

# AGRICULTURAL ADVANCEMENT.

## Movements by the Government.

In the House of Assembly on Wednesday Mr. Robertson directed attention to the present unsatisfactory system of weighing bags of wheat singly at railway stations. Half pounds and three-quarter pounds were not taken into account in that method. He asked if a system of weighing wheat in bulk could be introduced or whether something else could be done to overcome the difficulty.

The Premier (Hon. J. Gunn) replied that for some time the Government had had under consideration the high cost of wheat bags and also the antiquated method of weighing wheat at railway sidings. It was now thinking over the appointment of somebody to make enquiries and recommend to the Government what should be done to overcome the heavy costs in the handling of wheat.

### Research Suggestions.

Mr. McMillan referred to a suggestion by Mr. McIntosh, his colleague, that a permanent committee, on the lines of the Railways Standing Committee, should be appointed to investigate agricultural affairs, and advise the Government in the matter. Dr. A. E. V. Richardson (Director of the Waite Research Institute) had on Monday night stated in a lecture that he hoped generous support would be forthcoming for the extension of agricultural research work. Mr. McMillan asked if the Government would give sympathetic consideration to those proposals.

The Minister of Agriculture (Hon. T. Butterfield) said he realized that there had not been—nor could there be under any Minister of Agriculture in present conditions—any settled agricultural policy, and yet there should be some settled policy. The Government realized, as the Premier had indicated, that some thing should be done.

Mr. Anthony—What is to prevent you from framing a policy?

The Minister replied that he did not consider it the duty of any Minister of Agriculture to decide upon the policy. If a committee were appointed its duty would be to enquire into matters, and he presumed it would submit a report, with recommendations, to place the whole position on a more satisfactory basis.

## REGISTER 6-8-25.

### TABLET OF RECOGNITION.

From MRS. H. W. LANGSFORD, President St. Peter's Red Cross Circle:—Having read the account of the returned soldiers' grateful and appreciative act, in placing a memorial tablet in the club-rooms in recognition of the work of the women of Australia during the war, I was extremely sorry (owing to another engagement) that I could not be present at the unveiling on Tuesday, and take this opportunity, on behalf of the officers and members of St. Peter's Red Cross Circle, to thank them for the honour paid to us, and to acknowledge the charming thought of "our boys."

## Nov. 6-8-25.

### INTER-UNIVERSITY DEBATES.

The annual inter-university debates will begin at Sydney on August 21. Four universities, Adelaide, Melbourne, Sydney, and Brisbane, will be represented. Sydney and Melbourne will meet on the opening day. Sydney to affirm "that any action which tends to limit the functions of our present jury system is to be deplored." On the following day Brisbane and Adelaide will debate "that the entrance of women into public and professional life is desirable." The losers will then meet on the subject of the desirability of a capital levy, and the final between the winners will be on the subject "that Australia must look to America, rather than to Great Britain, for support in her external policy."

## Dec. 4-8-25.

### THEOLOGICAL DEGREES.

#### QUESTION OF BESTOWAL.

##### WELLINGTON, Monday

The University Commission concluded the taking of evidence to-day. A deputation from the Ministers Association asked that the D.D. degrees should be conferred by the New Zealand University, declaring that many New Zealand young men went home to get this degree, and never returned. As an alternative the deputation asked that the churches of New Zealand should be empowered by Act to grant, through a college of divinity, the B.D. and D.D. degrees.

# SCIENCE AND AGRICULTURE.

## Methods of Increasing Primary Production.

### Sources of National Revenue.

No. 10.

Dr. A. E. V. Richardson (Director of the Waite Agricultural Research Institute) delivered his third lecture of the series on the subject of science and agriculture in connection with the University extension lectures on Tuesday evening. He dealt with methods of increasing primary production, and said that the importance of agricultural and pastoral pursuits to the national welfare was reflected in the relative value which production from these sources bore to the total production. Of the £382,000,000 of new wealth created in 1923, the agricultural and pastoral industries contributed no less than £220,000,000 or 58 per cent. of the total. In view of the relative distribution of rural to urban population in Australia, that record of production was remarkable. During the same year the total production of South Australia was £34,000,000, of which £22,000,000, or 64 per cent. of the total, was contributed by the agricultural and pastoral interests. The principal source of revenue from the primary industries came from the 75,000,000 sheep and 14,000,000 cattle which were maintained on the pastoral lands of Australia. The wheat crop furnished and the main source of the revenue from agriculture. Wheat was relatively more important to South Australia than to any other State. Though this State normally produces 10 per cent. of Australia's agricultural and pastoral wealth, it contributed more than 25 per cent. of Australia's wheat output. The climate of South Australia was not as favourable for intensive agriculture as some of the other States of the Commonwealth, owing to the limited proportion of high rainfall land. Moreover, the rainfall over a very large proportion of the State was too low and too uncertain to engage in profitable agriculture. Nevertheless, there was every reason to believe that the production from the wheat belt and from the pastoral lands of the State could be greatly augmented before the limits imposed by the rainfall were approached.

#### Distribution of Wheat.

The average area sown to wheat in Australia was approximately 10,000,000 acres, of which New South Wales normally contributed 30 per cent., Victoria 26 per cent., South Australia 25 per cent., Western Australia 17 1/2 per cent., and Tasmania and Queensland the small balance. The factors limiting the distribution of wheat in Australia might be regarded as (a) natural, (b) economic. The most important natural factors were the total rainfall and its incidence and the fertility of the soil. The rain of importance for wheat was that received during the growing period of the crop—April to October inclusive. The rain falling during the summer was largely lost by evaporation. Practically all their wheat was now grown between the lines of 7 1/2 and 15 in. of winter rainfall (April to October). In South Australia, Victoria, and New South Wales, the 15 in. line of winter rainfall corresponded very closely with the southern boundary of the wheat belt, that line separating the dry farming areas from the closer settlement country where more intensive farming was possible. In Western Australia, however, there was a considerable area of wheat grown between the 15 and 20 in. lines of winter rainfall, but here settlement was relatively so sparse that more intensive agriculture had not yet pushed the wheat belt back into its true sphere in the dry farming regions.

The 10-in. line of winter rainfall had usually been regarded as safe for wheat growing, but in South Australia and Victoria wheat was grown over a very considerable area far beyond that line, extending to, and even passing beyond, the 7 1/2-in. winter rainfall line. A portion of the wheatgrowing area of South Australia, and the newly opened mallee country in north-west Victoria were outside the 7 1/2-in. line of winter rainfall, while between the 7 1/2 and 10 in. line of winter rainfall were the old-established mallee districts of Verich (S.A.), Ouyen, and Swan Hill (Victoria), where wheatgrowing had been an established and successful industry for the past 15 years. It might, therefore, be fairly assumed that country having a winter rainfall of 7 1/2 in. of reliability equal to the areas indicated was capable of being utilized for wheat under present conditions. In New South Wales the 10-in. line of winter rainfall had not yet been passed, and it would seem that in the northern part of the State that line did indicate the probable limit of the wheat belt. The greater variability of the rainfall and the higher temperature causing increased loss by evaporation, made a given average rainfall less efficient in crop production here than a similar amount of rain

in the cooler and more reliable rainfall areas in the southern portion of the State. Apart from northern New South Wales, it would appear that the 7 1/2-in. line of winter rainfall marks the present inland limits of the wheat belt. Transport facilities and competition with live stock industries were the main economic factors in determining the distribution of wheat. The limits on the coastal side of the wheat belt were determined by questions of profit in competition with other crop and live stock industries—the inland limits were determined in practically most cases by transport facilities. There were many millions of acres of land climatically suited for wheat, which at present were either used for pastoral purposes or covered with mallee scrub. The most important of these areas were:—1. The pastoral lands of the Riverina. 2. The enormous area of scrub land in Western Australia, lying between Southern Cross, Albany, and Eucla. 3. The undeveloped areas of north-west Victoria.

Under existing economic conditions, wheatgrowing was unprofitable beyond 12 to 15 miles from existing railway lines. Beyond those distances cost of cartage to the railway consumed the profit which resulted from wheatgrowing. Hence in Victoria on either side of the Pinnaroo-Ouyen line, there were large areas of undeveloped mallee land. The Riverina was highly suited for wheatgrowing, but lack of railway facilities had hitherto precluded its use for that purpose. The proposed railway extensions from Victoria would ultimately bring large areas of land under wheat in that fertile region. In Western Australia, the eastern boundary of the wheat belt was coincident with the termini of the railways. Beyond those termini were enormous areas of mallee scrub—useless either for wheat or sheep without adequate facilities for transport. Thus, the factors determining the present actual limits of wheat belt were economic rather than climatic.

#### Distribution of Sheep.

If the map showing the distribution of sheep in Australia was carefully examined, it would be seen that the area of maximum sheep concentration was in south-eastern Australia on either side of the 20-in. line of rainfall. Along the moister eastern side of the continent there were no appreciable numbers of sheep close to the coast, nor in regions over 30-in. line of rainfall. The liability of sheep to footrot, liver fluke, and other parasitic diseases was evidently one of the factors making the keeping of sheep in those districts less profitable than cattle raising. From that region of maximum concentration, there was a wide belt of decreasing sheep concentration, extending inland to the 5-in. line of rainfall. The main areas suggesting themselves as potential sheep country were:—1. The Victorian and South Australian mallee lands, where the stocking of the country did not, as was usual, precede, but followed on after the clearing of the mallee cover and the cultivation of the land. 2. A large tract of country in Western Australia within the 10-in. line of rainfall, bounded roughly by Southern Cross, Albany, and Eucla, which was practically devoid of sheep. From climatic considerations it should have a carrying capacity at least equal to the west coast of South Australia, and other 10 to 15-in. rainfall areas.

It should be borne in mind that in most parts of Australia sheepraising had pioneered the wheat industry. In the mallee country, however, the scrub should first be subjugated before sheepraising became possible, and the establishment of the wheat industry therefore preceded the stocking of the country with sheep.

3. Judged from climatic considerations, another potential sheep area appeared to be that portion of the Northern Territory lying between the 20-in. and 10-in. line of rainfall. At present no sheep were found in that area. In Queensland, however, the country lying between the 10 and 20-in. in the same latitude as the area above referred to, carried a large number of sheep as well as a considerable cattle population. The factors preventing the utilization of that possible sheep area were lack of transport facilities, of suitable water supplies, and the prevalence of wild dogs.

Apart from those areas, the sheep lands of the Commonwealth appeared to be fairly well occupied. The number of sheep maintained in the Commonwealth appeared to be fairly well occupied. The number of sheep maintained in the Commonwealth appeared to have become more or less stationary, fluctuating with the seasons, but maintaining on the whole an average of 75,000,000 to 80,000,000. A large proportion of the sheep of the Commonwealth were maintained in the areas of liberal rainfall. In those areas the stock-carrying capacity could be greatly increased by improving the pasture lands, either by sowing down artificial pastures, or by stimulating the growth of native pastures with artificial fertilizers. The methods of bringing about such an improvement would be discussed in detail later.

#### Distribution of Cattle.

Approximately 70 per cent. of the 14,000,000 cattle in Australia were maintained in Queensland and New South Wales. The areas of maximum concentration were found along the coasts of New South Wales and Queensland, commencing just outside the sheep country, and in districts with a rainfall of over 30 in. Under such conditions, cattle raising and dairying—compared with sheep,

were evidently so much more profitable as to practically exclude sheep. The next greatest area of concentration was Gippsland, and the western district of Victoria, and in northern portion of Western Australia. The influence of the big capital cities in increasing the cattle population for dairying and fattening was very marked. The influence of irrigation on cattle distribution was shown very clearly in the numbers of cattle found along the irrigated areas of the Murray Valley. Apart from those areas of maximum cattle distribution along the moister coastal regions and the irrigation districts, the remarkable feature was the fairly uniform distribution in all but the unoccupied areas of the continent. Cattle were found in considerable numbers from the arid interior with a 5 in. rainfall, to coastal Queensland, with over 60 in. of rain per annum. Similarly they appeared to thrive equally well with a temperature range of 85 deg. in North-western Australia to 55 deg. in the south-western corner. The ability of cattle to withstand both cold and heat, and their great travelling capacity, made them invaluable in the pioneering stages of a country's development. There appeared to be great possibilities for increased cattle production in the Northern Territory and North-Western Australia. Climatically those regions were similar to the areas in Queensland, where the cattle population was fairly dense. In both those territories there were vast unoccupied areas, a large proportion of which should ultimately carry cattle in density approximating that of Queensland. Artesian and sub-artesian water, and railway facilities had greatly helped the development of the cattle country in Queensland. The provision of transport facilities and water supply were the main factors which would greatly stimulate development in those undeveloped regions. Even in the arid interior—the driest portion of the continent—there were along old established lines of communication, e.g., the Oodnadatta railway line and the telegraph line to Darwin—a fair number of cattle. As their knowledge of the country improved, and as facilities for transport and water supply were provided, much of that arid interior would ultimately carry stock in numbers sufficient to repudiate the name of "desert" hitherto applied to that enormous regions.

To be continued.

## NEWS 1-8-25

On a visit to his parents in Adelaide, Mr. Bruce Anderson arrived from England by the Orama today. He graduated as a Bachelor of Science at the Adelaide University about two years ago, and for the past 18 months has been engaged in scientific research work at Cambridge University. He is making the visit during the long vacation, and will return to Britain in a month.

## 6-8-25

### ADVERTISER.

The R.M.S. Onitral, which arrived at Fremantle yesterday from London, has the following passengers for Adelaide:—Professor J. R. Wilton, Messrs F. Wilkinson, A. C. Kaines, F. T. Reimann, J. Clark, and H. C. Burton, Messdames A. C. Freeman, R. Ellis, Clark, Reimann, Wilkinson, and Wilton, and Misses McKenney, Frith, and Lovell.

## REGISTER 4-8-25

The last of the series of extension lectures on science and agriculture will be given this evening at the University by Professor A. C. V. Richardson, director of the Waite Agricultural Research Institute. The lecture will deal with the methods of increasing primary production, and will be illustrated by lantern slides.