the subject in the State—disseminated much useful knowledge to country dwellers. The lecturer said that mothers realized that no two children were alike. One was quicker at learning than another, and another more easily angered, more timid, and more curious, and difficult to manage. This was enough to show that each child could not be dealt with exactly in the same way. He or she should be studied as an individual, and it was the psychologist's part to analyse the various types, such as the backward, nervous, or delinquent child.

The Backward Child.

Touching upon the backward child more particularly, Dr. Davey quoted her own experiences of cases brought to her and her deductions. Through a series of enquiries it was learnt how some step was missed so that that child could not keep pace with normal ones. There were cases where retarded children had plenty of ability, when managed with insight and patience, and were not required to work in an ordinary school. There were three types to be considered—that one that was backward through lack of opportunity; the slow child who did well when given opportunity to go at its own rate; and the truly subnormal child (feeble-minded), whose development was so slow that he never would catch up. To that last type was necessary a special training, care, and control. That was impossible in ordinary classes, for a special curriculum was needed. Even if they could be taught very little, yet they were capable of doing something; and that was the art—to discover what would prove most congenial. Dr. Davey quoted instances where children had responded to such observation, and detailed some of the work processes. Thus the boys gradually learnt to weave, mend shoes, and garden; while the girls were led in simple stages to learn sewing and domestic work. Habit formation was most important, for it was just as hard to unlearn as to learn methods. In conclusion, the speaker said she believed that with proper training those children could, and did, become self-respected wage-earning citizens. Without that they drifted, and eventually became a burden to the State. Surely one of the noblest acts in life was to help inculcate self-respect in a darkened mind. (Applause.)

Attention to Country Cases.

At the instance of the Chairman, Dr. Davey was thanked warmly. General discussion followed, and members resolved to follow up the matter in their own districts. Dr. Davey said she would gladly give personal attention to any cases from the country.

Various bureau matters then came on for consideration, notably, one concerning vandalism, a paragraph of which appears in another column.

Upon the closing down of business warm tributes were bestowed upon Mrs. Hammat, Mrs. Sands, Mrs. McColl, and others who had helped to make the meetings such a success.