BOOK REVIEWS

Population and Food Supply, Sir Joseph Hutchinson (editor). Cambridge University Press, 1969. Pp. viii 144. Stg 30s.

This book is based on a course of eight open lectures on population and food supply organized by the Faculty Board of Agriculture of the University of Cambridge in 1966, and repeated in 1967. Eight Cambridge dons discuss separate aspects of the theme, and the result is an authoritative and fascinating little publication. The lectures pre-date the spectacular advances in grain production in some of the food deficit areas of the world—the so-called Green Revolution. However, these technological developments do not invalidate the fact that agricultural production cannot be multiplied indefinitely, but only temporarily shifts the emphasis off this problem. Neither does it invalidate the main message of this publication, that it is no more than common prudence to plan now for the stabilization of human populations before the point is reached that food production can no longer keep pace with human multiplication, and readjustment by catastrophy becomes inevitable. The book introduces the reader to the biological needs and the resources of human communities, and to the problems of balancing the one against the other.

Professor Thoday, introducing the problems arising from our expanding populations, points out that we have in recent years become more generally aware of these problems, but they are now growing more acute. They are not new. He quotes Pope Urban II's reference to over-population of homelands as grounds for enjoining the Crusaders to colonize Palestine. In 1801, Malthus generalized the problem, warning that, since populations increase geometrically whereas agricultural production does not, population would grow to the limit of available resources and keep the world in poverty. In 1948 William Vogt warned that the world could only support 3,000 million people with most of them living at coolie standards. Thoday points out that by 1964 there were 3,283 million people and 7,000 million are predicted by A.D. 2000. He says that there must be a limit to population expansion and that if it is not to be stopped by famine, pestilence and war, it must be slowed through conscious policy. At the same time every effort must be made to increase production, especially of agriculture, to match population. This being the subject of the book; the one side concerned with fertility, mortality and human needs; the other primarily with agriculture. However with all those basic sciences on which agriculture depends, together with all the social sciences, social systems must change with population, and any measures proposed, whether demographic or agricultural, must be planned in the light of the social situation if they are to be effectively accepted.

Professor Sir Alan Parkes deals with human fertility and population growth and presents a spectacular world population curve which can be likened to a powerful jet plane's take off—throttles open at 5500 B.C., nosewheel off the ground in the Middle Ages, airborne about 1950 and supersonic, almost vertical flight (to 7,000 million) by 2000.

He surveys causes and courses of population growth, fertility, biological and social population control mechanisms, fertility, and the control of conception. He concludes by posing the question; how soon will the crunch come?

Economist King expands on the current fortuitous food supply and demand balance, it being a favourable time to reassess the problem of population and food supply. He points out that a balance between supply and demand means no more than that there is as much food in the market as can be purchased with the money available. It does not mean that there is enough food to meet all human needs. Thus the real problem, which is poverty, is no longer obscured by the secondary problem, of earlier inadequate production. He concludes that the great achievement of world agriculture in meeting the effective demand for food will end in frustration unless it is matched by a rate of saving to make possible a real increase in wealth.

Professor Banks discusses the effects of catastrophies and restraints on population. There were many references to famine in the ancient world, especially in the Old Testament, but the most vividly recorded are those of medieval Europe and India. For example between A.D. 970 and 1100 there were sixty years of famine in France and in 1418 one-third of the population of Paris is said to have died of starvation. Many of these great famines preceded or followed violent social upheavals, wars, and revolutions. They were also associated with epidemic diseases. Droughts have been mainly responsible for famine in India which resulted in many millions of deaths in the 15th, 16th, and 17th centuries. One–third of Bengal's population died in the year that Captain Cook explored eastern Australia. Banks says that it would be difficult to exaggerate the depopulation caused by plague but as an example estimated the Black Death claimed twenty million victims, including about one–third of the population of England between 1346 and 1353.

Great and fatal epidemics are being controlled by modern methods so effectively that they are unlikely to recur unless there is a wide-spread breakdown of communications and a return to the primitive conditions which formerly gave rise to them. Banks covers the decline both in ancient disease patterns and the causes of premature death.

Agricultural lecturer Carpenter ranges over man's dietary needs. He foresees a bread and margarine, rather than a bread and butter world, but believes it will take all the skills and efforts of food technologists to produce enough of that kind of food! He advocates more education, better food distribution, deeper nutrition science, and food technology research as "musts".

B. H. Farmer's long chapter on available food supplies finds that many basic statistics are of doubtful accuracy and there is by no means universal agreement on man's dietary needs. However it cannot be denied that there is a serious food problem in many countries—seasonal, periodic, or perpetual; and that, given current rates of population growth, there is a compelling need for remedial action.

The distribution of other countries' surpluses, through trade or through aid, is an insufficient answer, and appears to be growing less and less of an answer. The only possible solution apart from population control is improvement in agricultural production and productivity in the underdeveloped countries, which need all the technical and other assistance it is possible to give them.

W. Allan of the Cambridge School of Agriculture and the F.A.O., covers land tenure and productivity. He says that it is now generally realized that the world's food balance is extremely precarious and that there is a widening gap between the richer and the poorer countries. In general, land tenure systems as such are neutral in relation to productivity, but the forces which give rise to agrarian decay operate through them. The most powerful of these forces is population increase. No tenure system can resist the effects of this force. Population pressure leads to reduction of the fallow and decline in fertility of long-fallow systems under communal tenure; subdivision and fragmentation in family smallholding systems with private ownership; increasing rent spiral in landlord-tenant systems; excessive subdivision in large estate systems; and hidden subdivision in collective and co-operative systems. The tenure systems of the developed countries appear to resist the forces of population pressure only because diversification of their economies has diverted pressure from the land by providing sufficient non-agricultural employment for those workers leaving the land.

In most of the less developed countries the reverse is the case. Population increase rates are high and the ratio of the growth rate of non-agricultural employment to that of the work force is decreasing. In these circumstances, population growth itself produces conditions which make the problems of agricultural development and food supply almost despairingly difficult. This is one of the main reasons why agriculture has so often failed to play the part it should in the transition from stagnant to expanding economies.

The last chapter by Professor Hutchinson surveys the resources of agriculture. He has recently lectured at most Australian universities, and, as a cotton breeder, he advocates more investment of manpower and funds in plant breeding and in soil chemistry research, and the provision of greatly expanded world-wide food storage facilities to cope with climatic uncertainty.

The issues raised in this book are of vital interest to those concerned with agricultural policy and to all who have some regard for the welfare of our children.

A. GOULD
G. MASON

Department of Agriculture, Sydney.

Experimental Research and Farm Production, B. R. Davidson and B. R. Martin. Melbourne: Melbourne University Press, 1969. Pp. x, 68. $3.75.

This publication is No. 7 in the Agricultural Economics Research Report Series of the Institute of Agriculture, University of Western Australia. It describes a study which attempts to define and explain the differences between the results obtained on experimental plots and those obtained by farmers. The preliminary findings and inferences drawn from the study make it an important reference for future research as well as useful reading for extension and technical research personnel.

The report begins with a rather cursory (two page) discussion of why farmers adopt new techniques, followed by a more useful (five page) treatment of the relation of farm to experimental yields. Then follows an empirical consideration of specific crop and animal product relationships. The general approach used is to compare, with regression analysis, experimental results with farm yields for areas where similar technologies are used. A major problem was the lack of comparable experimental and farm yield series of data. However Davidson and Martin were able to find sufficient data for their immediate purpose. A valuable aspect of the book is a four page bibliography comprised almost entirely of sources of experimental results.

This book is short and concise and can be read quickly. The implications and conclusions from this work are sufficiently important to recommend the book to all who are concerned with applied agricultural research and extension.

D. E. MACCALLUM

Department of Agriculture, Sydney.

Economic Development of Tropical Agriculture: Theory, Policy, Strategy and Organization, edited by W. W. McPherson. Gainesville: University of Florida Press, 1968. Pp. xvi, 328. $U.S.8.50.

"The tropics are one vast garden," Emerson once said. This opinion is illustrated on the jacket of the book under review, where we see a bison-like creature grazing contentedly beneath a boiling sun, while lush vegetative development springs up all around. But what are the peculiar characteristics of tropical agriculture which could make its *economic* development a special study? Dr McPherson, in his introduction to this volume, writes that "it is of particular importance to note that these (tropical and sub-tropical) areas are distinguished from the temperate zones by frost-free temperatures (except at high altitudes), smaller seasonal variations in length of day, and differences in soils" (page 13). Readers will doubtless be grateful for this penetrating insight.

In fact the distinction between tropical and any other sort of agriculture is not maintained in the book. On pages 19–20 a list is given of countries which are classified as the "tropics". It covers Central America, the Caribbean, much of South America, Africa (East, West, and North) and Southern and South-East Asia; in short the great majority of the developing world. In other words the book deals with development problems facing agriculture in L.D.C.'s generally. Perhaps the reason for the insistence on the word "tropical" in the title is that the book is sponsored by the University of Florida's Center for Tropical Agriculture, which naturally enough seeks reassurance on the printed page of its own right to existence.

The book comprises a collection of seminar papers which were presented on the Florida campus during 1966. After the editor's introduction there are three "theory" papers, by John Fei and Alpha Chiang, Arthur Gaitskell, and Earl O. Heady. Then come two marketing papers, one on product markets with illustrations from Peru by Richard King, and one on factor markets, in which Glenn Johnson draws on his experience in Nigeria. There is a paper by Harry Johnson on trade preferences for developing countries, and an application of dynamic linear programming to farm planning by Max Langham, in which data from British Honduras are used to quantify the model.

The remainder of the book contains some illuminating "case-studies" of development planning and organization in several areas: Vernon Ruttan on rice production in South-East Asia, and Arthur Gaitskell again, on West Pakistan and on Africa south of the Sahara. In addition there are two papers by James Green and one by J. Price Gittinger which deal with various aspects of structural organization required for the promotion of agricultural development. Finally there is a paper by Arthur Coutu entitled "The Role of United States Universities Abroad".

The standard of these papers is generally high, despite the lack of a coherent unifying thread running through the book. Moreover, thanks to competent editing, the usual irritations of multi-author collations are minimized. Faced with such a pot pourri, a reviewer's optimal strategy seems to be to avoid generalizations and to concentrate instead on a few points raised by specific papers.

The "theoretical" papers are on the whole a disappointment, perhaps reflecting the lack of any substantial recent innovation in development theory generally. Professors Fei and Chiang address themselves to the proposition that economic stagnation in agriculture results from persistent population pressure and lack of technological progress. They spend twenty mathematical pages verifying this almost truistic hypothesis. I found this paper as barren of ideas as some of Professor Fei's earlier work has been suggestive.

Professor Heady, whose prose grows more opaque daily, puts forward his "tested and proven" recipe for agricultural development: "Lower prices and increased availability of resources, add certainty and greater quantity to product prices, blend with knowledge and a firm or tenure structure which relates input productivities appropriately with resource/product price ratios. This mixture can be brought to a developmental

boil in a container of commercial farming, if not successfully in a purely subsistence environment which is outside the market economy" (page 63). The resulting pudding should presumably be garnished with a little untied aid and served accompanied by a few trade preferences on developed countries' markets. All this seems to be a curious inversion of the old "can't-see-the-wood-for-the-trees" syndrome. Heady can see the wood all right; it is his focus on some of the trees obstructing agricultural development which seems somewhat blurred.

Undoubtedly one of the most interesting essays in this book is Professor Harry Johnson's paper (reprinted from *Lloyds Bank Review*) in which he examines the Prebisch proposal that developed countries should grant temporary trade preferences in industrial products to the L.D.C.'s. This subject, originally raised at the first UNCTAD in 1964, is still of current interest, and Professor Johnson's analysis characteristically combines theoretical solidity with a realistic feel for the practical problems under consideration.

Johnson shows that the principle of non-discrimination as applied in GATT (i.e. the imposition of uniform tariff rates on an imported good regardless of its country of origin) has in practice involved serious discrimination against the L.D.C.'s on the developed countries' markets. The extension of trade preferences to L.D.C.'s is seen as a way of mitigating this discrimination. Johnson points out that preferential trading arrangements for L.D.C.'s could be devised which would in fact liberalize trade, by concentration on products in which developed countries had a visible comparative disadvantage and in which L.D.C.'s had a potential or actual comparative advantage. Such preferences could indeed be established on a permanent basis, thereby avoiding the problems of administering temporary arrangements.

Dr Coutu's paper on the involvement of U.S. universities in work in the economic development of L.D.C.'s makes significant reading in Australia. As yet most universities in this country are for all practical purposes uninvolved in this field. We have much to learn from the successes and failures of the practical work in economic development undertaken by universities in the U.S. and the U.K. The future possibilities for channeling some Australian aid funds through the universities by financing research, teaching, and applied project work on the American and British lines should not be overlooked.

C. D. THROSBY

Macquarie University, Sydney.