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BOOK NOTES.

Economics of Agricultural Production and Resource Use. Earl O. Heady, Prentice-Hall, Inc., New York, 1952. Pp. viii, 850. \$9.75.

Earl O. Heady, Professor of Economics at Iowa State College, is one of the leaders of the "new school" of agricultural economists in the United States. The two most prominent traits of this group are a preference for Walras' formulation of value theory as opposed to the Marshallian approach, and their considerable refinement of the statistical and econometric tools of investigation. In both these respects this book typifies the outlook of the "new school" and differs sharply from text-books written by the older group of agricultural economists in the United States. This should not be taken to imply, though, that the mathematics of *Economics of Agricultural Production and Resource Use* is formidable—in fact, Heady has very ably expounded complex ideas of economic theory with little recourse to any terrifying mathematical symbols.

Heady's book has many merits. It is the first text-book on agricultural economics published—at least since World War II—which is really up to date, and it incorporates most of the research findings of recent years. Although intended primarily as a text-book, it will also be valuable to the initiated. Unfortunately Heady's extremely apt comments on current research methods and problems are scattered through the whole volume, but the search for them will prove rewarding. *Economics of Agricultural Production and Resource Use* is one of the most thorough and encyclopaedic text-books on agricultural production economics which has yet been published. This may, however, turn out to be a mixed blessing. Although the wealth of illustrative and explanatory material will prove useful to United States' college teachers, it will be somewhat tedious for students and others who are interested chiefly in Heady's views. There is a profusion of arithmetic and geometric proofs for practically every principle of production economics—usually followed by one or two agricultural applications. This in turn is frequently followed by some slight modification or generalization of the principle and a further dose of agricultural examples.

The book is divided into four parts. Part I is a brief introductory chapter on the scope and nature of production economics. Part II—which occupies almost half the book—consists of the most comprehensive exposition of the static theory of the farm-firm (assuming the existence of perfect knowledge) to be found anywhere. However, not all of the 400 pages of Part II are devoted to subjects normally dealt with under this heading. For instance, most of the subject matter discussed in Chapter 10 is normally regarded as falling outside the field of static production economics. In this chapter Heady takes issue with some of the methods of land classification now used in the United States. Other classification problems are also dealt with, such as the inadequate stratification often used by farm management research workers, which tends to obscure the existence of such well-known relationships as the law of diminishing returns.

In Part III uncertainty is introduced formally. Heady makes the familiar distinction between risk and uncertainty, and then proceeds to discuss the effects of uncertainty on resource use, farm size and factor remuneration. Management is regarded as necessary only in an uncertain world, and the role of management is discussed in this context. This section relies heavily on the contributions to the theory of uncertainty of Gale Johnson, Hart, Hicks, Marschak and, of course, on Heady's own studies such as, for instance, his paper on diversification as a means for stabilizing income (*Journal of Farm Economics*, Vol. 34, No. 4).

The last part (Part IV) of the book deals with aggregate aspects of farm production. The tenure systems of the United States, the principles governing the location of production, the supply function for agricultural products singly and as a whole, an appraisal of the efficiency of United States' agriculture, and finally, discussions of conservation and technological change in agriculture, are the problems dealt with in the individual chapters which make up this last section of the book.

Professor Heady's great abilities are well illustrated in his treatment of these important issues, but his limitations also become apparent. When the discussion relates only to the exposition of certain principles—as, for instance, in the chapters on inter-regional specialization and on the supply curves in agriculture, it would be difficult to find many economists who could equal Professor Heady's skill, let alone improve upon it. However, when institutions or certain facets of the economy are appraised from an economic point of view, Heady's approach becomes unsatisfactory. There are three such appraisals in the last part of the book. For instance, there is the appraisal of the leasing and tenure systems of the United States. Heady's views on this subject have been published previously. It is here only necessary to say that the tenure systems are judged by one criterion alone, and that is economic efficiency, defined statically as the equalization of (1) marginal costs and revenue and of (2) the marginal value products for each resource in all its various actual and potential uses. It follows by definition that a share-farmer who receives half the gross income from a farm, but pays all variable costs, will not maximize net income at the same level of output as an owner-operator on the same farm. Hence, Heady objects to this type of tenure on grounds of inefficient resource allocation. However, the share-farmer's lower income and the landlord's insistence on a certain level of output may in fact keep the share-farmer's output at the ideal (i.e. owner-operator) level. The most important evil of tenure systems in the United States—as in Australia—is the tenant's lack of security which encourages soil-depleting practices. While this particular defect of the tenure system is also mentioned by Heady, his discussion on this subject seems to lack a sense of proportion and he tends to regard various defects of the tenure system as equally pernicious—even though some are very much more obvious and of much greater practical importance than others.

Similarly, on the subject of the efficiency of the agricultural sector of the economy, Heady sets up highly theoretical and practically misleading criteria. Attainment of maximum economic efficiency depends on certain well-known static criteria which he interprets more strictly

than they have even been interpreted before. "It is not sufficient that capital in broad aggregate and labor in broad aggregate be allocated between farms in a manner that substitution rates are equal. These same conditions must be attained for each particular form of capital such as tractor fuel, fertilizer, repairs, and other specific resource items. In the same manner, particular price and physical ratios must be equated. The feed/milk price ratio must equal the milk/feed transformation ratio. The corn/protein substitution ratio must not only be equal between farms but also equal the protein/corn price ratio. The machinery/labour substitution ratio must be equal between farms producing wheat only and also between one farm producing wheat and another producing flax" (pages 712/713). According to such a minutely detailed definition, no industry can ever be efficient in a changing world.

T. W. Schultz's original article on the efficiency of United States' agriculture used the criterion of resource allocation in a considerably looser way—his main purpose was to show that United States' productivity could be considerably increased by reducing the labour surplus in United States' agriculture, especially in the old southern areas, and by increasing capital investment there. However, if we adopt Heady's definitions, very little can be said about the inefficiency of agriculture which would not also apply to every other industry in the economy.

In addition there is no proper recognition of the dynamic aspects of the efficiency problem in Heady's two chapters devoted to agricultural efficiency. In fact, the relevance of changes in input-output ratios is implicitly denied by labelling this "technical" as opposed to "economic" efficiency.

Some years ago Schumpeter produced a brilliant defence of monopolies in a dynamic world. He argued that an industry or an economy which never achieved maximum efficiency in terms of resource allocation could yet be much more technically progressive and productive than an industry (or economy) which fulfilled every one of the maximizing criteria of the Robbins-Heady school. It is a great pity that Heady chooses to ignore this argument—and that he excludes technical innovations and their dynamic implications from his discussions of "Aggregate Aspects of Production" (at least until he reaches page 794). For these dynamic aspects are crucial for any discussion of the problems of agriculture in a developing economy.

In spite of these criticisms of sections of Part IV of the book, *Economics of Agricultural Production and Resource Use* must be regarded as an excellent book—though certain changes in emphasis and more condensation of the static theory of the firm could make it even better.

Year Book of Agricultural Co-operation, 1953. Horace Plunkett Foundation, Oxford, 1953. Pp. 345. 21s. (Stg.)

The 1953 issue of this annual publication contains 42 articles covering agricultural co-operation in 38 countries, together with an annual supplement to the Horace Plunkett Foundation's *Bibliography of Co-operation*. The contributors discuss developments which are of particular importance in many parts of the world, particularly the under-developed areas, and the book should be of considerable value to all those

interested in the subject of agricultural co-operation. Obviously in a short review only a few of the subjects covered can be commented on. The reviewer found the following contributions of particular interest.

The first article presents the results of an inquiry by the Foundation into the credit needs of the small market gardener in the United Kingdom. This subject should be of interest to Australian readers if only because of the wide discussion in recent years of Australia's own problems of encouraging increased investment in agriculture. The survey obtained information on when and where farmers borrowed, what amounts, and on what terms and security. Growers' attitudes to credit are reflected in the findings that nearly one-third had never borrowed and never intended to; a similar number disapproved strongly of borrowing, but had been driven to it by circumstances; whilst the remainder claimed to take a "business" view on the matter. The survey indicated that "capital rationing" existed both on the borrowing and the lending side. In answer to the question "Do you consider you need more money for the efficient operation of your holding than you can now obtain on satisfactory terms?", 40 per cent. of growers reported an unsatisfied demand for capital.

Many of the Foundation's conclusions and recommendations on agricultural credit are surprisingly appropriate to Australia. The Foundation reports that the shortage of agricultural credit has prevented many well-qualified people from entering the industry. Many growers start under-capitalized, and this involves them in an unplanned and ill-considered system of borrowing from a variety of sources. An extension of Government loans for settlement and major farm improvements is recommended, together with wide and persuasive publicity announcing details of the credit facilities available, for, as in Australia, it was discovered that the majority of growers were ignorant of the opportunities open to them under existing concessional credit schemes. The Foundation further recommends the development of marketing and purchasing co-operatives for market gardeners, and the setting-up of special agricultural banks, if possible through the creation of credit departments in existing agricultural co-operative societies.

Two articles on co-operation in India merit particular attention. The first discusses co-operative agricultural credit in India, and gives a brief description of the role of co-operative farming as envisaged in India's Five Year Plan. The Planning Commission maintains that Indian agriculture is unlikely to produce optimum results unless farm size is increased. This, it claims, can be achieved by making the village a unit of co-operative management and by inducing small farmers to set up co-operative farming associations. The Planning Commission's aim is that, following a vote of landowners, the land in the village should be taken as a single farm, with the rights of land-ownership being recognized, and the owners compensated, through the payment of an "ownership dividend" at each harvest. The village farm would be managed by a Village Production Council through which government aid would be channelled. A related contribution of co-operation to the solution of India's difficulties is discussed in an article on "Cottage

Industries in India". These industries (hand-spinning, tanning, sericulture) help to solve the problem of the under-employment of India's land-starved farmers by providing a subsidiary occupation, and their rapid development seems to necessitate the co-operative form of organization.

Italy had the distinction of being the first country to develop co-operative farming societies on any scale, and an article on this subject discusses the two types of co-operative organizations that have developed there—the Individualistic and the Collective. The former type originated in Lombardy in 1887 as a reaction to "rack-renting"; the latter type in 1886 in Emilia as a reaction to the unemployment of agricultural labour. The movement was suppressed by Mussolini, who saw co-operation as a competitive form of organization to Fascism.

In the *Individualistic* type the members have separate holdings leased from the Society, roughly proportional in area to the size and age of the lessee's family. The extent to which the co-operative management enforces scientific farming practices varies considerably between societies. Some machinery is hired out by the pool but the small and scattered nature of the holdings militates against the use of most types of large-scale machinery. In the *Collective* societies—members work together in groups under a single direction and all produce is pooled. Unemployment probably provides the sharpest spur to this form of organization. In Ravenna, for instance, the area requiring paid labour is divided each year by the number of registered workers, and every collective society must employ at least as many workers as will satisfy the resulting average in terms of its land. In general the societies have too little land for their members, and cannot provide anything like full-time employment. Some of the collective societies provide old-age pensions, free medical assistance and other benefits.

The author discusses some of the advantages and disadvantages of the two systems. The chief disadvantage of the collectives is that, with payment by the hour, no account can be taken of the quality of the work done, or even the quantity, beyond a very limited point. In short, there is the problem of incentive. On the other hand, collectivization has a good record in the adoption of mechanization, improved seed, better rotations and greater use of fertilizers. All of these advantages, according to the author, can be enjoyed by the individualistic societies, but with greater difficulty.

A survey of co-operation in the non-self-governing territories under United Kingdom administration focusses attention on what appears to be one of the most important aspects of the development of these areas. Detailed reports from 14 territories are presented, and the accompanying statistics reveal that of these, co-operation is strongest in Malaya and the African colonies, particularly Nigeria, Uganda, the Gold Coast and Tanganyika.

Australian readers will be particularly interested in an article on co-operation in Queensland, in which achievements in the sugar, dairying and tobacco industries are discussed. The author claims that tobacco provides a good example of how a new industry can be successfully established through co-operative effort, following the failure of earlier attempts at development in the absence of co-operative organization.

The Great Australian Pasture Revolution! British Farm Equipment Pty. Ltd., Melbourne and Sydney, 1953. Pp. 60.

This attractively produced booklet deals in quite a comprehensive manner with the problems and methods of pasture improvement in eastern Australia. Although it is directed primarily to the grazier in New South Wales and Victoria, it should prove of interest to a much wider audience. It is a pity, though, that some specific attention is not given to the dairying industry, where both the scope and the need for more efficient production is so great. Nevertheless the pamphlet deserves to be read by all Australian farmers on whose properties there is a potential for pasture improvement.

It is quite unusual for commercial organizations in Australia to produce extension literature for the farmer. More publications of the type and quality of *The Great Australian Pasture Revolution!* would provide a most useful supplement to official extension literature. The pamphlet is particularly well produced and illustrated and the limited amount of advertising matter is not obtrusive.

REPORT ON DAIRY FARMING IN THE BERRIQUIN AND DENIMEIN IRRIGATION DISTRICTS.

It is regretted that, owing to unforeseen circumstances, the report referred to in the editorial of the previous number of this journal (September-December, 1953) could not be published in this issue. It will be published in the next issue (June, 1954).