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BOOK REVIEWS

Dynamics of Land Use—Needed Adjustment. Center for Agricultural and Economic Adjustment. (Ames: Iowa State Univ. Press, 1961.) Pp. viii + 371, \$4.95.

The title of this book is misleading. It is not a treatise on the dynamics of land use but a study of the need for adjusting the area under agricultural production in the United States. This is only one aspect (and moreover one that is specific to America) of the dynamics of land use. The book is the report of a conference held in May 1960 to discuss the productivity and potential of farm land in the United States in relation to the demand for farm products and the level of farm incomes. Apart from a certain amount of repetition, the problem of integrating twenty-two separate papers into a coherent whole has been largely overcome and the book is admirably logical in structure.

The central theme is well known. The rate of technological change in agriculture—in an economy which is characterized by rising income per capita and low demand elasticities for farm products—is such that production outstrips consumption, while the supply inelasticities of land and other resources result in low incomes in agriculture relative to other sectors of the economy.

The first half of the book reviews the growth prospects of the American economy over the next twenty-five years, the potential demand for farm products and for non-farm products and services requiring extensive use of land, together with the physical and economic potential of agricultural production. Corn, wheat, cotton and forest products are singled out for particular attention. The pivot of the book is Chapter 11 in which Egbert and Dumenil review “the potential supply-demand imbalance”. The main feature of their contribution is a linear programming analysis to establish the potential excess areas under wheat and feed grains on a regional basis. It would have been interesting to see this method extended to a wider range of products.

The second half of the book reviews the desirability of withdrawing land (some 40-60 million acres) from agricultural production. Alternative uses are considered and the point is made that shifts to some of these, e.g. recreational uses, are likely to be too slow because they are dependent upon non-market forces. The core of this section however is the discussion as to whether land retirement would be the most effective and the most appropriate means of solving the twin problems of surplus products and low farm incomes. Land retirement is the focus of attention but Chryst and Timmons (Chapter 17) and Kaldor (Chapter 21—Summary) stress that the basic need is to move human resources out of agriculture. Higher incomes and a better balance of production and consumption might be achieved by policies aiming at a more extensive use of land rather than the retirement of specific areas of land on individual farms or within prescribed geographical areas.

This is only one of a series of studies sponsored by the Center for Agricultural and Economic Adjustment; others deal specifically with labour and capital. Without having these reports to hand the reviewer cannot say to what extent ideas and material are duplicated but it seems inevitable there must be considerable repetition. Land cannot be considered in isolation any more than labour or capital. A more satisfactory

approach would be a general study of disequilibrium in American agriculture with sections devoted to the institutional aspects of specific resources. The Center has in fact already published work dealing with general aspects of adjustment.

The book brings together a mass of material and ideas, and approaches the task set with the detailed thoroughness one would expect from a distinguished group of contributors. To some readers however the policy framework within which it is conceived will appear too restricted. The only reference to foreign trade is a single projection of exports for the year 1980. There is no discussion of the possible effects of a change in trade policy, nor of a change in immigration policy, nor of a new approach to solving the real need for foodstuffs in the less privileged parts of the world. It may be that such topics are poor starters in terms of political acceptability (a concept which is introduced in the final chapter) but this is surely not a sufficient reason for omitting them from discussion.

J. T. WARD

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Modern Land Policy. EDITED BY H. G. HALCROW. (Urbana: Univ. of Illinois Press, 1960.) Pp. vii + 449, \$8.50.

One might expect that a book entitled *Modern Land Policy* and containing the papers presented to the Land Economics Institute's session of 1958 would indicate definite policies which should be pursued in different countries to solve current land use problems. If such was the purpose of this gathering of leading land economists then it failed to achieve its object. The volume is far more a detailed investigation of current land use, and a commentary on present land use policies in the United States, than an attempt to state exactly how land should be used even in that country.

The chief value of this collection of papers lies in the mass of statistics it contains and in the destruction of certain myths concerning land use. The exact areas of land used for different purposes and the changes in the proportion of land in each use, urban, roads, railways, recreation, farming and forestry in the United States and the United Kingdom are given in a readily understandable form. Predictions are made of the areas of land which might be required for each particular use in the future.

An excellent paper by Professor T. W. Schultz discusses the declining importance of land and the increasing importance of capital in agricultural production. Agricultural land as a proportion of the total wealth of the United States has declined from 17% in 1896 to 5% in 1955. A smaller area of crops is needed to provide a superior diet for a greater population in 1957 than in 1933 because gross agricultural output per acre has increased at a faster rate than population. Schultz sees no reason why this trend should not continue in industrialized countries. The failure of any of the writers to answer the problem posed by Schultz, i.e. what to do with the large areas of land no longer needed for agriculture, is this book's chief failing.

Professor P. M. Raup points out that agriculture has provided cheap food for all industrialized societies because the farming population has accepted a lower standard of living than the urban dweller. He suggests that relatively low rural incomes will only disappear when large numbers of small farms are replaced by larger units. Although a whole section of the book is devoted to land tenure, methods of rapidly achieving the amalgamation of farm units and reducing farm population are not suggested.

It is recognized by several writers that agriculture in the U.S.A. and Western Europe is supported by large subsidies but no writer examines

these subsidies or considers how they might be used to obtain more efficient use of agricultural land. The question of how to obtain farming units which will provide the community with food at low cost and also give those who work them a reasonable return for the labour and capital they invest, without indulging in subsidies is practically ignored; although the answer to this question is surely the land policy which any country should pursue.

Perhaps the most revealing paper is that of Professor R. Barlowe dealing with the economics of irrigation schemes in the United States. It is pointed out that almost all of the schemes are uneconomic even when the total benefits they confer on society including non-agricultural benefits are listed as part of their output. Although some of the authors are still thinking in terms of future shortages of agricultural land in the United States, the general conclusion emerges that the present surplus of agricultural land is likely to increase. Only in very exceptional cases are irrigation schemes which will add to the nation's agricultural output justified. The United States apparently has no long term policy which will cope with its surplus agricultural land, ensure an adequate supply of cheap food for the country as a whole, and provide a high standard of living for its farmers. The possibility of formulating such a policy is not discussed.

The lack of any discussion of a policy of farm amalgamation in the United States is highlighted by papers dealing with this problem in Canada, Holland and India. C. C. Spence points out that the amalgamation of uneconomic units was achieved in the prairie provinces of Canada, but only after settlement schemes had failed and the major portion of land had been abandoned. D. Groenveld shows that in spite of alternative employment for the farming population and the provision of new land in reclaimed areas in the Zuider Zee, the amalgamation of small farms in Holland is only proceeding slowly and at great cost. The difficulty of amalgamating small farms in India is discussed by H. W. Hannah. He suggests that in underdeveloped countries it is probably easier to obtain additional food for the nation, and higher standards of living for farmers, by increasing yields rather than by attempting to amalgamate small farms. This is precisely what has happened in Japan. In view of the difficulties other countries have encountered when the amalgamation of small farms is attempted, it is perhaps not surprising that this policy is ignored by authors dealing with land policy in the United States. Yet any book dealing with land policy, particularly in industrialized countries, should suggest policies which will achieve a plentiful supply of food from the land and a high standard of living for those who produce it. Even the competent manner with which problems and policies associated with the use of land for towns, transport and recreational purposes are dealt with in this volume does not compensate for its failure to discuss a workable policy for agricultural land in industrial countries.

B. DAVIDSON

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Canberra.

Adjustments in Agriculture—a National Basebook. EDITED BY M. G. SMITH AND C. F. CHRISTIAN. (Ames: Iowa State Univ. Press, 1961.) Pp. xvii + 376, \$3.95.

This book, it is claimed, fills the need for a unified source that assembles, co-ordinates, and interprets data on U.S. agriculture for teachers, research workers, extension workers, farm leaders, farm organizations, political leaders, agricultural businessmen and government agencies. It represents

one of the services of the Iowa State University's Center for Agricultural and Economic Adjustment. The book contains thirteen articles. Each is by one or two authors who are among the current famous names in agricultural economics in the U.S.A.

There is nothing new in the book for agricultural economists. It is written for everybody. Its purpose is to help them understand the reasons for, consequences of, and solutions to, the major economic problem of American agriculture, namely excess labour resources.

On his topic of economic growth and agriculture, Brandt's starting point is when agriculture was the total economy. His end point is a projection to 1970 for the U.S.A., by which time employment in farming is expected to be 4.9 million and the total work force 87.1 million. He explains how this change in agriculture's position in the economy is the outcome of economic growth. Growth—the idea, the process, conditions and requirements for, its measurement—is discussed fully. Projections of historical data are used to clinch the final point that further growth “would create a great need for further dynamic adjustments in farming”.

In his analysis of the farm problem, Heady pin-points the treadmill-like situation in which farmers find themselves. The low income elasticity and low price elasticity of demand for most agricultural products, the high rate of adoption of production increasing innovations, and the substitution of capital for labour, present the individual farmer with the choices to leave agriculture or to become more efficient, if he wants to increase or maintain his income, or to adjust to a falling income. Experience is against those who believe that the farm income problem may be solved by increasing the scale of operations and production on all farms.

Nor is there great scope for increased consumption of food within the U.S.A. Here in Fox's essay on demand for farm products, the reader is again confronted with price and income elasticities. The prospects for expanding the demand for food by promotion, quality improvement and nutritional aid to the needy, and expanding the demand for non-food farm products are not encouraging. Difficulties of exporting the farm surplus problem are discussed and the unwisdom of further building up the existing stocks is pointed out. The utilization of surplus farm products in underdeveloped countries is thought to be already near the politically feasible maximum.

On the supply side, Bonnen illustrates statistically that production outstripped population growth and that labour used on farms has fallen by more than half since 1920 under the influence of mechanization, electrification and the growth in farm productivity. He describes the size of the stock of surplus farm output and its rate of increase, ending on the note that “the annual flow of surplus production will grow larger”, and “pressures on the returns earned by people and resources in farming will become more intense over the years ahead”. Sherman Johnson appraises land resources, notes that they are surplus to current needs and that there is “tremendous potential flexibility in their use”. Kiehl presents the case of those who see in the imbalance between supply and demand for grain an opportunity for expansion of the livestock industry, and “storing more grain on the hoof”. He points out that it requires roughly seven times as many nutrients to feed a human population on animals and animal products as on a strictly cereal diet. However, Kiehl concludes that “changes in either demand for meat products or in costs are not likely to be great enough to have a significant impact on increasing the derived demand for land resources”.

Brewster and Wunderlich define the family farm, do not consider it to be threatened by economies of scale, but think it could be threatened by

vertical integration. The net effects of these forces on the family farm are dimly perceived. Ogren and Scoville deal with the purchase of farm supplies and the marketing of farm production. They note the increasing tendency to integration in both and conclude happily that "cost reduction and improving efficiency in marketing should permit better prices to be paid for farm products" and "cost reduction in the farm supply industries should reduce farmers' costs".

Beale and Shoemaker deal with out-migration from the U.S. farm population—its rate, age and sex patterns, the reasons for its occurrence, and its occupational consequences for farm people. Larson and Lutz discuss the effects of out-migration on community facilities such as schools, churches, medical and other services. The need for town planning (zoning) is stressed and the effects of changes in agriculture on local government are discussed.

Brandow outlines the role of government programmes in agricultural adjustment and concludes that "it is not likely that any feasible income program can maintain the number of farm people at the 1960 level". Finally, James and Ackerman discuss the needed changes in education required to meet agricultural adjustments.

In this reviewer's opinion this book will not be read by the farmers who need to be adjusted; and for those who will do the adjusting, the book does not particularize sufficiently. Perhaps it will influence the great mass of people in between.

H. P. SCHAPPER

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Agricultural Supply Functions. EDITED BY E. O. HEADY, C. B. BAKER, H. G. DIESSLIN, E. KEHRBERG AND S. STANFORTH. (Ames: Iowa State Univ. Press, 1961.) Pp. viii + 305, \$3.95.

Consisting of 17 symposium papers and accompanying discussion grouped into five chapters, this book aims to present a systematic view of the problems of estimating and interpreting agricultural supply functions. Rather than attempt to assess all the contributions individually, it seems preferable to mention only those papers which—to this reviewer—represent the syrup on the waffle.

Following an introduction by Heady, Chapters 2 and 3 respectively present the two basic approaches to estimating farm supply response. The former chapter deals with the traditional descriptive time-series analysis based on aggregative data. The problem with this approach is how to incorporate into the analysis the changes in supply structure caused by non-random variations in technical and institutional conditions. The paper by Learn and Cochrane clarifies the effects of structural changes in contrast to the more or less parallel shifts of the supply function due to factor price changes. In a way, the effects of structural changes take the form of changes in the time lag with which farmers respond to price changes and/or in the way they base their expectations on present and past price data. Nerlove's paper is in this connection. He presents (1) a theoretical model for understanding farmers' response patterns under different fixed capital situations, and (2) an estimation model with a theoretically appropriate expectation pattern. His estimation model based on Muth's rational expectations hypothesis is of particular interest.

As a new device for supply prediction based on time-series data, a recursive programming model is proposed by Day. Here, the optimization principle is applied to the actual land utilization patterns which are subject to time-series estimation. The biggest problem in Day's model will be estimation of the "flexibility coefficients" (specifying the degree

of change expected from the preceding year's production pattern) and their legitimacy.

Though aggregate time series analysis is most direct in providing an aggregate supply prediction, the difficulties inherent in time-series analysis leads to the other approach dealt with in Chapter 3. This is the derivation of farm supply relations from production relations estimated on individual farm data. Based on the assumption of profit maximization, this approach—in contrast to the former—is normative, although its advocates have hopes of its descriptive value. The papers by Kehrberg, Loftsgard and G. L. Johnson respectively present methods of deriving supply estimates via production functions, linear-programming, and budgeting. The supply relations derived from these production models, by themselves, are not likely to provide good predictions. All the difficulties of extrapolating cross-sectional results into the future have to be countenanced. As well, there is the problem that because of their desires (or is it in spite of them ?) farmers usually do not behave as *ex ante* profit maximizers. Hence for good predictions, the normative supply relations must be supplemented with knowledge of the farmers' behavioural pattern. These difficulties should have received far more consideration in Chapter 5 on the interpretation of supply functions.

To complete the picture, Chapter 4 considers—with little originality—the role of spatial equilibrium models in answering the normative problem of what regional supply pattern will best satisfy national demand for agricultural products.

Overall, the systematic orientation that this book presents is certainly a useful stepping stone for further research. But it is no more than a stepping stone. Despite the increasing investment in supply studies, the book reflects both their fragmentary nature and the fact that the study of demand is a far better established field of research.

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Tokyo, Japan.*

The Theory of Linear Economic Models. BY D. GALE. (New York: McGraw-Hill, 1960.) Pp. xxi + 330, \$9.50.

Intended as a graduate-level text for mathematics and mathematical economics students, this book presents the basic *mathematical* theory relevant to linear programming, game theory, and linear models of exchange and production. Accordingly, emphasis is on such topics of linear algebra as matrices, linear inequalities and convex sets, and the use of these in the analysis of the above-mentioned types of economic problem. Although of interest as an example of the developing influence of economics on mathematics, the book is undoubtedly too mathematically abstract to enhance the non-mathematical economist's understanding of linear programming and related developments. In contrast, the economist with some mathematical predilection (and time to spare !) could gain much from Gale's lucid exposition—so long as he thought it worthwhile knowing, for example, just what one does via the simplex algorithm.

JOHN L. DILLON *University of Adelaide.*

Linear Programming in Industry: Theory and Applications; an Introduction. BY S. DANO. (Vienna: Springer-Verlag, 1960.) Pp. viii + 120, \$4.75.

This book offers nothing new, nor does it present something that we already know in a different or more palatable form. Despite this it does deserve a place on our already bulging bookshelf of linear programming texts. For the linear programming practitioner, it offers an opportunity

for precise revision of fundamentals; for the novice with some mathematical agility (but not necessarily depth) it introduces linear programming in a style which is both concise *and* simple (a welcome combination! — too often one is achieved at the expense of the other).

Dano describes the book as “ an introduction ” and of the nine chapters, five would feasibly fall under this heading (viz., those which set up the general linear programming problem, show how it can be solved, give worked examples, and demonstrate the use of its dual formulation). The remaining four chapters treat—not consecutively—parametric programming, the relationship between linear programming and production economics, some industrial applications (blending, machine utilization, inventory and transportation problems), and the general applicability of linear programming to industrial situations. An appendix contains some formal proofs, and several exercises with answers are provided.

The book is not without its shortcomings. Although the author is to be complimented for disposing of the theory behind linear programming and the simplex method in only ten pages, his first “ practical example ”, a blending problem of fourteen structural and seven basic variables, in which the initial basis turns out to be the optimal solution, is not well chosen. Dano does not enter the field of non-linearity, and on occasions this omission becomes noticeable, as in the chapter which treats the linear programming equation system as a model of production. In practice the linearity of many constraints is easily justifiable, but it is often less easy to rationalize a linear production function. Even a brief mention of the existence of non-linear programming models would have elevated this chapter. Finally, the four-page chapter on the applicability of linear programming in industry is inexplicably cursory. Surely this chapter should have presented the author with scope for original and imaginative thought.

Nevertheless this book, within its limitations, can be commended as a precise presentation of basic linear programming which might be well read in conjunction with other, more extensive, texts.

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The Terms of Trade between Agricultural and Industrial Products. BY M. K. ATALLAH. (Rotterdam: Netherlands Economic Institute, 1958, reprinted 1960.) Pp. 78, \$2.50.

In a recent discussion of the literature on the terms of trade between agricultural and industrial countries, Professor Haberler rather neatly disposed of a good deal of what has become conventional wisdom.¹ Some people have argued that the terms of trade in the past have tended to turn against agricultural (or undeveloped) countries. Professor Haberler pointed out that the statistical evidence is quite unclear on this matter, and certainly not simple. Secondly, various reasons have been propounded to explain this alleged trend of the terms of trade against agriculture. Professor Haberler emphasized the weaknesses of these explanations, quite apart from the weakness of the original proposition which they are designed to explain. Thirdly, various policy conclusions have been derived from the alleged facts; these conclusions have been based on the extrapolation of what are supposed to have been the past

1. Haberler, G., “ Terms of Trade and Economic Development ”, in Ellis, H. (ed.), *Economic Development for Latin America*, Macmillan, London, 1961.

trends in the terms of trade, and involve principally a case for industrial protectionism in the agricultural countries. As one might expect from Professor Haberler, he considers these conclusions do not follow, even if the historical facts were correct.

The present reviewer finds himself sympathetic to Professor Haberler's viewpoint, and so approached Dr. Atallah's little book with some apprehension.

Briefly, what Dr. Atallah has done is this. He has constructed a theoretical model in which the long-term movement of the terms of trade between agricultural and industrial countries emerges as the solution. Then he has collected data enabling him to attach reasonable ranges of values to the various coefficients of the model. He solves the model (or, to be precise, different varieties of the model) for a number of different sets of coefficients, and explores the effect on the final result of these variations in the parameters. What he finally comes out with is as follows (p. 74):

"We can conclude therefore that . . . the terms of trade between agricultural products and industrial products will move against the former by a factor around 0.3 in the decade after 1952-54."

Fortunately, Dr. Atallah recognizes (p. 76) that:

"the value of the present work has to be judged less on the use for which it has been put to predict the future movement of the terms of trade, than on the systematic study of the factors which influence this movement and their interrelations."

In other words, he appreciates that the main value in model-building is to clarify the issues involved, rather than in the econometrics based on it. There is no doubt some value in seeing what comes out when the best available figures are put into a simple model, provided one treats the result with proper scepticism. It seems hardly worthwhile to point out the gross over-simplifications in models of this type, making them questionable instruments for predicting the behaviour of the real-world. Furthermore, every figure fed into the model, whether it is a figure for world capital formation in agriculture, national income, population growth or capital coefficients, could be absolutely torn to shreds. There are methodological problems connected even with national income and capital coefficient estimates in advanced countries (and their aggregation for many such countries); one must hesitate in placing any credence, and drawing elaborate conclusions from, the available guesses for most under-developed countries. Finally, one wonders about the value of estimates of the terms of trade on a world basis when it is known (as Dr. Atallah points out) that movements have been very diverse as between different industrial and agricultural countries.

Nevertheless, given the limitations of the type of approach and a proper scepticism about the significance of the result, the book can be quite strongly recommended. The first two chapters contain a useful survey of the literature on the whole subject, both of the statistical evidence of past movements in the terms of trade and different views explaining the movements. The model itself is neatly presented, and indeed some more famous economists could learn from Dr. Atallah how to expound a model. It is a simple two-sector neo-classical growth model (an agricultural and an industrial sector) with a constant returns to scale production function in each sector, inputs of capital and labour, technical progress, and income and price elasticities of demand. The book can be recommended as an exercise in model-building or reading. Furthermore, there is a useful survey of the available statistical information required to estimate the magnitudes or growth rates of different elements of the model. It may be of interest to note that Dr. Atallah has made considerable use of Mr. Colin Clark's estimates even though

he differs from Mr. Clark both in the nature of his model and his conclusions.

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Fourth Report on Agricultural Policies in Europe and North America.
Organization for European Economic Cooperation, Ministerial
Committee for Agriculture and Food. (Paris: O.E.E.C., 1960.)
Vol. I, pp. 352, 27/6 stg.; Vol. II, pp. 463, 30/- stg.

These volumes continue the country-by-country study of agricultural problems and policies initiated in the Committee's Third Report. The first volume deals with "problems in the cereal sector" in Portugal and Yugoslavia, "problems in the meat sector" in Canada, Denmark and Switzerland, the Norwegian price support system, structural problems of agriculture in Greece, Iceland, Italy, Spain and Turkey, and the problem of low income farms in the United Kingdom and the United States. These problems, as they manifest themselves in other countries, were also discussed in the Third Report. The second volume is devoted entirely to a discussion of problems in dairy policy. The bulk of this volume—over 300 pages—consists of the description and appraisal of dairy problems and policies in 12 European countries (encompassing most of Western and Northern Europe) and in Canada. This section is preceded by several chapters which, *inter alia*, discuss recent trends in dairy production, consumption, trade and prices, supply and demand characteristics of the industry, and a general account and appraisal of methods of price support and stabilization employed in the countries considered.

The Report is of course primarily useful as a convenient source of information concerning European agriculture. It contains a wealth of statistical material of the usual type, but of even greater value—since it is not readily available elsewhere—is the fairly detailed information given concerning the organization and structure of agricultural production and marketing (cooperatives, marketing boards, etc.) and the aims and nature of government intervention in agriculture. The Report—in particular, the second volume—can also be recommended to anyone wishing to obtain a quick appreciation of the scope and ramifications of agricultural protection in Western Europe. Perusal of the second volume also opens up vistas for employing inter-country comparisons as a basic research tool. (Why, for example, has Sweden, alone among the countries considered, experienced a substantial decline in milk production?)

However, O.E.E.C. reports are more than mere reference books: they appraise, as well as describe. Their authors do not hesitate to criticize policies pursued by various countries, and to face up to hard choices. In the dairy study they emphasize the "fundamental conflict between the need to maintain or improve income from the production of milk and dairy products and the need to avoid oversupply". Possibilities for coordinating national dairy policies are also considered, but the authors are able to recommend only regular discussions between member countries and special consultations prior to major changes in dairy policy, or in the event of special difficulties arising. A multilateral stabilization scheme for butter and processed milk products (akin to the International Wheat Agreement) is explicitly rejected as being impracticable in present circumstances.

The second volume could usefully be read in conjunction with the F.A.O. study entitled *National Dairy Policies in Advanced Countries*. The two reports complement each other in several respects.

R. M. PARISH

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Programming Techniques for Economic Development—With special reference to Asia and the Far East. United Nations. Development Programming Techniques Series, No. 1. Report by a group of experts. (Bangkok, 1960.) Pp. 130, 7/- stg.

The argument of this book is firstly that where there is a need to plan it is important for the plan to be internally consistent, and secondly that consistency is likely to be best achieved by the use of formal models of the economy. Models discussed range from aggregative through static and dynamic input-output models to linear programming models. There is unlikely to be serious disagreement with the book's central thesis. A great deal of wise comment on how a planner may go about his job is compressed into the 79 pages of text.

If there is one general criticism of the book it is that the search for simplicity and brevity in the text (as distinct from the Appendices) has made some problems simpler than is perhaps warranted. For example Chapter III embodies the results of an elegant generalization of the familiar proposition that the attainable rate of growth equals the savings ratio divided by the marginal capital/output ratio. The generalization lies in a demonstration of the weights to be used in calculating the aggregate national capital/output ratio in a multi-sector model under conditions of equi-proportional growth. However, the assumption that the activities to be used are predetermined, and hence that the marginal capital/output ratio is a parameter, ignores many of the most interesting problems of development. The writers are of course well aware of this and the matter is picked up towards the end of Chapter V, though scarcely given its proper weight.

Technical knowledge in the field of economic planning is advancing rapidly and it is well known that our present inability to use linear programming models of the economy derives only from ignorance of the specific functions to introduce into the model. There is however one problem which will always be with us, and that is the size of the model. Is the realistic approach to planning to use the Soviet technique of material balances in physical terms and to couple this with a fifty sector (value) input-output model (with or without explicit analysis of choice) for general co-ordination as is reported to have been done in Poland ?

BURGESS CAMERON

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International Trade Aspects of Indian Burlap. BY G. K. CHACKO. (New York: Bookman Associates, 1961.) Pp. 226, \$10.

Burlap is gunny cloth, or hessian, and this book purports to be a thorough econometric analysis of the game of international trade in burlap and its precursor, raw jute. Australia imports all her burlap, but there are possibilities of growing kenaf, which is a close substitute, in the Kimberleys. Chacko's study therefore has an incidental practical interest, which should be transcended by the importance of an advance in the use of the theory of games for resolving problems of international trade, but is not.

The first 67 pages are a "historic-statistical survey" in which the structure of trade in burlap and jute from 1947 to 1956 is examined. Some of the data is presented here for the first time, but the key statistics are readily available in other sources.¹

1. In particular: *Mon. Bull. Agr. Econ. Statist.* 9 (12), 1960 and 10 (1), 1961; *Daily Mill Stock Reporter*, (Burlap, Jute and Annual Numbers); and *Jute Manufacturers*, Cwth. Econ. Comm., 1955.

In summary, the economic warfare between India and Pakistan dates from partition. Before partition in 1947, 90 per cent of the world's jute was grown and milled around Calcutta. Partition placed 70 per cent of the jute fields in Pakistan and the mills in India. The mills employed a high proportion of India's factory workers both directly and through the demand for transport and power. After partition, the crucial supply of Pakistani jute was often below the capacity of the Indian mills, and the gap was widened by the devaluation of the Indian rupee and pound sterling in 1949, and by Pakistan's establishment of price restrictions on the export of jute to India. India retaliated by placing an embargo on exports of raw jute, a restriction on exports of coal to Pakistan, and a campaign to grow sufficient jute to achieve self-sufficiency. The latter resulted in a rapid increase in the output of raw jute, mainly at the expense of growing less rice. Pakistan rapidly increased domestic manufacture of burlap.

This promised to be an intriguing basis for the application of game theory to international trade. The reviewer visualized a systematic treatment of the significant markets for burlap and raw jute, incorporating up-to-date specification of the structure of demand, and with special reference to the increasing competition from cotton, paper, and kenaf. Other important considerations appeared to be the relative costs of growing jute and of manufacturing burlap in India and Pakistan, and the alternative uses of land in both cases. The degree of dependence on the employment and accelerator effects of burlap manufacturing in plans for economic growth would also have made an interesting issue.

However, Chacko restricts his analysis to the Indian burlap which is exported to the United States. This is regularly over 80 per cent of the United States demand, but only some 30 to 50 per cent of the Indian supply. The analysis thereby ignores the major scope for sale of Pakistani burlap. Moreover, the analysis does not extend beyond 1956, which is not good enough for a book published in 1961. Nor is the treatment of alternative fibres and alternative uses of land very convincing. The conclusion in favour of a coalition of India and Pakistan against the United States is consequently of doubtful significance.

The 64 tables and charts are offset printed from typewritten originals. The appearance is untidy and wastes space. One expects something concise and attractive in 226 pages for ten dollars, but in addition to the poor format the text is rambling.

Chacko's study would make a reasonable article in a journal, but so many variables are omitted without careful testing that the book is disappointing. Perhaps international trade is too complex for optimum strategies to be found by detailed analysis of basic data. Maybe the only feasible approach is to begin with hypothetical strategies and reveal as many of the effects as possible.

D. W. G. TRELOAR

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Perth.*

Rural Sociology in India. BY A. R. DESAI. (Bombay: Indian Society of Agricultural Economics, 1961.) Pp. xxix + 730, Rs. 25.

Seemingly written to persuade Indian politicians and administrators, this book outlines, discusses and pleads for systematic investigation of the sociological problems facing rural planners in India. The major such problems, over and above the normal difficulty of resistance to change, are: the high rate of illiteracy; the (partly disrupted) non-market village economy; the large number of landless agricultural workers; the caste system; a low level of living combined with indebtedness to money-

lenders; and inefficient agricultural production. The book is over-difficult to read, contains broad generalizations about other countries and fails to present a clear discussion of the methods of investigation needed for efficient planning.

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