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BOOK REVIEWS

Seeds of Plenty, Seeds of Want. By ANDREW PEARSE. (Clarendon Press, Oxford, 1980.) Pp. 262, ISBN 0 19 877150 9.

In 1970 Andrew Pearse led a multi-disciplinary team on an UNRISD/UNDP funded global project to study the social and economic consequences of the 'green revolution'. This ambitious project took four years and resulted in a string of publications, of which *Seeds of Plenty, Seeds of Want* is a precis and general overview. As such it is a valuable document on an important topic that still commands the attention and involvement of the international development community.

Andrew Pearse and his colleagues laudably set out to winnow the benefits from the costs of the new technologies that make up the green revolution; alas, they find themselves mesmerised by the potential for harm that radical change can bring. They note that the agriculture and food systems of the Third World have been and are being transformed by the spread of commercialisation, increased competition for land and the pressure of a growing population of landless labourers. Pearse and his colleagues at UNRISD acknowledge that these manifestations of rural transformation in the Third World have many causes. Nonetheless, it is their contention that the green revolution, by accelerating rural transformation, has contributed to the deterioration in levels of nutrition in the Third World, to accelerated migration to urban areas, to chronic and deepening levels of underemployment and unemployment and to rising levels of unrest, conflict, and repression of village peoples. In short, the 'green revolution' is not judged kindly.

The green revolution involved more than the spread of high yielding varieties of food grains in food deficit countries. It involved the creation of national and international research programs to seek out and develop varieties of food grains that really are 'better', in terms of yield and nutrition, than traditional cultivars. This required development professionals to break with the past and reject received wisdom: that is, that superior technologies existed and merely awaited the development of a sufficient cadre of enlightened farmers to take them up. It also required a new breed of agricultural scientist—one willing to leave the research station for research 'in farmers' fields'. In the early 1960s, before IRRI and CIMMYT had a track record, developmentalists and agriculturalists willing to be so radical were in short supply. The courage, in the face of peer opposition, that the pioneers of this biological revolution had to have is nowhere considered or understood in Pearse's work.

The strategy of 'research for agricultural development' did not take long to win support from farmers. The plant breeders first made their high yielding varieties (HYV) available on a widespread scale in the mid 1960s. Only ten years later more than 100m ha were sown to HYV's of rice and wheat in Asia and the Near East. The impact of the HYVs was exciting and dramatic. Food deficit countries such as Mexico and Pakistan suddenly became cereal exporters. The revolutionary potential of HYVs was quickly recognised and their importance in helping to feed the hungry acknowledged by the award of the Nobel Peace Prize to

pioneering plant breeder Dr Norman Borlaug. Borlaug and his colleagues did not ignore the fact that HYVs could lead to social disruption in village societies. Nor, however, did they suggest that HYVs should be rejected because of the potential for 'revolutionary effects'. On the contrary the change that the green revolution promised was pragmatically welcomed because, 'It is literally helping to fill hundreds of millions of rice bowls once only half full. For those for whom hunger is a way of life, technology can offer no greater reward' (Brown 1970, p. 4).

At this juncture Pearse and his colleagues at UNRISD part company with Borlaug and his colleagues. *Seeds of Plenty, Seeds of Want* is an overview report on a research program that from the outset seems to have rejected the pragmatism of the plant breeders and development professionals who were seeking to foster the spread of the green revolution. In so doing Pearse and his colleagues have focused on the disruption that has occurred in the rural areas of the Third World and, by implication, made a whipping boy out of the green revolution. The intellectual honesty and persuasiveness of this approach is open to serious question. It ignores the real increases in food production in the Third World that could not have been expected to occur in the absence of the HYVs. This is demonstrated in a rough way in Table 1.

TABLE 1

Percentage Change in Selected Cereal Production and Yield per Hectare: Developing Countries^a 1950-80

Crop	Change in production		Change in yield per hectare	
	1950-65	1965-80	1950-65	1965-80
	%	%	%	%
Rice	+ 52.1	+ 177.5	+ 26.3	+ 71.3
Wheat	+ 62.6	+ 196.5	+ 23.2	+ 59.5
Maize	+ 113.5	+ 158.7	+ 27.6	+ 54.7

^a Excludes People's Republic of China.

Sources: FAO Production Yearbooks; Dalrymple (1978).

The acceleration in growth of production in Third World countries in 1965-80 compared to 1950-65 shown in Table 1, cannot be attributed wholly to improved yields from improved HYVs. Many other factors, including an increase in area cropped, an increase in the use of herbicides and fertilisers, the spread of mechanisation and, in some cases, higher farm-gate prices, also contributed to increases in output. However, the yield increases shown in Table 1 are so dramatic that any avowed socio-economic assessment which ignores the resultant impact of improved seeds on final consumer and producer surpluses in poor countries, as Pearse and his colleagues have done, does so to its own detriment. It is clear that without HYVs these advances in yield would not have been achieved. As a result, the available supplies of food grain cereals, especially rice, wheat and maize, would have been much lower and prices to consumers much higher (compare Scobie and Posada 1977). In terms

of world food security and the struggle to eliminate chronic malnutrition and starvation, this is a significant and positive result of the green revolution, social disruption notwithstanding. The author ignores this important macro-economic aspect of the 'global' project he seeks to evaluate.

Is there anything positive that can be said about *Seeds of Plenty, Seeds of Want*? Indeed there is. It highlights the enormous difficulty that socio-economic researchers face when they attempt to undertake global evaluations. Despite their obvious expertise, Pearse and his colleagues have been overwhelmed by the task of putting the micro-economic data from village studies into a balanced macro-economic context. They have examined shifts in income and wealth distribution and constraints that bias the ability of different potential client groups to benefit from improvements in plant breeding and agronomic practices. They have also contributed to the plethora of words that have been aimed at assessing the impact of the ubiquitous tractor. What they have failed to do is fulfill what they set out to achieve—examine the social and economic consequences of the green revolution. A partial effort will always remain just that, a partial and, hence, biased account.

Let me close on a more encouraging note. Am I being unfair to criticise Pearse so? In some sense the answer must be yes—five years after the initial launching of IR8-rice and Mexipak wheats was simply too soon to expect that a balanced and comprehensive evaluation could be achieved. More recent research, such as that by Leaf (1983) in India, has demonstrated how the passage of time can produce a clearer and less sceptical view of the impact of the green revolution on peasants and village life. Moreover, since those early days the urgency of the task has changed. We now seem to have learnt how to respond to food crises brought on by famine and other natural disasters. The challenge has shifted to achieving food security for the many rather than intervention to help the victims of famine. We seem to have learnt more about the pitfalls to be avoided in furthering the plant-breeders' program for increased yields on farmers' fields. Constraints facing farmers in hostile environments are now attracting the attention of researchers. Village studies now are better and more complete. All-in-all, we are coming to realise, as Critchfield (1982) argues, that the view from the 1980s is more positive with respect to the green revolution than it could have been a decade ago. This must give development professionals heart to persist. *Seeds of Plenty, Seeds of Want* stands, therefore, not as a lesson or record of what to avoid in development, but as a sobering example of how much we have yet to learn and how easily we can fail to see the wood for the trees. It is a book written too soon—before the dust of revolution has settled and the view of the new tomorrow has been revealed.

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Micro-Economic Policy. By KEITH HARTLEY and CLEM TISDELL. (John Wiley, Chichester, 1981.) Pp. 410, ISBN 0 471 28027 5.

Hartley and Tisdell have provided a high quality textbook of applied micro-economic theory with particular reference to the policy applications of theory. The preface states that the book is intended to show 'students how micro-economics can be applied to major issues of public policy' (p. xiii). The level of exposition is intended for late first year and second year higher education students who have a basic knowledge of micro-economic theory.

In addition to providing an exposition of standard theory, the book is intended to provide students with an introduction to more recent developments in the subject. In this connection, the authors provide the following list (p. xiii):

the economics of politics, bureaucracies, and public choice; the Australian school of subjectivism; search behaviour among consumers and workers; the economics of population; managerial theories of the firm, multinationals, labour-managed firms, advertising, and regulation; employment contracts, human capital, and screening; energy and pollution; time-cost trade-offs, de-industrialisation, and public sector micro-economics, including defence, alliances, nuclear weapons choices, and the economics of conscription versus an all-volunteer force.

It is pleasing to see the application of micro-economic analysis to fresh topics dealt with so thoroughly. In particular, the book contains, in Chapters 10, 11 and 12, a much more thorough treatment of labour markets, trade unions and human capital theory than is found in most micro-economic texts.

In addition to the impressive list of topics cited above, the authors offer a further statement of the scope of micro-economics in the following terms (p. 13):

The main features of micro-economics have been reviewed, although a summary treatment cannot do justice to the immense richness and fascination of the subject. It has many applications, some of them unusual and unexpected, such as the family, marriage, suicide, political parties, bureaucracies, crime, and police protection. Even churches are not immune

This is perhaps raising hopes too high. It has become common to read references such as the above to the generality of micro-economic theory of the neo-classical type. As a result, readers are encouraged to expect a high level of relevance of micro-economics to many aspects of life (and death!) outside the areas more usually of interest to economists. In this reviewer's opinion there is scope for the production of more convincing evidence than we have available now of the 'domestic' success of micro-economic analysis before attempting extensive colonisation of other territories.

There is no doubt that the task attempted by Hartley and Tisdell has been well done in the manner in which we have come to expect of textbooks with which Tisdell is associated. It is possible, however, that the title of the book might lead to an expectation, as it did in the reviewer's case, that the book would deal in more detail than it does with the theory of economic policy and in particular with its applications to micro-economic policy. These topics are in fact dealt with very briefly and there is, furthermore, little detailed attention to empirical case studies in the area of micro-economic policy formulation and almost no discussion based on numerical data. In this connection, however, it is only fair to note the author's comment in the preface that (p. xiii):

The emphasis is on general principles of micro-economic policy, rather than on providing a detailed account of any one nation's actual policies. Indeed, the different nationalities and backgrounds of the authors has contributed to the development of a text suitable for an international audience.

Even so, in the absence of material more specifically directed to the theory of micro-economic policy and its applications, it would perhaps be more accurate to entitle the book 'an intermediate text in micro-economics'.

Following the standard approach of micro-economic textbooks, the present work pays little attention to tariffs and other aspects of micro-economic policy which relate particularly to international transactions. This omission is no doubt justifiable in view of the usual approach to the design of intermediate and advanced syllabuses in economics, whereby the international aspects of micro-economics are usually placed in courses in international economics rather than in industrial economics. However, the omission is particularly unfortunate in courses in, say, agricultural economics where a distinction between the closed-economy and open-economy aspects of the subject cannot be maintained, in a country such as Australia, without producing extremely artificial effects.

Readers of this review will not fail to note a theme common to the genre: the book, though pleasing in many respects, is not precisely the book the reviewer would have written and which he hoped the authors would have written for him. The same readers, if they are also teachers, should be undeterred when giving serious consideration to the adoption in their courses of this lucid, reliable and up-to-date textbook.

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An Introduction to the New Zealand Economy. By B. H. EASTON and N. J. THOMSON. (University of Queensland Press, St Lucia, Queensland, 1982.) Pp. 339, ISBN 0 7022 1920 7.

As a teacher of undergraduate macro-economics in New Zealand, I have eagerly anticipated publication of a genuinely New Zealand text. Although the structure of the above book is based on *An Introduction to the Australian Economy* by R. K. Hefford, N. J. Thomson, J. Foreman and R. H. Vinall (University of Queensland Press, 1980) it is much more

than a New Zealand edition of an Australian text. Easton and Thomson's book well meets the genuinely New Zealand criterion.

To be fair, the book is more than an introduction to macro-economic theory and policy in the New Zealand context. It also includes discussion on some of the micro-economic foundations of macro-economics and on dilemmas in contemporary government policy. Roughly speaking the first eleven chapters are truly introductory in nature, covering the basic models of circular flow and national income determination. In Chapter 12 a simple illustrative (neo-classical) growth model is introduced supplementing the analysis of earlier chapters. The final five chapters deal with modern-day problems like inflation, unemployment, chronic external deficits and objectives and instruments of economic policy.

The text is highly readable and there are no attempts to 'talk down' to the reader as there sometimes are in other introductory texts. The role and importance of professional economists is explained with due modesty. As an example, in their discussion on market intervention the authors say (p.237):

Societies have to make a choice on how much they are going to leave the market to solve the economic issues by itself and how much the government should intervene. Economists can help to make that choice by pointing out the economic consequences. However, in the end there are critical *political value judgements* required. Economists can claim no special expertise in making such value judgements. That is why in a democracy ultimate government responsibility for the economy is by elected politicians and not by economists.

A particular strength of the book is its outstanding treatment of the role of the New Zealand Government in the economy. In Chapter 8 there is a thorough overview of sources of revenue, patterns of expenditure and patterns of deficit financing and the problem of monetary impacts of fiscal financing is addressed. In Chapters 13, 14 and 15 the interventionist responsibilities of the government are clearly (and sympathetically) explained and the objectives and instruments of policy in the New Zealand context are outlined. The mutually exclusive nature of some policy objectives is forcefully illustrated by means of a table and diagram (p. 256 and p. 259, respectively).

There are a number of useful aids to learning incorporated in the text. They include:

- (a) use of bold type when an economic term is introduced and explained;
- (b) use of green print for summary statements (which appear frequently);
- (c) interesting illustrations or discussions of related issues (for example p. 115 on 'plastic money') placed in green boxes;
- (d) relevant questions for consideration placed at the end of each subsection in every chapter; and
- (e) suggestions for further reading at the end of each chapter giving a short list of related, and in most cases, easily readable books.

Because the market for genuine New Zealand economics texts is tiny the authors have inevitably had to compromise so as to capture the interest of as many potential purchasers as possible. Concentrating mainly

on macro-economics and using very simple models will undoubtedly enhance the book in the eyes of the interested layperson. Economists tend to be poor communicators with society at large and the attempt to remove some of the 'mystery' of economics is to be applauded. However, there is a trade-off in that a balanced first-year undergraduate (or even senior high school) course would probably require a supplementary micro-economics text and supplementary reading in areas such as the monetarist approach to macro-economic analysis. Notwithstanding this criticism I believe that the book deserves wide acceptance among both lay people and educational institutions in New Zealand.

An Introduction to the New Zealand Economy is available in both hardbound and paperback versions. I noticed only two typographical errors. There were some minor grammatical errors which will probably go unnoticed by less pedantic readers than I. Both the table of contents and index are comprehensive, making it easy to locate discussion of specific terms or subjects.

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Measurement of Agricultural Protection. By JOHN STARK. (Macmillan, London, 1982.) Pp. 120, ISBN 0 333 32480 3.

This is number six in the Commercial Policy Issues series published by the Trade Policy Research Centre in London. Originally based on a Ph.D. thesis submitted to the University of Manchester, the author deals with a number of the technical and policy issues associated with measuring protection, particularly with respect to the British livestock industry. In Chapter 1 there is a brief statement which justifies the study of agricultural policy in the U.K. Two alternative views of the decision-making process in agricultural policy are presented. The first is described as incremental changes to existing policy, the second refers to fundamental or structural changes to such policy. At what precise point incremental change becomes structural change is, I suppose, a moot point. Nevertheless I believe that the author has raised an important issue which has been canvassed in the number of recent policy debates on Australian agricultural policy where incremental changes are judged by many to be more likely to be taken up by the policy makers than are fundamental changes.

The author inclines to the view, although unsubstantiated, that (p. 3) 'there is seldom any significant degree of economic analysis associated with incremental policy formulation'. Whether this is the case in the Australian context may be debatable. Many of the ongoing policy discussions that occur, say for example, in wheat underwriting schemes in recent years in Australia, have been more concerned with incremental changes than with structural changes.

The author provides a number of valuable insights into the likely impact of policy changes within an agricultural sector itself. Like their counterparts in Australia, farm organisations in the U.K. are becoming aware of the fact that a subsidy given to one section of agriculture may

well be a tax upon others. Moreover much discussion on policy has been concerned with intersectoral comparisons. Only recently has the agricultural policy debate been devoted to the within-agricultural effects of policy changes. As has been already discussed in this *Journal* on a number of occasions—in the context of the second-best—some of the resource distortions may be greater within agriculture, as a result of differential applications of assistance, than between agriculture and non-agriculture where the possibilities of resource substitution may be limited.

The main purpose of the author is to identify and estimate the relative levels of support that have been given to the British livestock sector in the past 20 years. With this purpose in mind the author goes on to discuss nominal tariff rates, adjusted nominal rates, applying both the Corden and the Balassa methods. The adjusted nominal rates give explicit recognition to the role of value added in the production process as distinct from the use of a tariff applied to the c.i.f. price of imports at the port of entry. It was Corden of the A.N.U. who was mainly responsible for directing attention at the resource allocation effects of protection measures on value-added rather than on simple output prices. The concept of adjustment of nominal rates based on value-added led Corden to the measure of the effective rate of protection which Stark defines as the value added per unit of output at domestic prices minus the value added per unit of output at foreign (free trade) prices, expressed as a proportion of the latter.

This part of the book I found somewhat disjointed since the analytics of protection are presented in a separate appendix and the discussion in the text proceeds with the use of the notation developed in the appendix but the reader is constantly turning from the text to the appendix. The author draws attention to the fact that the calculation of effective rates of protection can, particularly for agricultural commodities which have unstable prices both domestically and on international markets, result in marked variability of the estimates over time. He compiles what amounts, in football parlance, to the top six commodities in terms of the level of protection received, for some 14 years. He then observes the changes in the rankings and develops a relative scale of protection for the U.K.'s livestock sector. The end result is that U.K. beef goes top and the other red meat (lamb) has also risen through the rankings toward the top. By contrast, the intensive livestock industries (poultry, both broilers and egg production, and bacon production) have moved down in the rankings as the level of effective protection afforded to them has decreased.

This relative scale of protection has interesting policy implications as to the use of U.K. agricultural resources in the various sectors of the livestock industry. The consistently high ranking for beef in the protection stakes has been unquestioned since the onset of the Common Agricultural Policy of the EEC. However, even within two different beef systems, the level of protection afforded to intensive beef production, heavily dependent on cereals, declined relative to that relying on grass. This distinction between two different types of beef systems is expanded into a general development in Chapter 3. The sensitivity of the effective rate of protection to substitution between traded inputs—which might occur where one input has a tariff imposed on it relatively higher than another—is developed in this chapter. In the same context of substitution, the author discusses the particular problem of substitution between

traded inputs and primary factors (land, labour, capital and management).

In the second appendix, the author discusses some of the practical problems of measuring effective rates of protection. Such problems relate to the assumption of fixed technical coefficients in the production process; in the changes which may occur in those coefficients; or the inaccuracy of many such coefficients when applied to the complexities of different livestock production systems that do in fact exist in the U.K. The author concludes with a number of simple arithmetic examples which are most helpful in understanding the practical calculation of the effective rates of protection for the U.K. livestock sector.

In summary, this is a useful little book that gives some empirical flesh to the concept of the effective rate of protection. Most economists should have some understanding of the assumptions underlying the measures used, not least of all because it is the method which is widely adopted by the IAC in measuring effective rates of assistance to the various sectors of Australian industry, including agriculture, and which often become the basis for policy debate and recommendations. The criticism that I'd make on what is otherwise a handy book to have on one's shelf is that the presentation is somewhat disjointed, the argument doesn't flow as clearly as one would like and the style is sometimes a little on the stodgy side.

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Managing Agricultural Systems. By G. E. DALTON. (Applied Science Publishers, London and New York, 1982.) Pp. 157, ISBN 0 85334 165 6.

In this book, Dalton presents concepts of management as they apply to agricultural systems. The manager of an agricultural system is described as someone who has objectives and control over agricultural production. Dalton does not differentiate between types of agricultural systems but bases the text on the premise that all agricultural systems have similar managerial requirements regardless of whether they are, say, family farms, government departments or large corporations which provide services and goods to farms. Nevertheless he gives most attention to agricultural businesses rather than agricultural systems in the public sector. Thus, for example, there is considerable discussion about those problems which confront managers of agricultural businesses and which are associated with uncertainty caused by climatic variability.

A broad range of topics is covered including the characteristics of agricultural systems, the role of agriculture in national and international economies, the use of models as tools of management, dealing with the environment, the aims and tools of planning, the collection and recording of information, managers' objectives, controlling of systems, the role of forecasting, communication within systems, training of personnel and approaches to problem solving. Because such a broad range of topics is covered, the treatment of many topics is not rigorous and many generalisations are made. For example, Dalton brushes over the choice of criteria for investment analysis and linear programming in mere paragraphs and explains transactional analysis in one paragraph. However, some topics are covered in detail and the book provides good

introductions to the use of decision theory, simulation models and partial budgeting. Dalton acknowledges the shortcomings of partial budgets yet he represents no whole-business budgets nor addresses those difficulties, such as imputing unknown values, which are associated with formulating complete budgets.

The most detailed and satisfying discussion is a chapter on the role and practice of planning. It includes an excellent exposition on the importance of choosing objectives and collecting and using information. The section which discusses the common failings in the design and interpretation of surveys is worthy of praise. The same section includes an excellent criticism of the use of surveys designed to measure the cost of production of commodities in the process of price negotiation. Dalton observes that surveys would be more useful in price-fixing forums if, rather than determining average costs of production, they were designed to answer questions such as how much do prices have to change to alter the level of output.

A serious omission from the discussion about planning is the author's lack of emphasis on the fact that plans are meant to be changed. Plans are not made to be carried out but only to utilise all the available information in making the best decision for the present. Dalton's discussion of the value of information and the costs of collecting information is good but I disagree with his assertion that information that does not change a decision has no value. To my mind such information has 'value' if it increases the manager's confidence in his own actions or reduces his uncertainty about the outcomes of his decisions.

Generalisation has its place in basic texts but it is important to make it clear when a generalisation is being made. Unfortunately Dalton makes many generalisations without making this clear. For example. The author states without qualification that (p. 22) 'Real life is discrete, transient, stochastic, non-linear and dynamic', the word 'generally' is missing. Thankfully, there are exceptions to many generalisations and, even in my business, some things are certain, indiscrete and even linear.

The clarity of expression and the organisation of the text are adequate. The use of illustrations is adequate but the technical quality of some illustrations is only mediocre. The book is suitable as a 'starter' in management concepts for managers of agricultural businesses, for administrators of agricultural departments and, perhaps, for students of farm management. It is likely to be frustrating and of less value for teachers and students specialising in agricultural economics because Dalton's treatment of many economic concepts is not sufficiently rigorous.

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Policy and Practice in Fisheries Management. By N. H. STURGESS and T. F. MEANY (eds). (Australian Government Publishing Service, Canberra, 1982.) Pp. 384, ISBN 0 644 02218 3.

Policy and Practice in Fisheries Management is the selected proceedings of a seminar on Economic Aspects of Limited Entry and Associated Fisheries Management Measures which was held in

Melbourne in 1980. The seventeen papers included in *Policy and Practice* have been categorised into three parts: I General issues; II The management of selected fisheries; and III Management practices in selected countries. While Part I provides a perspective on current theoretical issues, the remaining papers deal mainly with economic case studies of a wide range of Australian and overseas fisheries and their management. The distinction between Parts II and III is not strong in that several US and Canadian fisheries have also been included in Part III.

The general value of this book is best seen in connection with the theory of limitation to entry in the marine fishery and the application of the principle to a range of practical situations. The early applications of limitation to entry in Australia make it especially appropriate to consider the dominant perspective of this book. The majority of fisheries considered here are Australian. However, the inclusion of several overseas fisheries adds a useful comparative dimension. As with most series of seminar papers which have been put together as a proceedings issue, this book does, however, lack an integrative theme or a co-ordination of perspective. The editors of this book, both of whom are authors of separate papers, have kept editorial guidance to a minimum.

Under the heading of General Issues in Fisheries Management there are five papers of substantial interest. The keynote address and lead-off paper by Crutchfield provides a useful overview of the state of fisheries management. Whilst expressing strong disappointment that little notice has been taken of both technical and economic research in practical fisheries management in the past, Crutchfield articulates considerable optimism on the potential of 'more complicated methods' to achieve better biological and economic performance. The key to success is expressed in terms of a plea for circumvention of political and institutional 'obstacles' which are seen to be the real areas of weakness.

Crutchfield goes on to consider a range of practical measures including taxes, effort licensing and the more-favoured quotas for individual fishermen. Pearse takes up the question of quotas in terms of the problems of specifying property rights—issues also addressed by Meany. Pearse proceeds to establish a forcible case for what he calls quantitative rights. However, his understanding of the property right structure, or rather the lack of it in most open-access fisheries, devalues the significance of the following policy prescriptions. In contrast to the usual and erroneous tag of common property, most open-access fisheries are better described by *res nullius*. Here the policies designed by Pearse to achieve particular property structures, as well as the institutional obstacles recognised by Crutchfield, assume an explicit distributional impact which is not usually recognised. A reading of Jurgensmeyer and Wadley (1974) or Ciriacy-Wantrup and Bishop (1975) on common property and the possibility of common property *solutions* to open-access problems, is particularly useful in this context.

The other papers in the book are notable in being informative in a descriptive way without being particularly innovative methodologically. However, the book does provide a substantial basis of comparative analysis in terms of the range of fisheries discussed and the regulatory perspectives of different jurisdictions. Thus, we find discussion of abalone fisheries in California by Huppert and another on the Victorian abalone fishery by Stanistreet who, interestingly (along with Kailis) is on-

ly one of two industry contributors to this volume. Other fisheries to be considered include the herring roe fisheries of California (again by Huppert) and also of British Columbia, by Fraser. Rock lobster fisheries attract significant attention from Sudmalis and Cleland et al. (Southern) and Rogers (Western). The S.A. and Northern prawn fisheries also receive useful attention from Byrne and MacLeod, respectively. Probably the most rigorous analytical paper in this section is that of Sturgess et al. whose application of the traditional Schaefer type of static model to the Victorian scallop fisheries provides useful insights into the economic performance of a complex fishery.

Of the remaining three papers in Part III, on management practices in selected countries, the paper by McKellar is particularly interesting. McKellar highlights the dilemma of applying complex economic models to fisheries in the North-East Atlantic where legal and political interrelationships constrain management to sub-optimal levels. This paper is all the more interesting in the light of the very long tradition of management for the region's fisheries and the current malaise in which the fisheries now appear to be.

Overall, *Policy and Practice in Fisheries Management* emerges as a useful casebook for those interested in economic aspects of fisheries management. The strengths of the volume revolve around the diversity of contributions, both in terms of fisheries considered and the perspectives of analysis. The weakness of this volume is that it will be sought for particular contributions rather than any integrated insight – but such a result must be expected given the structure of this type of book.

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Planning and Decision in Agribusiness: Principles and Experiences. By C. H. HANF and G. SCHIEFER (eds). (Elsevier Scientific Publishing Company, Amsterdam, 1983.) Pp. 373, ISBN 0 444 42134 3 (Vol. 1).

This book is the first in a new series titled *Developments in Agricultural Economics* to be published by Elsevier, and is subtitled 'A case study approach to the use of models in decision planning'. The core of the book is a series of 17 case studies by 24 researchers from 10 different countries. These case studies are loosely arranged in five different sections: production planning, dynamic production planning and control, inventory planning, marketing and co-ordination in planning and decision making.

The first 76 pages of the book are devoted to a summary of planning and decision models written by the two editors. The level at which this preliminary section is aimed appears to be that of the non-technical manager. The authors point out, quite correctly, that the complexity of modern operations is such that decision problems often arise which can-

not be solved by intuition, experience or familiarity. Hence, there is a need for these mathematical models from operations research. First, linear programming is discussed in sufficient detail to allow the reader to understand the nature of the problem together with the graphical solution in the case of two variables. There is then a discussion of duality, sensitivity analyses, and special formulations such as transportation problems. Linear programming is followed by general non-linear programming and a detailed discussion on the ideas behind dynamic programming. The discussion then moves to queueing problems, Markov processes, inventory models and simulation. This section of the book is too technical for the general reader while at the same time it is too brief and too general for the reader who wishes to try some of these techniques. Nevertheless it could provide an interesting and useful refresher for would-be users whose skills are somewhat 'rusty'. The real strengths of the book, however, lie in the second section which contains the 17 case studies, and as an aid to reading and understanding these case studies this preliminary section is of very limited value indeed.

The first subsection of the case studies is devoted to production planning. The first two case studies concern blending problems; the first is blending hamburger with fresh and frozen beef and the second is blending tobacco from 29 sources. The third study is about the production of canned vegetables on an annual basis from 17 vegetables that are available throughout the year, while the fourth case study provides an annual production schedule for products from the Swedish dairy industry. The first and fourth cases are described in general terms and give only a brief description of the techniques and the solutions while the second and third case studies are given in much greater detail and are self-contained. This subsection contains four very useful examples of the application of large linear programming models in their most often used applications.

The second subsection also contains four case studies. The first two involve both dynamic programming and linear programming; the first to determine least-cost rations in intensive beef production and the second to determine optimal irrigation when there is a dual quality water supply with differing levels of salinity in each. The third case study concerns the use of simulation modelling in decision making for disease control, specifically bovine brucellosis and is both clearly and elegantly presented. The fourth case in this subsection relates to the application of linear and mixed integer programming in investment planning for a dairy plant manager.

The third subsection relates to inventory planning. It is unsatisfactory because the case studies are too general and do not provide clear solutions to the questions posed. There are three case studies in this subsection. The first concerns the application of multi-period linear programming to planning purchases of raw materials for the manufacture of animal feed. The second reports on attempts to solve the Australian Wool Corporation's problem of ensuring stability of wool prices by employing a buffer-stock policy. The third examines government intervention in the markets for food grains in Bangladesh to provide an effective food grain policy.

The fourth subsection is devoted to marketing. The first case study is concerned with planning an optimal route for deliveries from a wholesale

distributing firm. The second study is an interesting analysis and evaluation of advertising strategies for a French cheese producer. The third case study analyses methods for determining the potential demand for an item of new technology, in this case, a new harvesting machine for roughage. The fourth case study of this subsection applies linear programming to the economic evaluation of whole crop harvesting. This very readable case study analyses a new harvesting system where the whole biomass above the ground is taken by new harvesters and used for both animal feed and industrial purposes.

The fifth and final subsection contains only two case studies. The first compares two different, dual approaches to the solution of a linear programming problem optimising profits in a co-operative slaughter house, handling mainly pigs. The second case study concerns an American chocolate company and various models are discussed relating to price forecasting, procurement policies, production planning and marketing promotion. This case study would have been more useful if it had not attempted to cover so much material.

The volume ends, very usefully, with the names and addresses of all of the contributors, so that interested readers will be able to contact the authors. For some of the case studies this may prove to be essential. However, the volume is a very useful addition to the literature and will make these techniques of operations research available to a much wider audience. With the explosion of minicomputers quite large linear programming problems can now be solved very cheaply with commercial software. Reading this collection will provide the reader with a comprehensive and accurate understanding of the wide range of complicated problems which, shortly, could be solved in even small business operations. The best of the case studies, that on the bovine brucellosis and the contributions in the marketing subsection, set this collection apart and provide a very high standard for this, the first volume in Elsevier's new series on developments in agricultural economics.

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