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## BOOK REVIEWS

*Decisions Under Uncertainty with Research Applications.* By A. N. HALTER and G. W. DEAN. (Cincinnati, Southwestern Publishing Co., 1971). Pp. 266, \$7.95.

This book is unquestionably one of the best of the recent flush of texts on applied decision making under uncertainty. Its title belies its true character as throughout there is a strong theme of application to decision making in agricultural economics. This naturally reflects the backgrounds of the authors who are Professors of Agricultural Economics at Oregon State University and University of California (Davis) respectively.

The authors visualize the book being used in several ways and to quote from their preface, 'First, the book is well adapted in its present form for a one-quarter senior or graduate course in decision theory . . . Second, for those schools that do not teach a separate and formal course in decision theory, the . . . book could serve as supplementary reading for . . . (related) . . . courses. . . . Third, we feel that the book will serve as a useful reference to researchers in natural resources and other applied fields of economics'. In its first claimed role, the book (in draft form) has been used at the University of New England since 1967 and has been found to be a very satisfactory text. It is reasonable to anticipate its success in the other claimed roles also.

The twelve chapters can be classified in two broad categories. The first five chapters outline the elements of modern decision theory and introduce in turn the components of decision problems, probability concepts, assessment of utility functions and methods of solving three classes of decision problems—namely those with no prior probability distribution, those with prior distributions and finally 'Bayesian' decision problems involving the modification of prior with new probabilistic information by means of Bayes' theorem. The next six chapters illustrate this theoretical background with empirical applications from geology, forestry and (mainly) agriculture. The agricultural examples include choice of stocking rate for beef cattle, selection of cropping systems in risky farming ventures, production decisions for turkey growers and fertilizer decisions hinged on rainfall prediction. The final chapter includes a miscellany of possible applications of decision theory in research.

Since the authors and the book ostensibly are devotedly Bayesian, it is surprising that so much space is given to decision problems without priors in Chapters 4, 5 and 7. In the Bayesian philosophy, problems for which subjective prior distributions cannot be elicited are so rare that the more-or-less unsatisfactory decision criteria discussed for such problems (e.g. maximin, Laplace, etc.) pale into operational insignificance. On the other hand, an important omission, for a text of this type, is discussion of the use of decision trees for formalizing decisions involving an interacting sequence of events and actions.

Apart from the absence of an index, the book is well laid out though not too stiff. Its use as a teaching aid is facilitated by a generous supply

of exercises (and answers) and ample suggestions for further reading. For the bulk of the book, mathematical prerequisites are minimal—an appreciation of elementary set theory, probability and descriptive statistics is all that is required.

The book seems to be free of obvious typographical and arithmetic errors and this reviewer has little quarrel with most of the empirical examples deployed. However, he must note what appears to be a methodological error in the material borrowed from C. J. Grayson pertaining to decisions about oil drilling. In Table 9.4 the conditional ('posterior?') probabilities have been calculated directly from the historical data reported in Table 9.3 and they thus take no account of the specified prior probabilities. The correct procedure would be to derive likelihood probabilities from Table 9.3 and combine these with the priors to obtain posterior probabilities.

J. R. ANDERSON

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*Cost-Benefit Analysis.* By E. J. MISHAN. (George Allen and Unwin, 1971). Pp. 360, \$14.65, soft covers, \$8.90.

A real lacuna in the benefit-cost literature is an introductory text that is both comprehensive and definitive. Mishan almost meets this requirement and almost achieves his own object in writing the book. As stated in the preface he aims to provide an introductory work which will

. . . convey to the interested reader with a smattering of economics some of the crucial notions and procedures that lie behind the techniques used in cost-benefit studies . . .

The 360 pages are divided into six parts and 52 chapters. Such a large number of short chapters is welcome for it facilitates the digestibility of the material. But Mishan's style is verbose and points are often made in an unnecessarily laborious manner. Chapter 45 on the social basis of welfare economics is an example. The reader would be helped by the occasional concise summary of points to come or material just covered.

The first of the six parts is entitled 'Some simplified examples of cost-benefit studies'. Unlike the proceedings of the symposium on cost-benefit analysis of the NATO Scientific Affairs Committee,<sup>1</sup> this part contains little information on methods of data collection or actual selection of criteria. In his simplified discussion of six sorts of projects, including the channel tunnel and reservoir construction, Mishan provides an excellent review of the definition of alternatives and the formulation of problems. This part deserves the attention of all who are interested in benefit-cost analyses.

Concepts of benefits and costs are discussed in part two. The other four parts are devoted to external effects, investment criteria, uncertainty and the welfare basis of benefit-cost analysis together with a discussion of measures of economic surplus. Much of Mishan's earlier published material finds its way into this book. Although this 'mileage' technique can often involve unnecessary duplication, much of the material is now pre-

<sup>1</sup> Kendall, M. G. (Ed.), *Cost-benefit Analysis*, London, The English Universities Press, 1971.

sented in a simpler fashion. An example is his 1965 paper on external effects<sup>2</sup> much of which appears in more readable form in part two.

Mishan's normalization procedure contributed to the methodology on investment criteria and provoked considerable discussion in the literature.<sup>3</sup> The comments and criticisms have now been incorporated into the 31 pages (nine per cent) of the book devoted to the procedure. The description is now simpler but still contains errors. For example, Table IV.8 on page 248 contains two cash outlays for project C, namely 14 in  $t_0$  and 124.5 in  $t_2$ . The outlays should be 13.9 and 124.0 as Mishan himself pointed out in 1969.<sup>4</sup> Again 0.20 in line 16 of page 261 should read 0.30. Although such errors are minor, they do give rise to the misapprehension that the basic procedure requires revision.

A strength of the book is the explicit recognition that benefit-cost analysis is an application of welfare economics and so is based on the principle of Pareto improvement. This principle is the standard against which basic theoretical constructs and practical procedures are judged for validity and relevance. Chapter 46, 'Cost-benefit Analysis and the Pareto Principle' provides a potted summary of the compensation argument. It also provides useful rationalization of the standard objection that questions of distribution and equity are ignored.

Mishan is, of course, a leading welfare economist so it is to be expected that the welfare theme runs throughout the book. This is valuable for those who wish to inquire about the foundations of benefit-cost analysis, for those economists who seek a refresher course and for engineers and others who appear to believe that benefit-cost analysis is merely an arithmetic exercise in discounting.

*Cost-benefit Analysis* is not a broad review of the voluminous literature and vociferous arguments on the subject. Rather, Mishan provides his own interpretation of all the pertinent subject areas, in his own style and with his own predilections. Such an interpretation has led, perhaps inevitably, to errors of commission and omission. Although the book reviews all the controversies it does not directly criticise specific authors. In places, such as the simplified examples of part one, Mishan seems to have chosen well structured examples or to have deliberately refrained from criticism. The closest he comes to criticism is, for example, the comment on page 12 'Given that a rate of discount of 6 per cent is acceptable'. A major omission is the lack of a reference or use of Baumol's simple and elegant work on the social rate of discount.<sup>5</sup> On pages 215 to 220 Mishan gives the same argument but in a more tortuous and less conclusive manner. Mishan's interpretation has led therefore to some looseness. Students will have difficulty keying this book to the rest of the literature. The interpretation has also led to some lack of clarity.

<sup>2</sup> Mishan, E. J., 'Reflections on Recent Developments in the Concept of External Effects', *Canadian Journal of Economics and Political Science*, 1965.

<sup>3</sup> Mishan, E. J., 'A Proposed Normalization Procedure for Investment Criteria', *Economic Journal*, 77(308): 777, 1967.

<sup>4</sup> Mishan, E. J., 'Normalization of Public Investment Criteria: Erratum', *Economic Journal*, 79(316): 980, 1969.

<sup>5</sup> For example, Baumol, W. J., 'On the Appropriate Rate of Discount for Evaluation of Public Projects', in Hinrichs, H. H., and Taylor G. M. (Eds.), *Programme Budgeting and Benefit-cost Analysis*, Goodyear, California, pp. 420, 1969.

This book deserves a place as a prescribed text for courses in benefit-cost analysis. But it isn't the introductory text that the author and publishers claim. Sections of it require a lot of patience or a lot of economics before the points can be grasped. *Program Budgeting and Benefit-cost Analysis* by Hinrichs and Taylor is at a more introductory level although this is not entirely satisfactory either because it is weak on investment criteria and on the welfare background. If an introductory text, within one set of covers, is still desired it might be better served by another book or a collection of readings. The existing literature is good but scattered.

J. A. SINDEN

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*Systems Analysis in Agricultural Management.* Edited by J. B. DENT and J. R. ANDERSON. (Sydney, John Wiley and Sons Australasia Pty. Ltd., 1971). Pp. 394, \$10.95, soft cover, \$7.96.

Man is becoming concerned about the management of his resources, whether they be privately owned or common property. Scientists are realizing that if they are to aid society in this problem then some of them must shift the direction of their studies. Instead of pursuing a narrow speciality, some scientists are beginning to think much more about the interacting components, or 'system' of which their speciality is part. In many instances this broadening or integrating approach stretches across what we term 'disciplines'. We have had farsighted advocates of interdisciplinary co-operation urging us in this direction for some time, but now the development of systems research and the advancements in computer technology have given these ideas operational feasibility. Now we can form a team of scientists to study and define the limits of a given system, build a mathematical model, then simulate, with the computer, the operations of the real system via the model.

In some fields, notably space exploration and military technology, this approach has had some remarkable successes. Whether it is likely to be a successful approach to the study and management of our agricultural resources is, in part, the subject of this book.

The book consists of the contributions of eighteen systems analysts welded into seventeen chapters. The aims of the book are: to elucidate some of the basic methods of systems analysis in an agricultural context, and to illustrate the value of the approach through a number of different case studies. I feel the editors have achieved these aims and that they must be congratulated on the cohesion which exists throughout the book. You don't need to be a mathematician, statistician or computer programmer to read and understand it. The book is clearly written and enjoyable to read. Although it can function as a text, it is primarily concerned with agricultural scientists and economists applying these new techniques to real problems.

The first of these aims is evident in the first six chapters. Here the reader is presented with such topics as: agricultural production and the systems concept; statistical methods in systems analysis; computer languages; computer modelling with interactive facilities, and the interpretation of simulation output for decision-making. Although these chapters

are written primarily for the systems layman, the old-hand will find some interesting material; particularly Armstrong on interactive computing and Dillon on the utility approach to decision-making. Taken as a group these chapters are not designed as a how-to-do-it kit, rather they acquaint the reader with the philosophy, techniques and problems of the subject. On the other hand, each chapter is accompanied by an extensive and comprehensive list of references which will enable the intending practitioner to delve more deeply into each of these topics. Charlton's chapter on computer languages, for example, doesn't teach FORTRAN or SIMSCRIPT, but the purposes and capabilities of each language, and a number of others, are clearly elucidated. This chapter can save the analyst much time and effort in his search for the appropriate language and computing facilities for his work.

The second aim is achieved by ten applications of the systems approach through a diverse range of subjects. Some of these chapters focus on the purely biological aspects of the subject while others combine the biological and economic aspects into a framework oriented towards decision-making. Space does not allow a discussion of each of these applications but the following précis of titles and authors indicates the variety.

- Flinn on crop-irrigation systems. (biological)
- Dumsday on soil conservation policies. (bio-economic)
- Goodall on extensive grazing. (biological)
- Jones and Brockington on intensive grazing. (biological)
- Morley and Graham on fodder conservation for drought. (bio-economic)
- Anderson on spatial diversification of sheep properties. (bio-economic)
- Dent on livestock performance and capital investment. (bio-economic)
- van Kampen on farm machinery selection. (bio-economic)
- Eisgruber and Lee on the growth of the farm firm. (bio-economic)
- Duckham on human food chains. (biological)

In these chapters the reader is able to see the concepts of systems research being put to work, and in some cases, being further developed. Although each of these chapters makes fascinating reading as the system is gradually translated into model and the model begins to operate, they do have the effect of making the modelling task appear deceptively easy. We get little feeling of the model-builder's agony as he retreats from blind alleys or as he tries to convince himself that he has a valid model. Since many of the studies which make up these chapters are very large this was presumably done in the interests of brevity. However, each chapter is accompanied by an extensive bibliography of source material.

Economists will find all of these chapters interesting—either as introductions to the biological complexities of the problems or as exercises in economic analysis. I found Anderson's treatment of the neglected topic of spatial diversification of particular interest. In contrast, Duckham's chapter, which takes a global view of food chains, seemed too ambitious within the context of the rest of the volume.

Although the contributors do present results of their analyses, the major emphasis in most chapters is on model-building. The important and difficult areas of validating a model, and the conduct and analysis of

experiments on the model, receive little direct attention. Although this deficiency is more a reflection of the current 'state of the art' than the fault of the contributors, it is a pity that a more specific treatment of an analyst's experiences with these problems was not presented. However, by emphasising the model-building phase and demonstrating the challenge of validation and experimentation, it is to be hoped that the book will serve to interest more agricultural scientists and economists in systems research.

Finally I would take issue with the editors when, in Chapter 1, they describe systems research as a 'holistic' approach. Their reason for this is that the systems view

implies that an isolated study of parts of the system will not be adequate to understand the complete system. This is because the separate parts are linked in an interacting manner.

I think this is just an unfortunate misuse of the word 'holistic', since nowhere in the book can I find the anti-analytical doctrine characteristic of 'holism'. The 'holist' would attach a mystical quality to these interactions (vide: the humus-worshippers). Attempting to understand and to model these interactions is the approach of the 'generalist'. It is an analytical approach and has nothing to do with 'holism'.

N. H. STURGESS

*University of Melbourne.*

*Foundations of Farm Policy.* By LUTHER TWEETEN. (Lincoln, University of Nebraska, 1970). Pp. 537, \$US9.50.

This book develops some new approaches to the discussion of agricultural policy. In general, these are a valuable contribution, but unfortunately, they tend to be obscured in what is a long treatise which is very tedious at times. The book is written for both undergraduate and postgraduate students of agricultural policy, but it should be made clear that it is not a general text on agricultural policy in developed countries. It is specifically a text on American farm policy.

The value of Tweeten's contribution outside of the U.S.A. is much less. In Australia, where courses on agricultural policy are oriented to Australian problems and to the study of the policy endeavours of a number of countries, this book will need to be used carefully. For example, in a course which considers certain aspects of agricultural policy in U.S.A., U.K., U.S.S.R. and the E.E.C., this book is too detailed. A book concentrating on the more important issues and half the length would be more satisfactory, particularly for undergraduates. As it is, considerable guidance in using the book would be needed to avoid undergraduates spending too much time finding the important and useful material among a vast amount of detail. Some of this detail would appear to be of doubtful value even for American students of American farm policy. To my mind, more careful selection of the material included in the book would have improved it considerably.

From its title one could have expected Tweeten to have included the results of research on policy carried out in other countries. However this is not so and Tweeten has limited himself almost entirely to American research findings. There is no doubt that he has carried through the task very thoroughly and left few aspects of American farm policy

research uncovered. From this point of view it is a valuable contribution and the generous dose of references at the end of each chapter provide a good coverage of American literature. For anyone wishing to have a detailed knowledge of American farm policy, or to obtain ideas for future research which may be carried out elsewhere this book will be very useful.

The book begins with 3 chapters dealing with the goals and values of policy and the role of farm organizations. Here there is a most useful discussion of the differing attitudes of the farm and urban sectors, highlighting the areas of conflict, or alternatively, areas where political compromise is needed. The third chapter details the development and actions of the numerous farm organizations, giving particular attention to the generally unsuccessful protests over low farm prices.

The next two chapters detail the economic development of American agriculture. Some of it is tedious history but it does point up as far as possible, the sources of growth and attempts to assess the efficiency of American agriculture. I was a little surprised to find the recent work of Griliches in particular, missing from the discussion on research and education, although some of his earlier work is included in the list of references at the end of Chapter 5.

Chapter 6 is an important chapter detailing the essence of the farm problem, particularly low incomes, low returns to resources, and the causes of the problem. A rather poor exposition of the fixed resources hypothesis leaves the reader unimpressed by it, while the discussion on economies of size (decreasing cost) hypothesis impressed this reviewer as very plausible. In the Australian context, this is becoming an important aspect warranting further research in the size-viability relationships of particular types of farms.

The next three chapters examine the economic structure of farm products markets, and input markets. The chapters are rather tedious documentations of evidence concluding that farm product markets are not a major cause of farm problems, nor are the suppliers of farm inputs exploiting the farmers. However, problems relating to the preservation of the family farm, and the general level of inflation in the economy are discussed.

Chapters 10 and 11 provide a history of U.S. commodity programmes and a discussion of the choices available. The latter is well done, with a chart on p. 323 clearly showing the alternatives, and the decision points. Students should find this most useful. The following pages discuss the advantages and disadvantages of the alternatives, show how they can be evaluated on a cost-effectiveness basis and makes some suggestions for a farm programme. However, Tweeten is careful to avoid prescribing his programme, but tends to let the reader make up his own mind on a suitable policy.

The next three chapters on rural poverty are important even if they are tedious in detail. They recognize the impact of the farm problem on people—poverty, elaborating the magnitude of the problem, the inadequacy of past efforts to relieve poverty and evaluation of prospective programmes. The latter is carried out on a cost-effectiveness basis, and ranks policies in this order; national full employment, improved factor market performance, education and training, and attraction of industry to depressed areas. While the scope of these chapters goes



beyond agriculture, they are an important contribution which could usefully be read by all students of economics and agriculture alike.

Apart from a chapter on trade and aid, the other major contribution of the book lies in Chapter 16 which introduces welfare and efficiency concepts. In his preface, Tweeten suggests this chapter should be read first by postgraduates and omitted in undergraduate courses. I feel that it is a clear exposition which could be handled by any student who has studied microeconomics, and would recommend the chapter for all students beginning a course on agricultural policy.

Overall, the book makes some valuable contributions. The format is pleasing with end of chapter summaries, and reference lists supplemented by an adequate index. Unfortunately the style is somewhat uneven, with parts being well written and interesting but others tortuous and confusing, such as the statement 'when the forces requiring adjustments are large relative to the ability to adjust, a liminal level of adjustment is reached at which the environment develops anomie and other dysfunctional syndromes inimical to rapid change'. (p. 375).

R. A. POWELL

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*Institutions in Agricultural Development.* Edited by M. G. BLASE. (Ames, Iowa State University Press, 1971). Pp. 242, \$US5.95.

This book is the result of an organized attempt by the North Central Land Economics Research Committee of the co-operating U.S. universities to bring out a definitive statement on the role of institutions in the agricultural development process. There are ten chapters contributed by specialists in the appropriate disciplines each with two short discussion comments by reviewers. The chapters were discussed in seminars in the course of preparation but in general reflect the set purpose of the organizing Committee rather than merely reporting on yet another conference on agricultural development. As a result there is a marked lack of repetition throughout the book and a pleasing coherence in the overall statement on the subject matter chosen.

The definition of institutions affecting agricultural development is a wide one. Blase, in his introductory chapter, follows T. W. Schultz in defining the scope of the volume: 'Our theory is designed to explain those changes in institutions that occur in response to the dynamics of economic growth . . . The dynamics of growth will induce farmers . . . to demand institutional adjustment'. Blase comments: 'The institutions discussed in this book all qualify as being potentially strategic at a given point in a nation's development and they all fall under the definition used here: they represent some form of social control over individual action'.

The scope of the definition can be seen by briefly reviewing the 10 chapters in the body of the book. Dorner reviews the role of land tenure institutions in development with some emphasis on income distribution problems. Witt discusses factor markets with emphasis on new inputs, the development of supporting infrastructure, the operation of the agricultural labour market and institutions, and policies needed to facilitate the intensification of agriculture. This is followed by a closely reasoned statement by Breimyer on product markets, giving particular

emphasis to difficulties in developing a viable system of market exchange.

There follows a chapter on planning institutions by Martin based on International Bank experience. Next Thomas and Atkinson discuss graduate and undergraduate teaching institutions with close emphasis on the manpower and scientific needs of developing societies. This is followed by a complementary chapter by Ruttan on research institutions with special reference to the Rockefeller contribution in this area. A second part of this same chapter is devoted to a discussion of research systems by Moseman which takes a rather wider view of the topic than Ruttan.

Chapter 8 is on extension institutions by McDermott with considerable emphasis on the short-comings of the land grant college system when transplanted abroad. Next Jones deals with agricultural credit needs in a particularly cautious frame of mind as might be expected. There follows a chapter on rural government institutions by Luykx which is valuable for its cross-disciplinary content, and the final chapter on legal systems by Church, mainly related to the African experience of the author.

In spite of the evidence of good editing of the contributed chapters, the introductory chapter by Blase is disappointing and concentrates on setting the scene rather than attempting a synthesis of what follows. I liked the contributions by Breimyer and Ruttan particularly; some of the others suffer from the heavy-handed way in which they are written even when the content is interesting and relevant. The citing of literature is good and a great deal of new material is brought to light in the process. A comprehensive index is also provided.

There are many quotable excerpts throughout the book but space confines me to only one. This is from Witt on factor markets and their relation to institutions developing new inputs:

Public research institutions dot the landscape of the developing countries. National, state, even local, they usually are small in size, low in quality, and have a limited scope. In numbers, they are too many, considering the present level of research investment. Few are well financed, well staffed, with relevant and imaginative research programs. More commonly the program is routine, repetitive, and unduly narrow; the results are inadequately analysed, unpublished, and not carried to completion by testing in actual farming.

Clearly a short review cannot do justice to so many topics and authors. In general, the statements and discussions all reflect personal experience from service in developing countries, with a preponderance in South America but Asia and Africa are also represented. The statements tend to be too general to apply in particular situations but are highly condensed summaries of each problem area as a whole. They would stimulate thinking on a topic when preparing for a mission or even when in the process of carrying one out, though as I have emphasised, direct relevance to particular problems will not be found.

The standard of the contributions is not uniform, as is often the case, and sometimes the discussant is more forthright than the selected contributor. The value of the book is clearly in the questions it raises rather than the answers it provides. It's a book for practising economists and administrators in developing countries and those interested in these matters, and it would also be useful as supplementary reading in university courses in economic development.

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*The Reluctant Farmer. The Rise of Agricultural Extension to 1914.* By ROY V. SCOTT. (University of Illinois Press, 1970). Pp. 362, \$US8.95.

This book is a valuable addition to the literature of agricultural extension in the United States. It brings the historian's viewpoint to bear on the interplay of events, people and institutions which have made the Cooperative Extension Service a reality.

The book traces the changing contributions of federal and state governments, land grant colleges, producer organizations, commerce, county institutions and outstanding individuals.

The Cooperative Extension Service was established by the Smith-Lever Act. As a separate service devoted to the needs of rural people, it was geared to the needs of the time, and for 50 years was a feature of the U.S. agricultural scene. The world may now be passing it by, yet it had many strengths from which much benefit and many lessons were derived. The book is a record of a past age which was a prelude to this passing age, but it is no less valuable because of that.

The strengths of the book are the insights given into the influence of individuals and institutions, together with careful documentation of references. Scott tells his story well, tracing the gradual development of extension programmes at the land grant colleges and elsewhere. A summary at the end of each chapter draws out the significance of the events described in detail, state by state. The book records the origins of different forms of extension effort, and the ample references cited provide insight as well as a starting point for further explorations of the literature. Practically all of extension's traditional methods were pioneered by the 1900s, and this book traces their early history in the United States.

The book starts from the frontier days. From 1850 to 1870 was the 'golden age' of local agricultural societies. But it was also the day of the farm press, especially after the civil war. Here, too, in the middle 19th century, we find the origins of agricultural education in the colleges. There was lack of interest by farmers, hostility among academics and shortage of funds, so that the effect on farmers was small.

Morrill first presented his bill (for grants of federal land to the states to establish colleges of education) in Congress in 1857. But it was not until 1862, at the height of the civil war, that the Morrill Land Grant Act was passed by Congress and accepted by President Lincoln. Yet for their first twenty years the colleges 'could only be described as failures'. (p. 27) Enrolments were low, faculties weak and incompetent and there was little scientific knowledge to teach, '. . . in a very real sense agricultural education was not economically feasible when land was of little value'. (p. 28).

The agrarian movements from the 1860s to 1900 were a measure of discontent, but helped farmers to recognize the value of education and to look to the agricultural colleges for aid. There was a move away from Jeffersonian attitudes to farming. By 1900 the simple existence of the agrarian myth was seen to be a thing of the past, and 'farmers were ready for a revolution in methods if a successful technique could be found to take agricultural science to them'. (p. 63).

Two chapters on the Farmers' Institutes follow. The institutes were generally 2 or 3 day meetings, with lectures by visiting specialists, each ex-

ploring ways of presenting materials to the farmer audiences. The most serious problem was rural inertia and apathy, but the institute movement spread across the nation.

The number of Institutes grew from some 2,770 in 1901 to 8,861 in 1913, while attendance rose from 819,000 to 3,050,000. Again the detail is complete, traversing the development of the institutes and of their association with land grant colleges and other rural organizations.

The Institutes proved to be a transitional stage. They suggested the importance of better methods, opened the eyes of farmers to what science offered, and provided the first effective contact between the farmer and the agricultural college and experiment station.

Next, Scott retraces his steps once again, leading the reader through a chapter describing the activities of the land grant colleges in agricultural extension. By the turn of the century, the 'widespread disregard and even contempt for the colleges, so common among actual farmers, was but the foremost indication that the institutions had failed to reach the goals that their founders had set for them'. (p. 138). New approaches were needed, other than lectures at farmers' institutes. In the early years the main emphasis had been on publications, as the Hatch Act of 1887 had specified that results of experiment station research should be made available to farmers. Gradually other activities developed—correspondence courses, direct correspondence, co-operative field tests with farmers, spraying demonstrations and itinerant schools. Holden, one of the leaders, developed and systematized county farm experiment work, travelling short courses and educational trains.

Underlying many of the changes in organization was the continued effort of the Association of Agricultural Colleges and Experiment Stations. The Association provided a forum for discussion and recommended in 1908 that each college create a department of extension, and that federal funds be sought to assist the states and colleges to greater efforts. By 1912, 43 colleges had directors of agricultural extension. Regional differences were becoming evident—inadequate funds in the South, little activity in the Pacific and mountain states except for California, Washington and Utah. But a thoroughly effective teaching device, says Scott, had not yet been found, not all farmers were involved, and the emphasis remained on telling rather than showing.

Two chapters on the Railroads and on other Industries follow. The railroads especially were educational innovators, as well as being powerful voices in state legislatures. They participated actively in development by providing reduced rate transportation, distributing educational literature, and encouraging farmer institutes. Several established demonstration farms. But their main contribution was in the development of educational trains—which had their heyday in the first decade of this century. Other commercial firms had active extension programmes, including bankers, fertilizer concerns, grain exchanges, and most important of all, the farm machinery manufacturers.

Now two-thirds through the book, we come to the Southern Demonstration work. We are back among old friends, Knapp and Galloway and Wilson, with all the trials and yet the magnificence of early efforts to establish community farmer-owned demonstration farms rather than farms conducted by governments or institutions. Knapp, born in 1833, had been a teacher, progressive farmer, minister, superintendent of a

school for the blind, and editor of a farm paper. He became a Professor at Iowa in 1879, where he 'developed a suspicion and distrust of college men that he would carry for the remainder of his life'. (p. 208). He jumped at an opportunity to move into land development in Louisiana and did not join the Department of Agriculture until 1898, when 65 years of age. The Porter demonstration farm began in 1903, and proved to be an immediate success. But it took the economic disruption caused by the cotton boll weevil to convince the U.S. Department of Agriculture to put federal funds into community demonstration work. Knapp used the railroad agricultural agents to assist him, and made additional USDA appointments as agents. His aversion to the academics led him to choose practical farmers, not college graduates, as agents. Knapp introduced the idea of co-operating farmers, who followed directions usually given by mail and reported on results without direct assistance or visits by agents. There was little taught that was original, but a new method of teaching was developing. Until Knapp's death in 1911, his work was conducted separately from the Land Grant Colleges, though he had ardent support from businessmen.

The General Education Board had been incorporated by Congress in 1903, but financed by Rockefeller, who was to give it \$53 million in the next six years. An agreement in 1906 enabled the USDA demonstration work to develop with Board finance, and work could also be developed in areas additional to those involved with boll weevil programmes. General Education Board funds also enabled Negro agents to be appointed to work with Negroes—a move initially opposed by Knapp. Knapp moved to Washington in 1907, and served as agent in charge until 1911. Between 1907 and 1912, the number of agents rose from 49 to 700. The agents travelled their areas giving advice, and methods gradually evolved to meet the needs for advice over a wide range of topics.

In 1906 a decision was made for one agent to work within one county only, and Stallings was appointed the first Agent in Smith County, Texas. By 1911 the term 'county agent' was in common use. Following Knapp's death, the way was easier for co-operative arrangements with land grant colleges, and in 1911 the first such agreement was signed between the land grant college in South Carolina and all of the counties in the state. All demonstration work was to be administered through a co-operatively appointed state agent stationed at Clemson College. By measures such as these, the main break from institute teaching to farmer demonstration was achieved in the years preceding the Smith-Lever Act.

A chapter follows tracing the growth of rural youth work, showing how Knapp used his position in Washington, and the support of the General Education Board, to encourage school pupils to participate in demonstrations and club activities.

Next, the growth of the county agent system in the North is recorded. Initially, in the first decade of this century, W. J. Spillman's efforts were important. He set up government sponsored farms on which specified practices were adopted as a guide for other farmers. The farms were said to differ from Knapp's demonstration farms by concentrating on diversification of land use and because they used ideas beyond the ability of most farmers. They were not successful. But by 1905, when Spillman was appointed in charge of the first Office of Farm Manage-

ment in the USDA he saw his way ahead more clearly. He made co-operative agreements with state experiment stations, and gradually built up detailed information about farm structures, use of land and machinery, and the feasibility of different kinds of farm organization in different soils and climates. He fused the knowledge of various USDA bureaux with the proven practices of successful farmers. The Office of Farm Management had the responsibility to disseminate information obtained, and used bulletins, lectures at institutes and visits to successful farms. Spillman had found a technique for gathering data, but not for 'putting the information to use on the ordinary farms of the country'. (p. 260). Gradually, he moved toward a concept of a man stationed in a locality, available to assist farmers. The first such appointment was made in Pennsylvania in 1907, and work soon developed in New York Broome County, in Missouri and North Dakota. Local leaders, railway companies, and agencies concerned with marketing all became involved. Spillman knew of the success of the Farmer Demonstration work in the South and proposed in 1911 that similar programmes be developed in the North, except that the work in the North would be concerned with a different class of people with far more sophisticated needs. Spillman saw the need for local assistance for county agents, and communities were expected to pay one half of the local agent's salary and expenses. These developments led to some resentment by some land grant colleges, but others, notably New York, supported them. By 1914, the county agent system was established in the North and the West, though less so than in the South. All that now remained, Scott points out, was a source of finance for a nation-wide movement, and a means of reconciling the demonstration method with the older techniques of extension.

The final chapter traces the preludes to the Smith-Lever Act and the gradual emergence of support for extension in Congress. President Roosevelt's Commission on Country Life pointed to the need for nation-wide extension work in 1909, and a series of bills was introduced, beginning in that year. The task was confounded by other moves to incorporate support for vocational agriculture in schools in the same bill, and the two issues were not separated until 1914. Lever, from South Carolina, who had been impressed by Knapp's work in the South, had introduced his first extension bill in 1911.

Even when Lever and Senator Smith introduced almost identical bills in the House and the Senate in April 1913, trouble still threatened. There were fears of the effects of cutting off the USDA from direct participation in extension programmes, and the long-standing disagreement between the USDA and the colleges came to the fore: 'That controversy stemmed from a number of factors including jealousy, fear of federal domination, and a difference of opinion concerning the place and role of the county agent in an extension program'. (p. 302).

Scott records that the colleges were slow to develop an interest in the county agent as a teaching device, and held out for more systematic or formal teaching. But the way out had been revealed in a move made by Secretary of Agriculture Houston, an ex-college President. In May 1913 he arranged a conference between the Association of Land Grant Colleges and the USDA which agreed that the proposed national extension programmes should be on a co-operative basis, and that the USDA

would form co-operative agreements only with colleges. The worst was over, and the way paved for the passing of the Smith-Lever Act 1914.

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*Developing the Third World: The Experience of the Nineteen Sixties.*  
Edited by RONALD ROBINSON. (Cambridge Commonwealth Studies,  
Cambridge University Press, 1971). Pp. 289, £4.20.

In 1961 the first of a series of annual conferences on the problems of economic development was held at Cambridge University. These Cambridge Conferences organized by the University Overseas Studies Committee assisted by the Ministry of Overseas Development, had two special characteristics which made them particularly useful, and well documented, events during the years of the Development Decade. The first is that they drew in a wide range of talents and special interests from the developing world, all involved with the general process of development but not all from planning offices and departments of economics. Economists were there in force, naturally enough, but so too were administrators and senior officials, senior ministers, businessmen and a whole range of technical experts and specialists. They came to Cambridge from Commonwealth Africa, South Asia, Latin America, the Caribbean and the Middle East, and from aid-providing countries and international agencies. Each conference lasted a fortnight and the one hundred and fifty or so delegates lived together in one of the colleges; a fairly ideal arrangement for productive exchanges of experiences, for lining up practice against theory, and for relating one's own problems and successes with those of fellow delegates from other countries and with other professional interests.

The second characteristic of the Cambridge Conferences, and one that has particular relevance for the book being reviewed here, is that through most of the nineteen sixties the Conferences were served as chairman by Ronald Robinson, then Smuts Reader in Commonwealth History at Cambridge, and now Beit Professor of the History of the British Commonwealth at Oxford. Robinson's long interest in the development process, his close association with the Conference series, and his craft, allow him to successfully pick the eyes of the series for his book. *Developing the Third World* is a selection of technical papers presented at the Conferences held in 1964, 1965, 1966 and 1968, interspersed with extracts from the Conference Reports. They have been arranged in four sections, each dealing with a major general problem area—industrialization, rural development, the role of government, and aid. The material has been published before in the annual Conference Reports and elsewhere so that in a strict sense there is little that is new here, except for Robinson's own contributions—skill in selecting important and otherwise interesting material and an excellent introductory chapter on the 'Practical Politics of Economic Development', the main theme of the book. Robinson has given us something of a modern day Greek Tragedy. The principle characters, mainly economists, read their papers and act out the important role they are trying to play in the Third World of the nineteen sixties; while the Chorus, the voice of the conference in the form of Robinson's personal impressions at the time of

consensus and dissent arising from the debates on individual papers, comments, criticisms, draws its own inferences, and with its practical finger on the development process, laments. It is largely this interplay between the principals and the chorus that brings the book to life and gives what might otherwise have been a rather dull collection of specialist papers of largely historical interest, some of the flavour of the search for the illusive development process.

The 1964 Cambridge Conference was concerned with Industrialization in Developing Countries and this is the source, and vintage, of the material presented in the Industrialization section of the book. At this time India and Pakistan were in the midst of development plans which placed heavy emphasis on industrialization and both countries are represented by papers whose authors are extremely confident about the outcome of their respective plans and the industrialization approach to development. There is also a paper on industrialization in Latin America and, to balance things a little, a strong plea for the development of an intermediate technology more in keeping with the needs and resources of many of the countries of the Third World. The extracts from the Conference Report are particularly interesting as they summarize the lively controversy of the time over the best strategy for development, the agriculture versus industry, and agriculture plus industry approaches. This has more meaning here than in many closely argued technical papers and the treatment given these issues in most textbooks.

The Conference held in the following year sounded a warning note that all was not well with the development process. The concern was with 'Overcoming the Obstacles to Development', and clearly it was felt to be necessary to take a long hard look at development performance during the first half of the decade. This was done by Gerald Meier in a sympathetically critical paper reproduced in the introductory section of the book. Two other areas of concern in 1965 provide Robinson with the material for the section on 'the Role of Government'; first, the capacity of Third World countries to mobilize internal resources through taxation, and second, their ability to administer and implement complex development plans and programs. The two papers are followed by lengthy and interesting extracts from the Conference Report.

The Conference of 1966 turned its attention to the problems of 'International Cooperation in Aid'. Papers examine critically the effectiveness of much foreign aid and discuss the pros and cons of bilateral and multilateral forms of aid. While the Conference seemed to be most concerned with the problem of how best to use the increasing volume of aid coming available, some doubts were expressed about the long term costs for recipient countries, about the motives of donor countries, and about the large proportion of military and other non-development aid.

In 1968, in the wake of a new optimism about prospects of rural development generated by the successful introduction of high-yielding dwarf wheat varieties from Mexico in India and Pakistan, and the early release of dwarf rice varieties from the International Rice Research Institute in the Philippines, the Conference returned to a re-examination of 'The Rural Base for National Development'. But 1968 was rather too early for any real assessment of the impact of the new technology on peasant farmers and national food supplies and the papers presented in Robinson's book could well have been written years before. The first paper



examines the historic role of agriculture in development, another sets priorities for agricultural production and rural industry, a third looks at social attitudes to agriculture, and the fourth brings up the perennial problem of land reform. This is the least interesting of the four sections in the book and is the only one not enlivened with extracts from the Conference discussions. Perhaps the participants were asleep.

Robinson's own chapter on the practical politics of development must be mentioned again. It deserves and needs to be read twice, first to see what you are in for when you read the rest of the book, and then again when you have done this, to see what it was all about. It is refreshing to have an historian's broad appraisal of the dilemma of the development decade and this one is particularly relevant for many economists whose main dilemma has been an inability to see that economic development is not all economics.

*Developing the Third World* is a worthwhile contribution to the literature on economic development mainly because it imparts something of the flavour of a great journey of exploration, one that was undertaken by a group of people dedicated to the task of finding a way to a more secure and comfortable life for the majority of the world's population. It is a tragedy that by the end of the decade deep frustration and a feeling of helplessness had overcome the initially high hopes of success. For many in the group this was the *Experience of the Nineteen Sixties*.

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*The Sino-American Joint Commission on Rural Reconstruction.* By T. H. SHEN. (New York, Cornell University Press, 1970). Pp. 278, price unknown.

Initially created as a temporary Sino-American agency for the post-war rural reconstruction of mainland China, the Joint Commission on Rural Reconstruction (JCRR) was transferred to Taiwan in 1949 and has since served as the agricultural arm of the United States Mission to China. The Joint Commission has been concerned with technological improvements and institutional changes in agriculture, and with the implementation of reform programmes—of which the most noteworthy have been the Land-to-the-Tiller Act and reorganization of various farmers' associations. Priority in JCRR programmes has gone to the development of cropping, livestock, fisheries and forestry in that order.

This book is concerned with the first 20 years of operation of the Joint Commission. It is complementary to two earlier works, *Agricultural Resources of China* and *Agricultural Development on Taiwan since World War II*, both published by the Cornell University Press. Readers in this field will likewise find interest in *Socio-Economic Results of Land Reform in Taiwan* (Yang) published recently by the East-West Center Press.

Shen's book is divided into four parts. Part I traces the origin of the Joint Commission, outlines its policies and organization and gives a brief analysis of its budget. Part 2 reviews the agricultural reforms carried out in Taiwan in the early 1950s, together with plans for new development. Part 3 details the major projects that have been implemented in Taiwan together with associated projects on Quemoy and in

Vietnam and Africa. Part 4 purports to evaluate the achievements of the Joint Commission through 20 years of effort.

The book is essentially a history of binational technical cooperation in agricultural development in Taiwan. The author, Dr Shen, has been associated with the JCRR since its establishment and chairman since 1964. He is therefore admirably equipped to describe the events of the past 20 years and, predictably, his book gives a strong commendation to the bilateral approach to problems of rural development in Taiwan.

Viewed as anything but a history of events in Taiwan, however, the book is disappointing. To many readers its greatest weakness will lie in Part 4 which sets out to appraise the 'successes, failures and unfinished tasks' of the Joint Commission. Regrettably, this final section is limited to a single chapter of 14 pages and in no way presents a critical appraisal of the methods, policies or shortfalls of the Commission. The assessment is little more than a restatement of the Commission's own findings in a review of projects implemented during the eleven years 1957 to 1967. It is judged that '1.1 per cent of all the projects were unsuccessful, and 1.6 per cent of the grants and 5.6 per cent of the loans appropriated for them'. Three cases are briefly cited as illustrative of the factors leading to the failure of some projects. The cases cited are the failure to introduce Peking ducks into Taiwan, an unsuccessful venture into fruit canning, and planning failures associated with the Tapu irrigation scheme.

In view of the high rate of success claimed for JCRR projects, the reader looks for some insight into the prospects and problems which the author might anticipate for similar binational organizations established elsewhere. The final section of the book is in fact devoted to the JCRR as a model for other aid-recipient countries, but the author divulges nothing more than that the United States Congress has given favourable consideration to similar proposals. The achievements recorded in this book are seen by Dr Shen to be a measure of the soundness of the bilateral approach to problems of rural reconstruction in the particular circumstances of *Taiwan*, but he is non-committal as to its value if applied elsewhere.

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*Bank Credit to Farmers for Irrigation Development.* By RESERVE BANK OF INDIA. (Bombay, Reserve Bank of India, 1969). Pp. 159, Rs. 10.

This volume presented the results of eight field studies conducted by the Economic Department of the Reserve Bank of India, between 1964 and 1968, in selected regions of India. The studies aimed to assess the financial benefits to cultivators of some refinance proposals received by the Agricultural Refinance Corporation.

The study is divided into two parts. The first reports on five studies aimed at estimating the benefits to cultivators from irrigation-cum-land preparation in areas of recently constructed canal irrigation systems. The second presents reports on three studies relating to the benefits to cultivators from the installation of tube-wells in other areas. (A *tube-well* in the Indian context is synonymous with a bore in the Australian context.)

For each study the relevant reports present some background information; the techniques of selecting the samples; estimates of the increase in farm incomes expected from the proposed projects; the additional investment required and the co-operative credit available; and a summary of the main findings. The conclusions reached in respect of each of the eight studies are presented in detail. They are, naturally, complex and, therefore, little would be gained by trying to summarize them here. In particular, they highlight the need for adopting an 'area approach' to schemes of farm development by financing institutions and the advantages of technical and economic appraisal while adopting this approach. Most interesting are the findings relative to the cultivators' income potential for repayment of the credit provided to implement the proposed projects on their farms. These conclusions depend largely upon the size of the farms and the uses to which the farms are put, i.e., the particular crops cultivated and/or the livestock enterprises.

For Australian agricultural economists, the main interest of the book is that it is a framework of methodology for similar surveys of the potential benefits to individual farmers from proposed capital projects and the ability to repay loans from the additional income generated on the farm.

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*Conditions Necessary for Agricultural Growth.* By A. N. RAJAMANI. (Agra: Lakshmi Norain Agarwal, 1970). p. 97, Rs. 15.

*Agricultural Development and Population Growth.* By R. N. TEWARI. (Delhi: Sultan Chand and Sons, 1970). p. 226, Rs. 25.

Dr. Rajamani has written a very general prescription for agricultural growth in India which raises many questions but provides few answers. His central theme is that rather than attempt to restructure the farm sector by removing people from the land, planners should do more to induce farmers to produce more of a marketable surplus. This goal is to be achieved through the profit motive which will reduce the relative level of farm output presently consumed on the farm and serve to arrest the flow of scarce rural savings to urban investment.

Rajamani is convinced that the free-enterprise system is the best vehicle for rural development and as such the book carries with it a mild undertone of his political philosophy. '... the last struggle between democratic India and totalitarian China made India a veritable show-piece, which the world watches with great expectations to demonstrate the compatibility of economic growth without prejudice to the soul of man' (p. 55). He studiously avoids criticism of the part (or lack of it) played by the Indian gentry in the growth of the rural sector.

Except for some awkward syntax the book is quite readable, though it contains little to stimulate the interest of the non-Indian reader. The tables present a handy statistical summary of the current situation in rural India, but they are marred in places by some serious and confusing typographical errors (see for example, Table 3.6).

Dr. Tewari's book is a comparative analysis of the relative pay-off to programmes of agriculture in various regions of the State of Uttar Pra-

dash. It assumes an immobile, but increasing population and attempts to appraise the different techniques of development applied in this backward State.

Like Rajamani, in the previous book reviewed, Tewari advocates policies which increase productivity without the need to shift labour from rural to urban industries.

Many of the statistical tables would please Dr. Ehrlich, since food-producing success is measured in terms of proteins as well as calories. In this regard the book is somewhat novel and of particular interest to those working in the field of subsistence agriculture.

Although the book is peppered with unsupported and often inaccurate statements of policy (for example, p. 5), it is well indexed and has a bibliography which goes beyond the works on regional development which are of purely Indian origin.

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*Agricultural Price Stabilization in India.* By B. Y. JHA. (Calcutta, Shot Publications, 1971). Pp. 312, \$7.50.

*Economics of Land Consolidation in India.* By S. K. AGARWAL. (New Delhi, S. Chand & Co., 1971), Pp. 159, Rs. 20.00.

The problem of agricultural prices in the less developed countries cannot escape the notice of researchers interested in the agricultural development of these countries. Indian agriculture has been, in many ways, a laboratory for testing a number of economic hypotheses. Findings based on Indian data seem to have fairly wide applicability in other developing countries. Dr. Jha's book is an addition to a slowly growing literature on Indian agricultural prices. His book covers a fifteen year period (1950-51 to 1965-66) and is based on his dissertation for a D.Phil degree of the University of Calcutta.

In the first half of the book the author attempts to establish statistically that fluctuations in agricultural prices during this period were violent and in the second half of the book he attempts to build a case for agricultural price stabilization through forward prices. The book is very well documented, but contains far too many quotations and references to Indian and U.S. studies of a rather specialized nature, which limits the usefulness of the book to a narrow group.

Chapter 1 deals with the instability of agricultural prices, the asymmetrical response of farmers to rising and falling prices, and the effects of price instability on farmers' income, resource allocation and terms of trade. This chapter could be easily compressed into one third of its present length.

Chapters 2 and 3 examine the impact of fluctuating agricultural prices on the Indian economy. The 15 year period is divided, for good reasons, into two parts, 1951-52 to 1955-56 and 1956-57 to 1965-66. Trends are fitted to these observations and reported separately. However, a trend based on five observations cannot be taken too seriously and a free hand curve would have sufficed. The standard errors of the fitted trend equations are not reported.

Chapter 4 deals with the price instability of individual commodities—wheat, rice, cotton, jute and sugar. Procedures similar to those of

Chapter 2 are followed, but the numerous tables could easily be transferred to an appendix to make easier reading.

Chapter 5 deals with seasonal variations, irregular fluctuations, and regional disparities in prices. The magnitudes differ between wheat, rice, cotton and jute, and these are attributed to 'lack of mobility in the economy, absence of organized markets and, above all, the restrictions on the movements imposed by the government' (p. 199). This does not follow from the statistical data presented.

In Chapter 6 generally accepted objectives of price stabilization are described rather elegantly. Chapters 7 and 8 deal with approaches to price stabilization, and forward prices as a means of price stabilization. The rationale for the establishment of the Indian Agricultural Prices Commission is described in detail but there is hardly any evaluation of its recommended policies. Finally, the treatment of storage in the concluding chapter is rather superficial.

The conclusion that forward prices should be used for price stabilization and be announced before the sowing season for all the major crops is essentially an endorsement of what the Indian Government has already been doing through the Agricultural Prices Commission. The specialists will have a handy source of data on Indian agricultural prices in 45 statistical tables and students interested in the use of forward prices for agricultural price stabilization in less developed countries will find Chapters 6-8 useful.

The second book, *Economics of Land Consolidation in India*, deals with an aspect of a major problem for planners and policy makers. This book is a revised version of the author's doctoral thesis submitted to Lucknow University in 1966. The study is based on primary data collected from 318 cultivating households in 20 villages of Lucknow district (Uttar Pradesh) for the agricultural year 1962-63. An economic evaluation of the land consolidation programme would be of interest for its (a) methodology and (b) statistical measurement of change in production and productivity. The book does not fulfil expectations because there is little economic evaluation of the consolidation programme and the statistical measurements of productivity change are already 'dated' due to the lag in publication. The work will only be of interest to students of the history of land consolidation and its probable benefits during the pre-green revolution period.

Chapter 1 summarizes the legislative provisions of the land consolidation in different states of India and outlines the methodology and the sources of data. Chapter 2 deals with the various characteristics of the cultivating households of the project group (consolidation completed) and in a control group for comparison.

Chapters 3-5 form the statistical core of the study by comparing farm inputs and outputs (Chapter 3), labour utilization (Chapter 4) and agricultural practices (Chapter 5). On all of the three counts, households with consolidation of land holdings perform better than those of the control group. Only simple comparisons using percentage differences between the two groups are used, while the author stops short of undertaking an economic evaluation of the costs and benefits of the programme of land consolidation in the region he studies.

Chapter 6 deals with cultivators' indebtedness and Chapter 7 enumerates obstacles in the way of land consolidation. The important ques-

tion that land consolidation is an important facet of the land reforms programme is relegated to the concluding chapter. Even here the emphasis is on consolidation and prevention of future fragmentation and is bound to disappoint the advocates of land reforms.

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*Introduction to Tropical Agriculture.* By J. A. SUTHERLAND. (Sydney, Angus and Robertson, 1971). Pp. 242 \$3.75.

Alan Sutherland's latest book for school use is directed to pupils in the Pacific islands including Papua New Guinea. He has thus aimed to fill a serious gap in texts suitable for students of agriculture in these countries.

The author states in the Preface that the book is pitched at the junior secondary level and Professor McClymont, in his Foreword, suggests its use in primary schools. In Papua New Guinea, where English is taught as a second language, the book has been found to be more suited to middle and upper secondary levels. In such countries *Introduction to Tropical Agriculture*, therefore, fills a different role to that intended by the author. The difficult task of producing a basic agricultural text for junior secondary students of developing Pacific countries remains a challenge to the future.

In this review I will therefore examine *Introduction to Tropical Agriculture* as a school text for middle and upper secondary students.

The strength of the book is its use of self-educating practical activities and projects to introduce some simple principles of agriculture. Mr. Sutherland's approach should encourage an open enquiring attitude toward agricultural problems. It has gained a good response to the book from schoolteachers in Papua New Guinea.

Throughout the book background information has been kept very brief and the student is encouraged to discover for himself about soils, plants and animals by doing exercises outlined in the book. In these exercises the student's attention is drawn to certain differences in results and he is asked the reason for these. The book consists of 26 brief chapters on different aspects of agriculture and these are grouped into four parts—introduction to agriculture, plant production, animal production and agricultural economics. The text is backed by 126 excellent illustrations by the author, which add considerably to the book's educational value.

Alan Sutherland's self-educating approach will come as a breath of fresh air to most developing Pacific countries where the school systems remain largely directive and still expect passive learning by students. However, the book has some serious shortcomings and teachers should be aware of these before they make use of the book.

Firstly, it is apparent that Mr. Sutherland has made only a brief visit to the tropical countries about which he writes and that he examines these countries in terms of his own culture. The author appears to have fallen for the classical trap which seems to snare experts from developed Western countries who visit underdeveloped countries. Such experts examine the underdeveloped country in terms of the culture and institutions of their own country. Invariably they conclude that economic de-

velopment is only possible if the social relations of the underdeveloped country are reformed to resemble those of their own Western country. Alan Sutherland has done this wherever he deals with the social aspects of the agricultural system. The resultant paternalistic pleading for reform of traditional 'bad' ways in favour of the 'good' ways of Western countries is most unsatisfactory.

The author's cultural bias shows up clearly in Chapter 1 when he presents a list of all the 'bad things about subsistence agriculture' (p. 5). I doubt if many Pacific islanders would be impressed by a statement such as 'Subsistence farmers do not grow many kinds of crops. Most farmers grow only one or two kinds of crops. For example, one farmer near Goroka only grows yams and sweet-potatoes'. If Alan Sutherland did in fact find a farmer near Goroka with 'only two kinds of crops' then surely he found a very typical farmer. This theme is illustrated with a drawing of 'modern agriculture' (Fig. 1.3) in which he transposes a vision of the ideal small farm from the Nepean River flats to the Pacific islands by the addition of coconut palms and Islanders. Those with more experience in tropical agriculture would reject the model depicted as entirely unsuited to their environment. Probably most readers will find the 'Garden of Eden' type illustration of food gatherers (Fig. 1.1) a better model which would hardly be what the author intended.

The author's Western paternalism is most obvious when he deals with land tenure (Chapter 8). Any land tenure system is a product of a particular social system at a point in time. It is both cultural and dynamic. There is little appreciation of this in Chapter 8 where a list is given of what is 'good' land tenure and what is 'bad' land tenure. This list implies that all aspects of land tenure which fit in with Australian cultural values are 'good' and all those which do not are 'bad'. We are then told that 'there are a number of steps which must be followed when a good land tenure system is being made. These are the things which must be done.

1. The names of men who hold the land must be written down so everyone can see who owns the land . . .
2. The land must be properly measured and marked out. A survey must be made.
3. There must be land courts which can decide who owns the land.
4. There must be a way of transferring rights to land from one man to another.'

None of these steps, as spelt out here, 'must be done' in the formal manner suggested. They may seem necessary in Australia, but to transfer the same practices to other countries has been shown by experience, to be economically unattainable and socially disastrous.

To a lesser extent these attitudes reappear in the brief section on agricultural economics at the conclusion of the book. Once again there is some propaganda for Western land tenure, in particular for land settlement schemes (p. 237). On page 236 it is incorrectly stated that 'farmers cannot get rural credit if their garden is on village land'.

Readers of this review might be concerned to learn that Alan Sutherland feels he can deal with the subject of agricultural economics in twelve pages. However, it is no easy task to explain money, markets and budgeting in simple English. I feel the author has done well in even attempting the section, but it is disappointing to see him dispensing with

the simple practical exercises used in the other sections of the book. Surely practical exercises on budgeting for example would have made the section more meaningful to students.

My second area for criticism concerns the technical information included. The author is obviously a temperate agriculturalist. In places he appears to have used technical information directly from temperate zones. This is obvious in Chapter 13 on vegetable growing where recommendations are given for temperate vegetables without any indication of the difficulty of growing these species in the tropics. In other cases recommendations are given which are out of date. For instance the house and cattle yard illustrated in Figure 22.2 is one used in Papua New Guinea's first village cattle project prior to 1963. A different type of yard has been used on all projects since that year. The number of technical errors in the book is quite substantial. For example the Tropical Pig Breeding and Research Centre at Goroka have listed eleven points in the two chapters on pigs which are either misleading or contrary to research findings. To illustrate, the tables on pages 180 and 189 listing suggested rations and the protein content of food are apparently based on dried weights but this is not stated. This would be confusing for school students who would normally only have fresh carbohydrate foods available such as sweet-potato or taro tubers.

It would seem that the author has relied extensively on old recommendations appearing in manuals and the like and where these are unavailable he has substituted information from temperate sources. A lot more technical information is available on tropical agriculture in the Pacific, but to collect it together would have involved personal contact with more specialist resource officers. If the author had made more contact with such specialists I feel the resultant book would have been more up to date, more accurate and therefore more valuable for teaching agriculture in the secondary schools of developing Pacific countries. As the book stands now, it fills an urgent need for a relevant text in simple English and its self-education format is to be commended, but, teachers should be aware of its shortcomings in order to make the best use of the book.

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