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BOOK REVIEWS

Australia Wet or Dry. By B. R. DAVIDSON. (Melbourne University Press, 1969.) Pp. 264, \$6.60, soft covers, \$3.60.

The theme of this book is a familiar one to agricultural economists, particularly in Australia where there has been considerable criticism of the habit Governments have of littering the countryside with dams, of not recouping the capital costs of irrigation schemes, and of not relying more on the price mechanism to allocate water. Dr Bruce Davidson has been a leading critic and he has here assembled and, a little incompletely, documented his arguments.

The purpose of the book, as stated on the first page of the preface is, . . . to demonstrate that none of Australia's irrigation schemes operate profitably and that the Australian people would have had a higher standard of living if the area of irrigated land had been much smaller . . . to demonstrate that the instability of agricultural production during severe droughts is increased by irrigation and not alleviated by it as is commonly believed.

In achieving this purpose Davidson also pursues the familiar argument that ' . . . higher returns could be obtained by using labour and capital to open up new regions for dry land farming than by using the same resources to construct new irrigation schemes'. He develops his arguments with the same tenacity and a similar barrage of budgets to that we saw in his other controversial book *The Northern Myth*.

Following an initial cursory examination and rejection of traditional arguments in favour of irrigation, the reader is taken on a, perhaps unnecessarily long, examination of the physical characteristics of Australian water resources. This enables the important conclusion that Australia has possibly the highest level of irrigation development per head, among the developed countries of the world.

After a brief discussion of efficiency measures, Davidson demonstrates how the closer settlement movement of the second half of the 19th century and the unhappy experiences of a large number of settlers led to the growth of a belief in the desirability of irrigation development as an adjunct of closer settlement. This belief was reinforced by the feeling that Australia's low average rainfall and large areas of desert must make irrigation profitable. Such favourable attitudes toward irrigation became well entrenched and, like the belief in the desirability of closer settlement itself, have only in recent years come to be widely questioned. The fact that they have come to be questioned, even at this late stage is due, in no small part, to the argument and public educational effort of agricultural economists such as Dr Davidson.

The outline of the history of the establishment of irrigation in Australia is sufficiently comprehensive to make it apparent that, even by the beginning of World War I, it was abundantly clear that extensive irrigation development was not justified on the basis of nowadays conventional economic criteria. In both New South Wales and Victoria an early determination to treat irrigation as a profit-making business was frustrated by the economic collapse of a number of schemes. It seems possible that a widespread failure to recognize the economic unsoundness of these early schemes was due to deficiencies in physical planning.

These confounded the problem and came to be regarded as its principal cause.

All this background material is most interesting and useful. It provides a summary of attitudes toward irrigation and the development of irrigation and irrigation policies which, in itself, justifies publication of the book. It is unfortunate that, here and there (see for example, p. 87) Davidson displays shocked innocence at the use of irrigation development to preserve political, rather than economic goals. This is a flaw in his whole approach to irrigation policy. The use by politicians of irrigation development to maximize their own welfare is to my mind unremarkable and an example of rational behaviour on their part. Irrigation development is not the only area of public sector activity where politicians, in rationally pursuing their own ends, do not promote the maximization of national pecuniary wealth. Davidson is, of course, quite right to publicize the losses in national wealth which have occurred and to try to persuade the electorate to change its attitude toward irrigation. However, he would be more effective as a critic if he were to suggest reasonable institutional changes which would make it harder for politicians to put irrigation projects in the 'pork barrel'.

Having prepared his ground with considerable thoroughness, Davidson then launches his attack on the economic merits of Australian irrigation. It is a wide-ranging and unrelenting attack in which data from a vast array of sources, some unfortunately not referenced, are used. In its own way it is quite an achievement. Unfortunately, it is monotonous reading and I don't think the average reader will wait with bated breath for the inevitable demolition of the next of the long list of projects which is examined. I will not review this attack in any systematic way, other than to comment on some points which caught my attention.

Chapter 7, in which the relative efficiency of irrigation is discussed, is the most vexatious chapter in the book. Most of my trouble stemmed from Table 33, which presents an estimate of national income lost due to irrigation in the Murray and Murrumbidgee Valleys between 1886 and 1966. My problem was not eased by the rather unclear discussion of Table 33 on page 115 and the poor layout of the table itself.

Davidson argues that the loss of national income due to irrigation can be estimated by contrasting the '. . . total earning power of the capital invested at current bank interest rate . . . with the difference between the unimproved value of the land in the irrigation areas and in neighbouring non-irrigation areas'.

Davidson assumed, and many would debate this, that this difference in unimproved values reflects accurately the value of the primary benefits of the irrigation scheme. Strictly speaking, the difference is the present value of the extra profit due to irrigation discounted at the rate used by the buyers and sellers of irrigated land. It is a value based on expectations for the future not on performances in the past. It seems unreasonable to compare a compounded stream of *past* potential interest receipts (which is not a true measure of net losses of the scheme) with a capital value which reflects expected *future* profits or quasi-rents. A more valid comparison would be of this capital value with a duly depreciated estimate of the value of the public capital invested in the scheme and for which no charge is made to the irrigators, to which is added a compounded estimate of the past losses of the scheme.

While Davidson's conclusion that surpluses from these irrigation schemes would not cover the capital costs of headworks and distribution is probably correct, it seems, from what I can understand from the vague and all too brief discussion of page 115 and the poorly organized Table 33, that the criterion used to establish this conclusion is not very relevant to it.

In Chapter 9 Davidson discusses prospects for improving the efficiency of existing irrigation schemes. This discussion is restricted to Murray-Murrumbidgee schemes and draws substantially on the research of Ryan¹ and Randall². Throughout this section I found Davidson's attitude toward linear programming results to be rather cavalier. Perhaps it is not good polemic to indicate the strengths *and weaknesses* of your methodology but I have good reason to suspect that substantial qualification would be called for by a referee if the conclusions drawn were to be presented in this *Journal*. Actually, in writing for the general public, I think Davidson should have warned his reader that linear programming has frequently been found wanting in both its predictive and prescriptive uses. Similarly, he could reasonably have been expected to indicate the dangers of aggregating from representative farm results to the population and that this problem is particularly acute when linear programming is used.

However, despite these criticisms, it does seem reasonable to conclude, along with Davidson, that the performance of the irrigation schemes of the lower Murray basin would probably be improved significantly if far greater acreages of rice were permitted, the impact of the green revolution notwithstanding.

Davidson belittles the role of irrigation in counteracting the impact of drought. While he might have overstated his case in this respect, I feel there is little doubt that the intensive farming which characterizes most of our irrigation areas provides little of the slack which would be necessary for them to act as 'green oases of salvation', against the depredations of old man drought. In fact, now and then, I am attracted by the proposition that irrigation farmers have a lower aversion to risk than dry land farmers and tend to run businesses which are potentially more unstable than dry land farm businesses. I am encouraged in this belief by observation of Namoi cotton farmers but must admit that it is dampened by observation of the seemingly more conservative behaviour of irrigators in the Murray Valley. However, in its more intensive forms, irrigation can be a highly risky business; certainly not an occupation for the timid or the risk averse. In support of this, Davidson rightly points out, on page 151, that risks of failure of crops may be necessary if an irrigation scheme is to be operated in the most profitable fashion over its entire life. He then goes on to point out that, for a given storage, such optimal operation revolves round questions of what is the optimal area to irrigate. Davidson concludes this section in a laudable fashion by advocating '... a flexible system ... of selling water which does not attach a definite amount of water to any particular piece of land'.

¹ Ryan, J. G., *Determination of the Optimum Farm Organization for Large Area Irrigation Farms* unpub. M.Sc.Agr. thesis, University of Sydney, 1968.

² Randall, A. J., *The Economic Utilization of Water in a Private Irrigation Scheme* unpub. M.Sc.Agr. thesis, University of Sydney, 1968.

Chapters 12, 13, and 14 are devoted to a detailed analysis of schemes recently completed or proposed. Space does not permit, nor is your reviewer competent to, comment on all these empirical details. No doubt, as happened after publication of the *Northern Myth*, there will be considerable debate about them. Not surprisingly, Davidson finds little that can be said in favour of any of the various schemes. His results are in rather pronounced variance to what one hears 'on the grape-vine' to be the results of the various State Government sponsored studies of many of these schemes.

While this section of the book is important it makes very tedious reading. Davidson seems to realize this and points out that much of the detail which he includes would not have been necessary had the government sponsored benefit-cost studies been released. This suppression of results, is of course, but one absurdity of several relating to the use of benefit-cost analysis in Australia. As in the United States, experience with the technique in this country in recent years shows that it can be just as much a hindrance to responsible government as it can be an aid.

It is regrettable that Davidson did not make greater use of more Australian work on irrigation economics than he did. Flinn's³ work on the demand for irrigation water is highly relevant to Murrumbidgee irrigation and to the effect of varying water price on optimal farm plans. Similarly, Dudley's⁴ study of irrigation policy in a stochastic environment is relevant, particularly as it contained an implication that optimal strategies, determined by techniques which recognize variability of the environment, can differ *considerably* from those prescribed by static techniques such as conventional linear programming. Finally, Waring's⁵ *ex post* analysis of the performance of the Murrumbidgee Irrigation Areas is pertinent. All of these studies were virtually completed before this book was published.

While not providing a gem of deathless prose, this is an important book. It should act as an antidote to the emotive and often widely inaccurate statements which tend to be uttered by this country's hydro-philists. In the past, too many of the attacks on prodigal irrigation policies have too often been available to the general public only through the mass media and consequently have had rather an ephemeral quality. Dr Davidson has corrected this.

W. F. MUSGRAVE

*University of New England,
Armidale.*

Farm Management Handbook. By QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES, ECONOMIC SERVICES BRANCH. (Brisbane, 1970.) Pp. 196, \$1.00.

This publication aims at providing a ready reference to technical and financial data which can be used by farmers, graziers, extension officers and others concerned with property planning and development.

³ Flinn, J. C., *Demand Function for Irrigation Water, and Efficiency of Allocation*, unpublished Ph.D. thesis, University of New England, 1968.

⁴ Dudley, N. J., *A Simulation and Dynamic Programming Approach to Irrigation Decision Making in a Variable Environment*, unpublished Ph.D. thesis, University of New England, 1969.

⁵ Waring, E. J., *Benefit-Cost Analysis and Murrumbidgee Irrigation*, Paper presented to the Australian Agricultural Economics Society, February, 1967, roneo.

The demand for this handbook since it was first published in February, 1964, may be taken as evidence of its success in meeting its aims. While the information contained is Queensland orientated, its usefulness in other states is evidenced by its wide distribution.

The third edition contains more material than previous editions, while the format, except for its binding in a hard cover, remains much the same.

A new section on Rural Finance has been added while other sections have been expanded. The most notable expansions are Livestock, another 19 pages; Irrigation and Water Supply, 22 pages; Machinery, 14 pages; and Marketing and Crop Production Statistics, 10 pages (although 7 of these are devoted to marketing facilities only applicable in Queensland).

On a critical note it was disappointing to find that there has been so little change in the format of the handbook.

Changes which could have been usefully incorporated include the following.

- (i) A means of updating information, especially that on prices. This is achieved in the farm management handbook produced at Cornell University (1962) by providing appropriate space for revision of certain information.
- (ii) Allowance of space for the incorporation of more specific information either on a state, regional or farm level.
- (iii) The separation of reference material from educational material.
- (iv) More rewriting of material taken from other sources, so that the information can be more readily applied. For example, the table concerning anthelmintics for sheep (pages 50-51) was probably suitable for the publication in which it originally appeared. But in the more durable handbook it should have shown the pack size, price per pack and dose rate, in addition to the calculated costs per head which are now inappropriate. If this were done in conjunction with the provision of extra space as suggested in points (i) and (ii) the table would be of more lasting value.

In summary this is a well worthwhile publication considering its low price. It is unique in Australia since it is the only publication of its type which is not restricted in circulation. Its usefulness could be improved, however, by certain inexpensive alterations in format.

ROSS. L. BARNETT

*Department of Agriculture,
Victoria.*

The Camel in Australia. By T. L. McKNIGHT. (Melbourne University Press, 1969.) Pp. 154, \$4.50.

Although the camel is of only passing interest to today's rural dilemmas, the book provides some valuable insights into many aspects of Australia and the Australian character. The author argues that the camel made '... a significant short-run contribution to economic development and ... a minimal long-run imprint on the character of the (outback) region ...' In this sense, the camel has had a similar effect to several public development schemes.

The Arabian one-humped camel or dromedary was imported into three widely separated dryland parts of the world; the south-west of the United States, South Africa and inland Australia. Only in Australia were the camels and the continent compatible.

After the first introduction in 1840, which killed its owner, the numbers rose to some 30,000 in the early 1920s. Around the turn of the century, most of the successful exploring expeditions, and settlement and developing parties owed their success to camel transport. The Trans-Continental Railway and Overland Telegraph used camels to haul construction materials. The Canning and Birdsville Track stock routes could be opened largely because of camel transport of survey and bore equipment.

Closely associated with the camel were the migrant camel-drivers, who were referred to as 'Ghans' although few actually came from Afghanistan. While some became wealthy with camel transport businesses, most lived 'across the railway tracks'. Faiz Mohomet became a successful merchant and businessman. In 1896, after living in Australia for 30 years, he applied for naturalization and was immediately refused, apparently as a matter of policy.

Tom McKnight is a geographer at the University of California and has spent several sabbaticals at the University of New England. He writes as he teaches, in a clear and engaging manner. Perhaps therefore, he can be excused the main point of his 500 words on economic conclusions, 'with this sort of survival capability it would be unrealistic not to investigate the possibility of camel pastoralism for profit'. But perhaps a 'gimmick' product would sell and assist some rural producers.

There remain about five hundred domestic camels and several thousand wild ones. McKnight quotes several grazier responses to the question of the future of wild camels. One of his replies was, 'We could wipe them out if we wanted to, but we will probably always keep a few just for fun'.

J. A. SINDEN

*University of New England,
Armidale.*

Policy for Agriculture. Edited by C. McK. DREW. (Perth: Department of Country Extension, University of Western Australia.) Pp. 131.

The introduction of wheat quotas and the large decline in wool prices during the last two years appear to have ended the era in which the effects of the cost-price squeeze could be offset by increasing production. This situation has led to a renewed interest in agricultural policy as a means of overcoming the current economic problems confronting Australia's rural industries.

Policy for Agriculture is the Proceedings of a National Conference on this subject held in Perth in April, 1970. The main value of this work is that it collects together the existing views on agricultural policy of the two leading political parties, the leaders of the major farmer organizations and of agricultural economists. It also contains a summary of the views of officers of the Bureau of Agricultural Economics and of the Department of Trade on the future market prospects for Australia's agricultural commodities.

It is obvious from the statements of Mr Anthony that the Government's agricultural policy is one of supplying farmers with technical and economic information from which they can develop a policy which can then be implemented by the Government if natural resources and market prospects permit. On the other hand the Labor Party's agricultural spokesman Dr Patterson considers that a definite policy of equalized agricultural subsidies is required to offset the adverse effects of tariff protection to secondary industry. While this may be a rational policy, it is difficult to support Dr Patterson's other plea for additional assistance to the sugar industry because it is in a temporarily depressed state. The sugar industry has required a large subsidy for a number of years and there is no evidence that it will not require an equally large one in the future.

The farmers' views vary widely. Mr Forrester of the Farmers' Union advocates a wide range of assistance including cost compensation, input subsidies, tax relief, probate relief and controlled marketing. On the other hand Mr Lee-Steere of the Pastoralists and Graziers' Association is convinced that subsidies are useless and improved credit and transport facilities, international trade agreements and promotion are the only means of improving the incomes of farmers. Sir William Gunn's surprising belief that the same quantity of wool could be sold at a higher price is the most amazing statement to come from any of the farmers' leaders.

Professor Lloyd performs a valuable task in pointing out that the existing overproduction in the wheat industry was not due to too high a level of government support and that Australia's wheat farmers were economically correct in producing large quantities of wheat in years in which it could be sold. It is to be hoped that his plea for a more flexible price support and a drastic reduction in prices when a situation of over-supply is reached, will not go unheeded.

Although both the political leaders and Professor Lloyd are aware that in the long run the problem of unsatisfactory farmers' incomes can only be cured by low income farmers leaving the industry, it is left to Dr Schapper to show how effective such a policy might be, compared with the subsidies based on farm output. Dr Schapper points out that if the number of farmers leaving agriculture were increased by 6,400 per annum the real net farm incomes of the remaining farmers would have increased by 4 per cent per annum. On the other hand a subsidy of \$100 million distributed among Australian farmers in proportion to their income would have little effect on the income of the small farmer. The 68 per cent of Australia's farmers with net incomes of less than \$6,000 would receive less than \$300 per annum from such a subsidy. On the other hand, 15 per cent of Australia's farmers with incomes of more than \$10,000 would receive 47 per cent of such a subsidy and have their net incomes increased by over \$1,500 per annum.

As both the Bureau of Agricultural Economics and the Department of Trade consider that the future prospects for selling most types of agricultural produce are poor, it is time that all political parties and farm organizations recognized the need for adopting a plan to decrease the number of farmers as the best agricultural policy for Australia.

B. R. DAVIDSON

University of Sydney.

The Indian Rural Problem. By M. B. NANAVAH and J. J. ANJANA. (Bombay: Vora & Co., 1970.) Pp. 621, Rs. 20.

Conditions of Stability and Growth in Arid Agriculture. By M. J. JODHA and V. S. VYAS. (Vallabh Vidyanagar: Agro-Economic Research Centre, 1969.) Pp. 127, Rs. 15.

Both books examine the problems of Indian agriculture within a setting of centralized planning for economic development. However, that is where the similarity ends. The former deals superficially with the many problems involved when integrating the rural sector into the aims of Five Year Planning. The second book, on the other hand, is a sub-set of the first, being an in-depth examination of the specific problems in one particular area.

The Indian Rural Problem, now in its seventh edition, has been revised four times since it was first published in 1944. This latest edition was completed after the death of the two original authors and is largely the work of a team of writers from the Indian Society of Agricultural Economics.

The book begins with a description of the Indian agricultural environment and outlines its development since the end of the nineteenth century. Several chapters are devoted to the system of land tenure and its reform. However, nothing is said of the conflict in policy between the equity-oriented States and the Central Government's preoccupation with efficiency. In the absence of comment one might (wrongly) assume that India is able to simultaneously satisfy both the equity and efficiency objectives of the two groups of legislators.

Parts II to IV develop the theme that Indian economic development is impossible without planned growth. The very size and absolute population of India together with her limited internal transport system dictates that she be not only self sufficient for foodstuffs on a national, but also on a regional basis.

Despite some inconsistencies in style and in occasional difference in the currency of statistical data (even when dealing with the same subject), the book is a handy general guide to the problems and aspirations of rural India. However, it suffers from a lack of analysis in depth and students of Indian agriculture are best served by the book's comprehensive bibliography. Australian readers must also regret the absence of a glossary of the many Indian terms scattered through the text and tables.

Conditions of Stability and Growth in Arid Agriculture in contrast to the book just reviewed, is content to focus our attention on one specific aspect of Indian agriculture and is supported by well tabulated and fairly current data. It contains a limited—though insufficient—glossary of local terms, and has a bibliography of other Indian works in the field of 'arid agriculture'.

The title is deceptive in that readers who expect to find empirical evidence to support the various models of economic growth will be disappointed. The book is largely oriented towards the interests of economic geographers and describes the conditions met (and solutions attempted) in the arid region of Rajasthan.

Australians will recognize the familiar characteristics of a region of irregular rainfall and high rates of evaporation. It is refreshing to find a work on irrigation which gives as much emphasis to the needs of

conserving moisture as obtaining it. Jodha and Vyas indicate not only the results of various irrigation schemes but also the relative benefits to be derived from such conservation measures as wind breaks, preservation of native grasses and supplementary soil coverage.

Though Joda and Vyas have highlighted the areas which show the greatest potential for either rehabilitation or development, they have avoided indicating how feasible these measures might be in the light of the existing system of land tenure in Rajasthan.

N. J. THOMSON

University of Adelaide.

Socio-Economic Results of Land Reform in Taiwan. By M. C. YANG.
(Honolulu: East West Center Press, 1970.) Pp. 555, \$12.00.

This book is a detailed study of land reform accomplishments in Taiwan and the socio-economic changes arising from these reforms. The expressed intention of the author is to determine whether land reform in Taiwan has had 'some significant, but unforetold, effects on the farm people's work spirit and work techniques, on their daily living conditions, on their educational inspirations and cultural activities, and on their interest in community organization and social participation'. The author acknowledges that land reform in Taiwan 'may not have had these things clearly stated as official policy objectives, but they could very likely be among its profound effects'.

The early chapters are devoted to the objectives, implementation and achievements of the three chief programmes of land reform carried out during the years 1949 to 1953. These were programmes relating to farm rent limitation, the sale of public farm-lands to individual farmers, and the compulsory purchase of tenanted private farm land by the Government for re-sale to the current tenant. The conclusion is reached that as far as the fulfilment of their immediate purpose is concerned, the programmes were a great success. The author then proceeds to enumerate the methods used to evaluate the reforms in terms of their effects on all aspects of farm life and work. The study brings together findings derived from sample interviews of farm and non-farm people, contemporary literature, and case studies.

Subsequent chapters deal with the effect of the land reforms upon morale, agricultural improvements, landlords, farm living conditions, community participation, social structure and the modernization of rural life. Each chapter includes relevant background material, a description of the method of data collection, a detailed account of the findings, and the author's conclusions. The mass of detail will be welcomed by researchers in this field, but the casual reader will probably skip many sections where the repetition and unnecessarily wordy expression make for tedious reading.

Perhaps the most interesting sections for the agricultural economist are those dealing with agricultural improvement and the modernization of agriculture following land reforms. Here the author claims that land reform provided the incentive and base for improved farming and that this improvement has been so extensive that living conditions, attitudes to education in general and improved farm technology in particular have undergone profound changes. As a result, the social structure in farm

villages and rural townships is claimed to be undergoing significant changes and 'the majority of the younger farmers have acquired characteristics which qualify them as people of a modern world'.

The reader is left in no doubt that major socio-economic changes have accompanied land reform in Taiwan. It may well be that these changes are primarily an outcome of land reform and would not have occurred in the absence of land reform. The book is far from convincing on this point, however, and gives little recognition to the parallel benefits deriving from international aid, improved transport and communications, rising national income, the spread of education, improved technology and so on.

M. L. PARKER

Administration of Papua and New Guinea.

Intermediate Economic Statistics. By K. A. Fox. (New York: Wiley, 1968.) Pp. 568, \$13.50, soft covers, \$8.80.

This book is designed primarily as a teaching text in economic statistics and is based on the author's wide experience in teaching and in research, particularly research on econometric models of agricultural commodity markets. It has been pitched at two broad levels—an 'undergraduate' review of economic and statistical concepts together with an introduction to index numbers, analysis of variance and simple and multiple regression analysis, and a 'graduate' discussion of a variety of problems relating to model-building in econometrics with an emphasis on practical application.

The lower level treatment seems to be a somewhat superfluous padding and thickening of an otherwise excellent book which well fills an important gap in the textbook market. The literature abounds with at least equally satisfying expositions of basic concepts outlined in the early chapters. Indeed, it seems unlikely that readers of econometric sections would find much of interest or novelty in the first eight chapters with the possible exception of some aspects of multiple regression.

In contrast, most of the material contained in Chapters 9-15 represents a refreshing and readable introduction to the formulation of econometric models. Fox's technique of reasoning along rather intuitive lines in discussing the construction of models will be welcomed by students for its easy access to understanding of the problems involved. The clear explanations of the identification problem, aggregation problems, and the various methods of estimation are especially valuable.

The main novelty of the book is in a useful discussion of the effects of multicollinearity and the use of *a priori* information in estimation. The pioneering work of Fox and Cooney on intercorrelation effects is here given a deserved accessibility.

This book would be a very worthwhile acquisition for researchers working on econometric problems who find the usual (formal) treatments of simultaneous equation estimation either uncomfortable or mysterious. In the classroom, its major use seems destined to be in applied econometrics courses. (There are all too few such courses presently available in Australian universities). For such classroom use it is unfortunate that a rather more systematic treatment of methods for dealing with autocorrelation was not included—perhaps at the expense

of some of the rather unbalanced material included in the contributed chapter 'Alternative Methods of Estimation in Economic Models' by J. K. Sengupta and B. C. Sanyal.

It would be interesting to discover the motives of the publisher in hiding the page numbers in the middle of the page spread—a frustrating feature in a 600 page book—and in eliminating the index completely in the soft covered edition.

J. R. ANDERSON

*University of New England,
Armidale.*