

trees are sufficiently well established they must be protected and cared for, and a secure fence has therefore been placed round the entire Arboretum area. The University council has the assurance of the Mitcham District Council that it will co-operate with the University in its endeavor to establish the Waite Arboretum for the ultimate benefit of the public.

REG. 14-8-28
ECONOMIC RESEARCH.

Application to Agriculture.

In the presence of members of the Economic Society and visitors, presided over by Professor W. Jethro Brown, at the Adelaide University on Monday night, Professor A. E. V. Richardson (Director of the Waite Research Institute) gave an address on economic research and its application to the agricultural industry.

Professor Richardson said that there was an urgent need in Australia for continuous organized research on what might be termed the business and economic aspects of agriculture. Farming was an art which, on the production side, had undergone great development by the application of the teachings of science. Farming was also a business, and, as such, could be greatly aided and assisted by the application of economic principles. The financial problems of the farm had become more and more involved until they now ranked in importance with the financial problems of secondary industries. Had we in the past given as much attention to the economics of agriculture as we had to promoting closer settlement and stimulating production, some at least of the troubles which had confronted some branches of agricultural production could have been anticipated and avoided.

Agriculture, the speaker said, made adjustment of demand very slowly. One striking feature of agriculture as compared with industry was that it could not make its adjustments on production to demand so rapidly and accurately as could industry. The forces of Nature required for the purposes of primary production were much less amenable to control than those which played their part in secondary industry, and, therefore, the output was subject to great fluctuations. Thus, agriculture was hampered by weather conditions, plant and animal pests, limitations of soil and climate, by fixed periods of growth, by slow turnover, and other more or less uncontrollable influences. No matter how prudently farm crops and live stock might be regulated in accordance with forecasts of supply and demand, surpluses would be produced from time to time, owing to the bountiful yields in good seasons, and so Nature might upset the best considered plans for establishing a harmonious balance between production and consumption. Moreover, the supply of primary products did not readily respond to changes in prices, due mainly to the length of time taken to convert farms from one type of production to another, to the influences of habit and custom and the conservatism of farmers.

Law of Diminishing Returns.

Every farmer desired to reap the largest possible return from his expenditure of capital and labour upon his land. If it were not for the law there would be no limit to the expenditure of labour. (1) Cost accounting on individual farms; and (2) farm surveys with estimations of receipts and expenditure combined with a critical study of farming methods. Cost studies were of value to the farmer and the general public. If the farmer made full use of them he could adjust his farm operations to those enterprises which would yield him a satisfactory profit. Cost studies also informed the public regarding the cost of production and the added cost before they reached the consumer. Through the organization of farm surveys it was possible to work out the factors for successful farm management, by comparing in detail the practices of the successful men with those of the unsuccessful.

Marketing Problems.

The working out of a more efficient system of marketing, the professor went on, must go hand-in-hand with an intelligent adjustment of production to market demand, so as to avoid periods of over-production with great loss to the farmer, and periods of under-production, which were unsatisfactory to the consuming public. Most agricultural products pass through many hands before they reach the consumer. These services varied considerably in cost and importance for each farm commodity. There was urgent need for the study of mechanism of the process with a view to define the services of the various units of the machine, and endeavouring to measure the cost of their services, then comparing the estimated cost with the remuneration actually received, and finally determining whether there could be any economies in the working of the machine. Another aspect of marketing research covered the question of price fluctuations, price stabilization, and price forecasting. The chief aim in co-operative marketing was not to obtain for producers the profits of independent merchants, but rather to contribute to and effect better methods of marketing by proper grading of farm products and standardization of grade and pack, which were essential to efficient

Continued

Organized Economic Service.

In view of the important developments in applied economic research on agriculture in other countries, and the importance of agriculture to our national welfare, there appeared to be an urgent need for the establishment of an organized economic service which will provide for continuous research by trained investigators, not only of the major economic problems affecting the welfare and permanence of our agricultural industries, but which, by providing the community with the right background of economic information, would guide intelligent programmes of production and land settlement, increase farm efficiency, promote effective marketing, and reduce costs of production. The economic societies throughout Australia could, by their active support, greatly assist in materializing such a service.

ADV. 14-8-28

ECONOMIC RESEARCH AND AGRICULTURE.

Lecture by Professor Richardson.

Professor A. E. V. Richardson, director of the Waite Agricultural Research Institute, delivered an address to the Economic Society of Australia at the Adelaide University on Monday evening. His subject was "Economic Research and its Application to the Agricultural Industry." He said there was an urgent need in Australia for continuous organized research on what might be termed the business and economic aspects of agriculture. One of the serious post-war economic problems was the widespread depression in the agricultural industries throughout the world. In Great Britain, the United States, and Europe abundant evidence was available to show that the labor income of the farmer was inadequate, either in comparison with pre-war standards or in comparison with the rewards from the secondary industries. So far as Australia was concerned, the depression observed in other countries had been felt in all agricultural industries. Since the war these industries had been faced with periodic crises which sooner or later had called for Commonwealth or State intervention. The appreciation for the need for economic research in agriculture had been shown by the rapid growth in the last decade of agricultural economic research stations throughout the world. These research stations were for the most part associated with universities, Government departments, and agricultural colleges. The United States had advanced further in research in this field than any other country, and during the last year the appropriation for the Bureau of Agricultural Economics exceeded one million pounds. Important work in agricultural economic research had also been undertaken for many years in Continental countries, notably in Denmark, Sweden, and Germany. An Agricultural Research Institute had been established at Oxford, and since the war the scope of the work had been greatly extended. The Canadian agricultural colleges had been active in developing economic research, and the Province of Ontario had a highly developed system for investigational work in agricultural economics. In South Africa, a division of agricultural economics, marketing and co-operation was established in 1925, and in 1926 a branch of farm economics was established by the New Zealand Department of Agriculture. Australia was the only important agricultural country of the world in which no department of agriculture or university had an organized division of agricultural economics.

Objective of Research Worker.

The main objective of the research worker in this field was to furnish farmers with a background of economic information which would guide intelligent programmes of production, increase farm efficiency, and decrease production costs. But apart from this direct service to the farmer was a task of much wider scope, the investigation of the major economic problems in the agricultural industries in relation to the nation as a whole. Closely associated with this aspect of economic enquiry was the determination of the area of land required by settlers to raise sufficient produce to maintain a decent standard of living. Another important economic problem was that of handling unavoidable surpluses, which were so disastrous to stabilised agriculture. Finally, there was the important problem of marketing. Marketing was as truly a part of production as the growing of crops, for crops had no value until they could be put into the hands of those who needed them. The acquiring and disseminating of knowledge of what to produce and how best to market it was as much needed as the knowledge of how to produce, whether the matter was viewed from the standpoint of the farmer, the middleman, or the consumer. Such knowledge could not be gained from a study of the mechanics of marketing alone. It involved research in agricultural, statistical, and economic science by men trained in their respective lines who had a knowledge of working conditions. The three primary agents of production were land, labor, and capital. The adjustment of these three agencies in the right proportion to secure maximum returns was the essence of successful agriculture. The farmer's object as a business man was to obtain the greatest possible profit from his operations. His ability as a manager was measured by the amount of land, labor, and materials which he could use efficiently. Usually his income was limited by some factor, land, labor, or capital. Cost studies were of value to the farmer and the general public. If the farmer made full use of them he could adjust his farm operations to those enterprises which would yield him a satisfactory profit.

The Survey Method.

In the United States the survey method of obtaining and analysing farm management data had been extensively used. These surveys enabled the economic investigator to answer important problems

relating to farm management and rural welfare:—1. The determination of the factors that had the greatest effect in raising or lowering farm profits, by comparing the business organization of the successful farms with those of the unsuccessful. 2. The determination of the proportion in which land, labor, and capital should be combined in each locality to give the highest returns, and the capital that a farmer should possess to undertake, with a reasonable chance of success, a farm of any given size, in any given locality. This was a very important problem in connection with migration and land settlement. 3. The determination of the extent to which improved practices, for example, top-dressing, use of supplementary crops, subdivision, increased use of livestock and feeding, could be carried on economically. 4. The determination, under the conditions that existed on the average farm, of the cost of production of farm commodities and livestock. 5. Finally, the determination of the standard of living of the farmer and farm laborer, in comparison with that of the industrial classes.

A Local Illustration.

An excellent local illustration of the cost of production of wheat might be given from the records of the Turrefield farm, which was run on purely commercial lines by the Department of Agriculture of South Australia to determine the cost of production of typical products of the district. The investigation showed clearly that hay growing was not a paying proposition, dairying and pigs were unprofitable, and the profits from oats and barley were problematical. If profits were to be maintained at as high a level as circumstances permitted the farm had to be confined to wheat and sheep. If similar investigations could be made on a large number of farms in each of the different climatic regions of the country, accompanied by detailed comparisons of the practices and methods of the most successful farmers as compared with those less fortunately situated, a great stimulus would be given to the study of the essentials of farm management and of the principles underlying the best possible utilisation of land, labor, and capital in production. The general contention was that farming could not afford higher wages. The multiplication of small holdings would mean increased population on the land and a larger product from it, but at the same time it would mean a general lowering of the standard of living to those engaged in the farming industry. The second direction in which change might proceed, was diametrically opposed to the foregoing and was foreshadowed by Sir Daniel Hall. It consisted in the development of large scale production either on arable farms, where the work would be done mainly by machinery, thus turning the farm laborer into an agricultural mechanic, or on strong land grass farms, where the labor would consist of stockmen and shepherds. An example of the results of a survey of the financial aspect of wheatgrowing on nine of the leading farms in Victoria was recorded by the Victorian Department of Agriculture in 1921, in a report on the inter district farm competition, conducted by the Royal Agricultural Society of Victoria. The survey disclosed the fact that on nine of the leading farms in the Wimmera district of Victoria the competitors earned for the three periods, 1918 to 1920, 5 per cent. on their total capital investment, and in addition a labor income ranging from £285 to £904. Through the organization of farm surveys, it was possible to work out the factors for successful farm management, by comparing in detail the practices of the successful men with those of the unsuccessful. Such a survey would reveal the organization of the farms that were making big profits and those that were not, and it would also reveal the reasons why these latter farms were not making profits. In the United States there were over 400 trained investigators now working on this type of economic research, and the surveys had led to marked improvement in efficiency. In the past the vast amount of experience obtained by farmers had been almost entirely lost because there had been no organized agency for systematically studying the data, and applying the lessons so learned to the further improvements of farm practice. That was particularly true on the business side of farming—an aspect which had to be considered of first rate importance—since agriculture had to be profitable if it was to be permanent.

Marketing Problems.

The problem of marketing could not be avoided in his remarks, for there was an inseparable relationship between marketing and production; in fact, marketing was a part of the production process. A great deal of attention had been devoted to research into marketing problems in the United States, Canada and Europe. This research had so far been concentrated mainly on the study of the mechanism of marketing, rather than on the investi-