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To conclude that enterprising behaviour reflects the possession, not only of superior abilities, but also of particular attitudes, which are a response to past experience, in no way impugns the general position put forward in the second section of this article. It is a psychological response that is involved, not a response to the logic of economics and technology. But this conclusion does show that farmers' differing entrepreneurial skills and attitudes are not immutable things, the importance of which may be recognized but about which nothing useful can be said. They are subject to change, reflecting as they do the current and the past economic and cultural climate, and, in this aspect are a suitable subject for study and for consideration in the formation of policy.

WARTIME AGRICULTURE IN AUSTRALIA.

The story of agriculture in Australia and New Zealand during World War II and the immediate post-war period is the subject of an interesting book recently published by the Food Research Institute of Stanford University.¹ The Australian portion of the book was written by three agricultural economists (J. G. Crawford, C. P. Dowsett and D. B. Williams) and one agricultural scientist (C. M. Donald), all of whom were intimately concerned with the wartime administration of Australian agriculture. The official wartime historian for the New Zealand Department of Agriculture (A. A. Ross) was responsible for the section devoted to New Zealand. This comment will be concerned mainly with the major section dealing with Australia.

This is the first detailed description of wartime agricultural policy in Australia and, therefore, of the historical background responsible for some of our present problems. As such alone, this book deserves to be read by those interested in our rural industries. It should do much to stimulate discussion on agricultural policies; a subject which has received much less attention than it deserves and much less than it receives in many other countries. Apart from its particular interest to Australian readers, the book is worth recommending. The authors have told their story well and in a very pleasing and relaxed style. Lucid, theoretical argument, agricultural description and discussion of wartime developments are all well combined.

The order of treatment in a book dealing with wartime agricultural developments poses some essentially insoluble problems. If a strictly chronological order is adopted, frequent changes from one industry to another are unavoidable. If industries are discussed separately, there is much duplication of experiences and problems common to the whole rural economy. The authors have adopted a compromise order of

¹ *Wartime Agriculture in Australia and New Zealand, 1939-1950*. J. G. Crawford, C. M. Donald, C. P. Dowsett and D. B. Williams; and A. A. Ross. Stanford University Press, Stanford, 1954. Pp. xiii, 354. \$7.50.

treatment which is easy to follow but entails a certain amount of repetition. The introductory chapter discusses the pre-war pattern of Australian agriculture and makes some comparisons with agriculture in the United States; the latter being designed to increase the appeal of the book to American readers. The general agricultural development during the war years is then described. This is followed by a discussion of trends in selected rural industries. The next two chapters discuss the shortages of manpower, fertilizer, machinery and other essential farm materials, which developed in the latter stages of the war, and their impact on the farm sector of the economy. An all-too-short chapter on wartime agricultural price policy follows. It is disappointing that the authors' comments on this important subject are not concentrated entirely in this one section. The authors deal next with problems of wartime disposal and distribution of Australian farm products. The two final chapters consist of an assessment of the wartime administration of agriculture as a whole and a discussion of post-war developments and policy up to December, 1952.

One of the shortcomings of the arrangement of the book is that the sections on Australia and New Zealand are completely separated. Some comments on similarities and contrasts in the wartime experiences of the two countries would have been desirable. In fact, the separation of the two sections is so complete that it is difficult to find the table of contents relating to the New Zealand section. This is on a page in the centre of the book and is not referred to in the first section at all.

* * *

The difficult situation of Australia's farming industries in the pre-war decade is an essential part of the story of wartime agriculture. After a long period of expansion and profitable farm prices, with only minor recessions in the earlier part of the century, the 'thirties produced a sharp setback. Farm prices tumbled, and stayed at low levels; for the first time for many years farm income per worker was distinctly lower than that of workers in other employment. In spite of considerable government financial assistance rural indebtedness increased by 20 per cent. between 1927 and 1939. This period of crisis brought to light certain basic weaknesses in land settlement conditions, land use and methods of crop and animal husbandry. It also became clear that funds and facilities for agricultural research and extension were inadequate. Most of the government measures taken to help farmers related to the provision of stop-gap and palliative measures such as subsidies, specialized credit and moratoria programmes. By 1939, the decade of the 'twenties, with its optimism and plans for expansion, was not only far away but its spirit seemed to have disappeared for ever. In its place there was a stress on the virtues of "security", "stabilization", and "orderly marketing". In this situation the outbreak of war in Europe inevitably gave rise to further fears of surpluses and unprofitable prices. The loss of overseas markets for our rural exports, resulting from the war and its accompanying shipping shortages, became a very real threat. This goes a long way towards explaining the desire to secure those long-term contracts which were subject to considerable criticism in the post-war period. Long-term agreements were signed with the United Kingdom for the sale of exportable surpluses of wool, meat, dairy products, eggs, sugar, dried and canned fruits.

During the first two years of the war "farmers continued to produce whatever they had produced in pre-war years, and indeed there was no reason clear to them why they should do otherwise. The sole question impressing itself on the country was what contribution of men and munitions could Australia make toward the defeat of Germany. Agriculture had no additional calls made upon it, and the problem seemed to be that of the sale of her commodities produced in pre-war quantities and probably in excess of needs". (p.27.)

The entry of Japan into the war brought the scenes of conflict much nearer to Australian shores and produced a much more intensive war effort. Armed services' enlistment and employment in munitions and other direct war industries increased very rapidly—at the expense of less essential secondary industries and of agriculture. By 1943 the problems of the rural industries had changed greatly. Most of the earlier surpluses had by now disappeared as a result of increased civilian, service and export demands. Their places had been taken by shortages of manpower, equipment, materials and farm products. Agriculture became a war industry with more "priority", but also with closer Government control over its resources.

The manpower problem became acute only after Pearl Harbour. In the first two years of the war the farm labour force remained near pre-war levels. In the next two years it declined very rapidly. By May, 1943, the permanent male labour force in agriculture was 20 per cent. below the pre-war level, and the number of seasonal and casual workers had declined by more than 50 per cent. This depletion meant that labour was necessarily concentrated on the immediate problems of current output; maintenance of fences, buildings and other improvements had to be neglected. In addition, by 1943 there was a call for greatly increased production in many rural industries, partly to meet the additional demands of the American armed services in the Pacific. It became clear that rural manpower had been reduced to a level which was not adequate to meet the demands made upon it. Attempts to return manpower to agriculture were much less successful than at first envisaged. The employment shortage was not relieved until the end of 1944. The authors contend that the return of manpower to agriculture was a case of too little and too late. "Australia over-depleted its rural labour force and action to redistribute manpower between the competing demands failed to recognise the vital claims of rural industry until the position had become critical." (p.100.) However, as the authors admit, this is partly hindsight. "It would be presumptuous to suggest that recruitment into the services should have been on a more modest scale during 1943, when Japan had a foothold in New Guinea, was threatening the Australian mainland, and was bombing our northern towns (p.105).²

² The chapter on rural manpower contains one misleading comparison (Chart 7, page 93), which should be commented upon. This chart purports to show a much greater proportionate reduction in the rural labour force in Australia between 1939 and 1943 than in the United States. In the chart the percentage decline of the permanent male farm labour force in Australia is contrasted with farm employment figures for the United States, which include (a) female farm workers and (b) boys under fourteen years of age who are working a certain minimum period on farms. These two categories of farm workers increased greatly during the war years, both in the United States and in Australia. If these two groups are deducted from the United States figures this difference between Australian and U.S. agriculture disappears.

The manpower shortage was only one of many shortages the Australian farmer had to contend with. Australian fertilizer consumption, for instance, remained close to the pre-war level during the first two years of war, then dropped to less than half that figure in 1944, and did not return to the pre-war level until 1946-47. This is in glaring contrast to the fertilizer position in other Allied countries. In the United States, for instance, fertilizer consumption had risen 50 per cent. above the pre-war level in 1943, and by 100 per cent. in 1946. The desperate fertilizer shortage in Australia was the result of the seizure of Nauru and Ocean Island by Japan in August, 1942, which deprived us of a secure supply of phosphate rock—an essential ingredient of superphosphate, the most important fertilizer used here. The shortage of nitrogenous and potassic fertilizers was almost equally serious as a result of a marked curtailment of imports. Nor were shortages confined to fertilizers. Tractors, which in the pre-war period were mostly imported from the United States, were in particularly short supply. The wartime rate of increase in the tractor force was halved, compared with pre-war rates of growth. Locally-produced machinery and other farm requisites such as fencing materials, piping and galvanized iron, were also virtually unobtainable because of the diversion of steel fabricating plants to the production of munitions. The distribution of most of these farm requisites, and of many other scarce products such as bran and pollard, were brought under Government control. The Government allocation of these items, while subject to considerable criticism, did achieve its main object of channelling limited supplies to the centres of greatest need. For instance, from 1942 onwards, fertilizer allocation between various crops was made in accordance with their relative priority in the initial farm production programme. The authors contend that the distribution of these farm requisites "was still far from perfect in relation to real needs and priorities, but the reduction in output due to inadequate supply was concentrated in the less essential rural industries" (p.118).

Although all farm industries suffered from similar shortages and other common problems, a wide divergence developed in the wartime trends of different industries. There was a very rapid expansion of production in a number of fields which previously had been of minor importance in the rural economy. For instance, flax acreage was extended from 2,000 acres in 1939-40 to 61,000 in 1944-45, mainly at the request of the United Kingdom. Rice acreage increased from a pre-war level of 23,500 acres to over 40,000 acres. Potato production was increased by 150 per cent., and other vegetable acreages were also greatly expanded. In most cases the expansion was stimulated by guaranteeing farm prices at attractive levels, coupled with priority allocations of manpower, fertilizer and other materials during the latter war years.

However, in other rural industries the story of the war years does not read equally well. In the case of sugar, production declined slowly in spite of expanding needs. Shortages of ammonium sulphate, tractors and manpower, the biennial nature of the crop, and the reluctance of Governments to abandon the severe peacetime acreage restrictions of the industry, even as a temporary wartime measure, are cited by the authors as the major factors responsible for the decline.

The sheep industry entered the war with prospects of accumulating large surpluses and with an uncertain overseas demand for mutton and lamb—depending largely on the availability of shipping space. The wool

acquisition scheme which was operated throughout the war years provided Australia with an average price of 13.4375d. per lb. greasy, for the whole clip (later raised to 15.45d.). This scheme was a brilliant technical achievement requiring the definition of over 1,000 different types of wool; the classification of all wool within these types, and the valuation of the different types so that the overall average price appraised for the clip became equal to the price paid by the United Kingdom. The authors are critical of the rigid price guarantee given to wool growers by the wool acquisition scheme. As the guarantee applied irrespective of the level of production, the scheme—coupled with the difficulties associated with wheat growing in these years—resulted in a substantial change-over to sheep in the wheat belt, and discouraged a switch back to wheat in the later war years.

In addition, sheep meat prices were not used to guide production as they should have been. After 1942, when wool became a more and more embarrassing physical surplus, the growing demand for meat was so urgent that rationing on the home market had to be introduced. Yet the trend in the relative prices of wool, lamb and mutton after that date gave no encouragement to increased meat production. The authors do not believe that the price mechanism could have been used successfully to divert resources from the sheep industry as a whole for the following reasons:—(a) For the most part wool is produced as a joint product with meat, and meat production gradually became important. (b) The wool industry was generally independent of government intervention, and resisted any attempt at regulation. (c) There was a tendency for wheat growers to turn to wool production because of the smaller labour and machinery requirements of sheep farming.

The wheat industry had a dramatic reversal of fortune during the war. Very embarrassing surpluses of wheat were suddenly converted into equally dramatic shortages. In 1939, the loss of export markets plus a very large crop taxed storage facilities severely. Large crops in the succeeding two years added to the difficulties. A licensing system was introduced to reduce wheat acreages, but neither that nor the shortages of superphosphate, machinery and manpower prevented the increase in annual carryover stocks of wheat, which reached a record level of 154 million bushels in November, 1943. One of the measures used to reduce these growing accumulations of wheat was the Commonwealth subsidy on wheat for stock feed at the rate of 6d. per bushel. This subsidy had the additional aim of stimulating the production of pig meats and eggs—two groups of products for which there was a greatly increased wartime demand. The subsidy was largely responsible for an increase in the use of wheat as stock feed from less than 15 million bushels in 1941-42 to over 40 million bushels between 1943 and 1945. The cheap stock feed policy must be regarded as a very successful wartime expedient.

A measure used to reduce wheat acreages at the time when rising wheat stocks were becoming embarrassing was the quota scheme which guaranteed a higher price for the first 3,000 bushels of a grower's crop than for any excess above this level of production. It had the subsidiary aim of providing financial support for small-scale farm living units in an industry which had been operating at very unfavourable prices for the previous decade. This scheme must have had some effect

in keeping small inefficient producers in existence, at a time when sufficient alternative employment opportunities existed to facilitate a switch to other industries. It would appear that a good opportunity for increasing the efficiency of wheat production by increasing the size of the average firm in the industry was missed. This is a criticism not voiced by the authors, although they appear to disapprove of the quota scheme. In any case they feel that the scheme was continued for an unjustifiably long period.

Wheat stocks declined from the record level of 154 million bushels in November, 1943, to only 12 million bushels two years later. Lower wheat acreages, drought conditions, the increased use of wheat for stock feed and overseas food demands were some of the factors responsible for this rapid change. Efforts to raise wheat acreages in subsequent years were only partially successful. While wheat acreages expanded from the low wartime levels, the expansion was disappointingly small. This was probably one of the most vulnerable aspects of war and post-war agricultural policy. The authors are in agreement with most of the comment which has since been made on this point. " . . . there is no doubt that the failure to exceed pre-war (wheat) acreages, even with extremely favourable markets, was attributable, not alone to limited supplies of fertilizer and machinery, but also to the continuation of the price differential whereby prices on the home market were held at levels well below world parity at a time when wool prices were to assume a marked advance" (p.61).

Another industry with a mixed war and post-war record was dairying. Throughout the war years an increasing supply of dairy products was urgently required for the United Kingdom, the services and the civilian population. The dairy cattle population fell slowly but steadily throughout the war years in spite of sustained Government attempts from 1942 onwards to increase dairy production. The writer is doubtful that this decline was the result of lack of incentives as implied by the authors. The reasons for rejecting this view are twofold. Firstly, contrary to the figures shown in Table 10 (p.128), the price trends in the most important section of the dairying industry did not compare unfavourably with those in other rural industries during the early war years, and after June, 1943, the comparison was distinctly favourable to dairy farmers outside the liquid milk markets (who were responsible for the largest proportion of the Australian dairy production).^a The drain of farmers (and farms) from dairying took place under a more favourable price and income situation for dairying than existed in the pre-war period. As the authors point out, the attractive employment opportunities offering outside dairying in the war years provided a contrast to the poor amenities, inadequate housing conditions and constancy of work in the dairying industry. It would probably have been very difficult to counteract these factors with price incentives alone, especially at a time when shortages prevented improvement in the conditions of work on dairy farms.

^a See note at foot of next page.

Secondly, a substantial part of the decline in dairy production during the war years took place in marginal dairying areas where dairy production had only been taken up in the 'thirties in response to depression prices for wheat, meat and wool. Given the wartime increases in other farm prices and the improvement in employment opportunities, many of these farmers would have left the dairying industry almost irrespective of any changes in the prices of dairy products. As the authors suggest, Government attempts to increase dairy production by the payment of subsidies and the special allocation of superphosphate were left too late. However, it would have been very difficult to keep milk production at pre-war levels, let alone increase output to meet the increased demand for dairy products in the face of an exodus of marginal producers from the industry.

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Wartime agricultural price policy is probably more severely criticized in the book than any other major aspect of agricultural administration during the war years. Until 1943 the price control authorities granted price increases to agricultural producers only to the extent needed to counteract cost increases since the pre-war base period. It is argued that this placed agricultural producers at a disadvantage in the struggle for resources as the base period used (*i.e.*, the immediate pre-war period) was an unfavourable one for agriculture. On the other hand, it is possible to point to the surpluses and the marketing problems which existed in so many major rural industries in the early war years when incentive prices in agriculture seemed uncalled for—unless future war developments could then have been foreseen.

³ The first five columns given below are from Table 10, with the original headings. The sixth and seventh columns are price relatives for overall average returns to manufacturers of butter and cheese respectively, taken from Table XX (A) of the book:—

Year.	Price Index Numbers.					Return to Manufacturers.	
	Wholesale Prices.	All Farming.	Agricultural.	Pastoral.	Dairying and Farmyard.	Butter.	Cheese.
1939-40	104.7	98.4	89.3	102.1	106.6	107.5	104.2
1940-41	114.0	104.6	100.5	108.6	102.5	108.3	105.5
1941-42	124.2	109.8	102.9	115.8	107.5	110.4	115.7
1942-43	137.3	122.4	118.5	127.4	117.5	124.5	134.7
1943-44	139.6	130.7	133.1	132.7	121.3	144.3	153.8
1944-45	140.5	140.7	163.7	132.0	120.0	147.9	155.1
1945-46	141.2	140.1	160.2	133.1	124.0	155.0	161.4

(Average 1936-37—1938-39 = 100.)

These price relatives show that butter and cheese prices to manufacturers increased as fast as returns to most rural producers during the early war years, and considerably faster from 1943 onwards. Changes in returns to cream suppliers would be very similar to those to butter manufacturers, as costs of manufacture usually constitute a small and fairly constant proportion of the wholesale price of butter. The writer is not certain what causes the discrepancy between butter and cheese price relatives and the dairying and farmyard index. One factor may be the less pronounced rise in prices paid for fluid milk during the war years. From the point of view of dairy farmers' incomes this slower rise in fluid milk prices is counteracted to some extent by the increase in the proportion of total milk consumed in liquid state during this period and the price increase dairy farmers obtained from the switch to the fluid milk market.

The authors also point out that while the production goals set by Commonwealth Food Control in the later war years were used to good effect by Government agencies as a guide to the allocation of manpower, fertilizer and scarce materials, the Prices Commission took little or no cognizance of the goals. The Prices Commission's whole approach was based on minimizing price rises of all commodities entering the "C" Series Cost of Living Index. "At no time was there an effective acceptance of the principle that prices could and should be used as a purposeful instrument of stimulating production of particular commodities at the expense of others" (p.161). In reply to this argument it is possible to point to those cases where incentive prices were offered to farmers for increasing production, such as, for instance, in the case of flax, potatoes, vegetables and cheese. It seems that price incentives were used only in those cases where production could be significantly affected within twelve months or so. In view of the rapidly changing demands of the war situation, this policy may have seemed more justifiable then than it seems to us now. The two major defects of Australian agricultural price policy in the war and post-war years were probably the low prices offered for meat relative to wool after 1942, and the low wheat prices paid from 1944 onwards when an expansion in wheat acreage became increasingly desirable.

The concluding chapter of the Australian section was written at a time when the grave dangers resulting from the lagging expansion of our agricultural production were first realized. The authors provide a very well documented case of the need for such expansion, namely, to supply the increasing quantity of foreign exchange required by a rapidly growing population. However, the relative importance to be attached to the different factors responsible for this stagnation of Australian agricultural production remains somewhat obscure. At one point the authors maintain that "the continual shortages of materials and equipment were a major factor, probably the greatest, in the stagnation of production" (p. 178). The shortage of farm labour is also regarded as a contributory factor. These shortages were not the result of lack of farm purchasing power. "In this (post-war) period it was clearly not lack of financial resources that inhibited production: net farm incomes as a ratio of national income steadily increased and showed a marked improvement over war and pre-war experience" (p. 178). However, in an earlier section on agricultural price policy a different view is taken: "There is little doubt that the continuance of this cheap food policy in the early post-war years, without accompanying effective restraint on other prices, contributed in no small part to the slow recovery of Australian agriculture after the war (pp. 128, 129). The authors' attitude to the problem is perhaps best summarized as follows:—"A freer price policy may have added incentive, yet it is doubtful whether private investment would have made much more headway than it did in the face of material shortages and the failure of labour to return to the farms" (p. 180). While it may perhaps have led too far afield, one feels that a more detailed discussion of the factors responsible for the materials and labour shortages in the post-war years would have been desirable. Such a discussion would be especially valuable if it provided some explanation of the great discrepancies in the supply of farm requisites to Australian farmers and that of other countries such as the United States, Canada and Great Britain where

agricultural production has increased so much more rapidly in the war and post-war period. The reasons for the superphosphate shortage in the immediate post-war period were, of course, peculiar to the countries relying on phosphates from Nauru. However, other products such as wire, galvanized iron sheets, pipes, steel posts and many agricultural machines were in equally short supply in Australia. The authors state that "steel found its way into housing and industrial development rather than into industries supplying agriculture" (p. 178). This was presumably also true of the other Allied countries where agricultural production increased so markedly.

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In retrospect, what can be said of the record of Australian wartime agriculture and of those concerned with achieving the necessary adjustments in production, processing and distribution of farm products? It is to the credit of the authors that they are critical of many aspects of wartime agricultural policies, even where this amounts to a criticism of their own activities during this period. Some of the mistakes which were made have been mentioned earlier. In addition, the authors feel that rationing was in many cases introduced too tardily and that the reduction in civilian consumption was not severe enough, given the urgency of other demands for the limited supplies available. The authors are also critical of the operations of the Australian Agricultural Council and of the administrative guidance provided at the Federal level in agricultural matters. Up to 1943 there was a serious division of authority between the Department of Supply, which was concerned only with defence needs, and the Department of Commerce, which was responsible for marketing problems. Perhaps one of the gravest mistakes of wartime administration was the dispersal of scientific personnel which took place in the early war years. "The use of scientific agricultural personnel is not one of the phases of the war effort of which Australia can be proud. A tighter control of these men would have been an immense aid to our food production programs" (p.169).

On the whole, however, the story told in this book is one of considerable achievement of which both farmers and those concerned with the operation of the rural economy during World War II can be justifiably proud. Where requirements were known sufficiently in advance, the necessary shifts in production were generally made, as witnessed by the expansion of production of potatoes, vegetables, flax, rice, cheese, eggs and pigmeats. Another successful part of the agricultural war programme was the tremendous expansion of canning and dehydration facilities. The demand for processed foods arose partly out of the desire to save shipping space and also out of the need to supply Australian and Allied armed forces in forward areas. Processing facilities for meat, vegetables, milk and eggs were all very greatly expanded. The allocation of scarce farm materials and of foodstuffs was on the whole effectively conducted. Perhaps in many ways the most difficult problem was posed by industries such as apples and pears which suffered from a serious "surplus" problem in the early war years owing to their low priority in United Kingdom food needs. In this case the Commonwealth Government acquired the whole crop and allowed only that portion of it to be marketed which could be processed or disposed of on the local market. This action protected apple and pear growers—especially in Western Australia and Tasmania—from serious financial hardship. (F. H. GRUEN.)