



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Vol XLI
No. 2

ISSN 0019-5014

APRIL-
JUNE
1986

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS



INDIAN SOCIETY OF
AGRICULTURAL ECONOMICS,
BOMBAY

BOOK REVIEWS

The Social Consequences and Challenges of New Agricultural Technologies, Edited by Gigi M. Berardi and Charles C. Geisler, Westview Press, Inc., Boulder, Colorado, U.S.A., 1984. Pp. xxi+376. \$ 37.00. (Suppliers: Bowker Publishing Company, Epping, Essex, England.)

The book under review is somewhat out of the ordinary and therefore rather interesting. While we are familiar with studies which seek to assess the impact of technology on agriculture and the agrarian structure in the less developed countries (LDCs), this volume of selections addresses itself to an assessment of new agricultural technologies in a highly developed country, the U.S.A. (All but two of the papers deal with the U.S. context.) The main purpose of this selection is to bring together in one place a synthesis of the different approaches to the study of the socio-economic consequences of technological change. Where this book has value is in directing our attention to the fact that new technologies can have as pervasive effects on developed societies as on societies such as our own. Another important point that stands out is that social science research has generally been of the reactive type rather than one focussing on the likely impact of proposed or designed changes.

The volume is divided into four parts dealing respectively with a literature overview, historical precedents and insights, recent concerns with new technologies in agriculture and emerging visions.

Part 1 sets the tone of the volume. In a brief but interesting piece on research synthesis, the editors point out that although the socio-economic consequences of technological change have been debated by generations of social scientists "the value orientations of investigations have been supportive of technological change, and have allowed for little discussion of its assorted impacts on more than one segment of the population and even less on the possible adjustments or compensations for those negatively affected by such change" (p. 3). There may be some dispute regarding the social scientists' uncritical support of technological change but on the whole it is true that the potential adverse spill-overs of such change have received less attention than they deserved. It may be that when new technologies developed in the developed countries social science research lagged considerably behind technological progress—a point tellingly brought out in the Foreword.

Part 2 has some fascinating pieces. There is a reprint of a 1939 paper by C. Horace Hamilton which expressly deals with mechanisation in the cotton belt and examines such questions as the difficulties of displaced tenants, share-croppers, etc., and goes on to speculate whether stable social institutions can be developed which can control machine technology and promote those values which existed under a simple agrarian organisation. Just as interesting is the USDA report: *Technology on the Farm*. This report prophetically warned that unless adjustments were made in the whole industrial economy, measures to help the groups affected by technological change would not be fully effective—a lesson which most LDCs of today could profitably learn.

Practically all the papers in the second part focus on the possible deleterious consequences of mechanisation. None is anti-mechanisation but all are (were) conscious of the need to monitor technological change.

Part 3 has eleven papers, all of them barring two dealing with case studies from the U.S.A. The exceptions are a paper on agribusiness in the U.K. and a paper on the social impacts of biogenetic technology in agriculture. The first paper in this part by Andrew Schmitz and David Seckler is a case study of the tomato harvester. This paper brings out the basic limitation in all cost-benefit analysis. The authors show that although net social returns from the tomato harvester would be favourable even if displaced labour were compensated for wage loss, "since compensation was not actually paid, it cannot be concluded that society as a whole has benefited from the tomato harvester" (p. 103). The point is made effectively that there is a need for strategies of compensation that will make for a more equitable distribution of the social costs and benefits of technology.

Nine of the eleven papers in the third part deal with the way in which adjustments to mechanisation have taken place in the U.S.A. If a general inference can be gleaned from these papers it is that policy makers need to take care to ensure that technological change does not have adverse repercussions on the vulnerable sections of society.

The last part is in the nature of a summary. It brings together the opinions of several of the contributors to the volume and of the members of the Rural Sociological Society (RSS) at the 1981 RSS meeting. The principal questions raised in this discussion are the following. Is it necessary that when new agricultural technologies are developed their impact—experimental and social—are formally assessed? How can the equity component be included in assessing the social impact of agricultural mechanisation? Finally, in the last 80 years or so which technological innovations in the agricultural sector can be regarded as the socially most 'benign'?

Perhaps the most fundamental point which emerges out of this discussion is that social impact is something to be viewed in a broad perspective. "Technology is not merely tractors, fertilizers, and hybrid seed. Rather, it is a complex set of social forces conditioned by historical class relationships." This perception is vital to an understanding of the society-technology nexus. It is all too easy to view the impact of technology in a supposedly social framework by introducing a few social variables or by attempting the application of social cost-benefit analysis without realising its limitations. As the editors remark: "In the future, social scientists must recognize this and accept the challenge of incorporating political economy into social impact assessment" (pp. 325-326). The final part of this book offers a number of lessons. Social impact assessment (SIA in the language of this volume) can degenerate into a ritual unless it takes specific account of relationships in production. It is not enough if SIA ends up saying that as a result of a particular technology 'some' benefit and 'some' do not. It makes sense only if we can identify exactly who benefits and who do not. Only then shall we be able to say what can be done to use technology in a meaningful way. On the whole, it is a useful and thought-provoking book.

Conditions of Labour in Indian Agriculture; Apparent and Real, Manabendu Chattopadhyay, K. P. Bagchi and Company, Calcutta-12, 1985. Pp. 146. Rs. 90.00.

In the literature dealing with issues relating to labour in Indian agriculture, it is not often that one comes across studies dealing with an overall view of agricultural labour class, although it constitutes a major category in relation to other agrarian class categories. A number of studies, each dealing with some specific issues concerning labour in Indian agriculture, have been coming out from time to time, but the present study (book) under review is perhaps the only one which brings together all the issues and attempts to present a positive approach towards the building up of new analytical frameworks designed to tackle many of the problems in the analysis of labour conditions and relations.

The book is divided into nine chapters, each chapter dealing with a particular aspect of labour in Indian agriculture. In the concluding chapter the author presents an overall view of the changing role of labour under the changes that are taking place in the conditions of Indian agriculture in the light of the results presented in the preceding chapters.

The first chapter deals with the origin and growth of agricultural labourers. The author, after reviewing briefly the various studies dealing with these aspects, concludes that the phenomenon of the growth of agricultural labour should not be treated as an indication of a process of proletarianisation of the rural poor and that different factors are responsible in different regions in swelling the number of agricultural labour.

Employment and unemployment which are the most crucial issues of the conditions of labour in Indian agriculture are presented in Chapter 2. The author explains that though the concept of labour force provided by the National Sample Survey (NSS) is quite different from the concept of 'workers' used by the Censuses, the concept of 'employed' used by the NSS is broadly comparable with that of 'worker' used by the Censuses. However, these two sets of data give two sets of opposite results in the post-1961 period and in spite of the author's attempt to explain away these discrepancies the phenomenon remains largely inexplicable. Employment and unemployment have been examined by the author solely on the basis of the NSS data and the author concludes that employment has been increasing particularly in the 1960s and that under-employment has been decreasing, indicating a significant increase in employment opportunities in the rural areas. This conclusion ought to be viewed cautiously, first, because of the change in the 'reference period' between the earlier and later rounds of NSS and also because of the single criterion 'time', used by the NSS estimates.

The third chapter deals with rural labour utilisation in which the author has attempted estimates of surplus labour and seasonality of employment based on Farm Management data of Nowgong district of Assam. Details of operationwise labour use in agriculture are also presented which reveals the quantitative magnitude of the variations of the operations for different categories of labour for a number of different regions. In his analysis of surplus labour, the author has excluded female family labour although it is well-known that female family labour participates to a considerable extent in most of the agricultural operations and particularly so in some operations which are to be completed in time like transplanting, harvesting, etc.

Further, the author's contention that the farmers would employ female hired labour for specific agricultural activities and male hired casual labour only to supplement family labour is not tenable.

Wages form a very important aspect of the conditions of labour in Indian agriculture which the author discusses in Chapter 4. After briefly reviewing the other studies on agricultural wages, the author has in his study discarded the use of 'Consumer Price Index Number' for agricultural labourers as a valid means of converting money wage rates to real terms. Instead, he has tried to understand the movement of real wage rates by observing the relative movements of money wage rates and the prices of two wage goods, rice and wheat, that agricultural households generally consume. The reason for discarding the Consumer Price Index Number that an agricultural labourer would be least affected by the changes in prices of different kinds of food and other durable and non-durable goods is exceptional. Firstly, an agricultural labourer need not remain at the same level of consumption as in the past; what with increased levels of living over the years for all other sections of the community and, secondly, rice and wheat need not necessarily be the two major commodities in all the regions which the agricultural labour households generally consume; in point of fact millets and inferior cereals are more commonly used by them in many regions. However, the result of the analysis by the author does not drastically differ from the results of earlier studies.

The author has brought out a meaningful classification of hired labour in agriculture in Chapter 5, which is different from the classification largely followed in our official statistics, namely, (a) casual labourers and (b) attached labourers. Different aspects of employment can be treated as so many co-ordinates, such as, (a) basis of payment, (b) duration of contract, (c) medium of payment, (d) dependence/attachment, (e) nature of obligation and (f) wages.

On the basis of the Farm Management data of Nowgaon district of Assam, the author attempts to analyse wage rates and labour types in Chapter 6. The author emphasises the involvement of non-substitutable labour in different kinds of operations based on operationwise wage differences. While the explanation for higher wage rate for female labour than that for male labour, at least during busy season, seems to be logical, the same for higher wage rate on smaller size of farm compared to higher size-group is exceptional. Further, his findings are not borne out by other studies for other regions. Comparative per capita income of the male casual labour and permanent farm servant estimated by the author shows a higher annual or monthly income in the case of permanent farm servant. But it has to be borne in mind that in the case of a casual labour his annual income does not necessarily arise only out of wage payment because in addition to hiring himself out he may be earning some income from own farming.

One of the most recurring topics in the post-Farm Management Studies period is that of size-productivity relationship in Indian agriculture. Debate on this topic is still considered as inconclusive. The issue under debate is whether or not there exists an inverse relationship between farm size and output per unit of land. The author discusses this issue anew in Chapter 7 and there is no reason to believe that we have heard the last word on this debate; such is the remarkable capability of statistical tests and reasoning. In so far as labour use and productivity is concerned,

the author concludes on the basis of his analysis of Farm Management data from Punjab, Assam and West Bengal and also taking recourse to Ashok Rudra's study, which he quotes, that the 'cheap labour' based explanation for the alleged inverse relationship between labour use and productivity cannot be considered as universally valid.

The author has more or less re-emphasised and has attempted to re-establish his findings on size-productivity relationship in the course of his analysis of labour, tenure and farm efficiency presented in Chapter 8. The presentation in this chapter is a bit jarring to read not only because of its repetitive nature but perhaps also because of the details which do not throw much light to reach any meaningful conclusion. First of all, the data pertain to only three regions and in most of the analysis the results do not permit any generalisation. To give an illustration, in Table 8.2 C there is hardly any significant difference in output per hectare and average productivity of labour between owners, tenants and owner-cum-tenants to conclude that output per hectare and average productivity of labour is higher in owner operated farm and lower in tenant cultivated farm. Secondly, the author seems to have considered all tenant cultivators and all owner-cum-tenant cultivators given in the Farm Management reports as share-croppers, whereas many of those, in point of fact, may be fixed rent tenants.

As mentioned earlier, in the concluding chapter the author presents an overall view of changing labour conditions and relations and reiterates that there is enough scope for increasing employment opportunities in agriculture through irrigation development. At the same time, he also emphasises the need for rural works programme to create employment opportunities.

Notwithstanding the few observations made on some of the analytical procedures and conclusion arrived at, on the whole, the author has done a commendable job in presenting a comprehensive analysis and a concrete study of the agricultural labour class which constitutes a major category in relation to other agrarian class categories. This kind of study was overdue and obviously, it will be a very useful teaching material at post-graduate level in agricultural economics and will also be useful for research workers engaged in this field of study.

*Gokhale Institute of
Politics and Economics,
Pune*

Ashok K. Mitra

Rural Small-Scale Industries and Employment in Africa and Asia: A Review of Programmes and Policies, Edited by Enyinna Chuta and S. V. Sethuraman, International Labour Office, Geneva, Switzerland, 1984. Pp. x+159. 25 Sw. frs.

Development strategy of any developing country hinges upon a dire need to shift a substantial portion of the rural labour force from farming activity to the non-farm one mostly in the rural area itself. The success of development planning, therefore, is intimately linked with the performance of the country in this respect since it has a great bearing on the problems of rural employment, poverty and inequalities. Rural small-scale industries are supposed to play a key role in this respect and hence are usually recommended as a comprehensive programme for rural

uplift. Since these industries are, by and large, labour-intensive, they can make a good dent in relieving the grave problem of rural unemployment. With this in view the developing countries have adopted policies and programmes for promotion of rural small-scale industries irrespective of the form of governance of the country.

Given the conviction and the efforts, it becomes imperative to delve into the results in an international setting so as to get empirical evidence on the suitability or otherwise of the strategy itself. The book under reference fills this void by assessing the role assigned by developing countries to rural non-farm activities in national development strategies and by reviewing the programmes and policies in the context of their employment consequences. The editors have selected Kenya, Tanzania, Nigeria and French-speaking African nations from Africa and Punjab region of Northern India, Pakistan, Sri Lanka and China from Asia as case studies, avoiding countries from the Latin America on the grounds that due to significantly higher levels of urbanisation, industrialisation and development there, the role played by rural small-scale industries in the context of employment promotion is different and government intervention is limited. The volume provides a scenario independently of the selected countries and enables the reader to compare the experience of different countries with regard to the approach adopted, institutional mechanisms and instruments used and the achievements. Underlying the analyses is an enquiry into the role of rural small-scale industries in an industrial development strategy. The problems posed are: (1) Can they be promoted in an autonomous fashion irrespective of the overall industrial policy orientation? (2) What are their implications for spatial planning and regional development? (3) Is it possible to formulate plans for rural industrial development? (4) Are the policies and instruments currently in practice for rural small-scale industries adequate? (5) Are there alternative strategies for rural industrial development and what are their implications? (6) Are there conflicts between promotion of small-scale industries and modernisation? And (7) is there a need for institutions specially devoted to rural industrialisation in addition to other organisations that may exist? Experiences of the countries/regions under reference direct one to find out answers to these questions.

In the development process of the developing countries, the government plays a crucial role. Economic activities are inter-linked and thus form part of the national policy. With respect to rural small-scale industries, however, it appears that, with exceptions, programmes of rural industrialisation were very loosely knit into the national development plans, formed a minor section in the plan document and were less employment-oriented. In many countries a rural industrialisation strategy was very much lacking. Furthermore, the thrust was, more or less, on promotion of village and artisan-oriented industries and only to some extent on modern small-scale industries with the result that the efforts on the part of the government contributed largely to the survival of village and artisan industries from urban competition rather than creation of more employment significantly. Compared to other countries, India and China presented a better understanding of their roles and nurtured the rural industries through Khadi and Village Industries Commission and other institutions in India and commune- and brigade-run industries in China.

Three approaches to rural industrialisation can be clearly discerned from these studies: (a) problem-oriented approach aimed at easing specific bottlenecks at the

enterprise level; (b) sectoral approach striving to promote the rural industrial sector as a whole and (c) integrated rural development approach attempting to promote rural industries within the framework of rural development. The first approach provided the key missing links only (e.g., supply of specific inputs, marketing arrangement, loans, training, etc.) while the second strove to provide a package of programmes, services and institutions. In all the three approaches, success was modest for a variety of reasons such as introduction of new products into the market without preparing it to accept them, lack of adequate infrastructure, lack of extension institutions, meagre financial support, urban-based industrial estates, regional concentration of units due to bias towards large-scale units, industries solely geared to urban/export needs, inadequate and unsatisfactory training facilities, weak base of supporting institutions, lack of sectoral linkage, and so on. In this context, the authors of the volume have opined, "rural industries cannot be viewed in isolation for the purposes of planning and policy-making. Rural- and urban-based industries are often interdependent and competing for the same markets. Similarly, the interrelationship between sectors, notably with agriculture, cannot be ignored" (p. 150). It is maintained that a comprehensive strategy for a conspicuous performance by the rural non-farm industries should be concerned primarily with systematic spatial planning of these industries, backward and forward linkages, efficient delivery system of the benefits, adoption of appropriate technology, assured market outlets, identification of emerging pattern of demand for the non-farm goods and services and eschewing of piece-meal approach.

While these impressions are gleaned through the pages of the book, one gets struck at places. When the editors decided to review the progress at the country level, an account of the Punjab region comprising Punjab and Haryana States alone does not present even a caricature of the Indian situation and hence India's case is rather misrepresented. Moreover, even the Punjab region has shifted its emphasis on to the 'focal point' approach is a noticeable revelation of its past experience and a guideline for the policy makers. It is an example of better kind of industrial linkage which may help in surmounting numerous constraints experienced by the developing countries. True that the strategy will necessarily be region-specific but opinions need not differ on the point that the development efforts of the less developed countries would not bear adequate fruits unless a significant role is assigned to the non-farm industrial activities in the rural areas and effective institutional and infrastructural support is provided while inducing popular involvement in the endeavours.

*Department of Economics,
Shivaji University,
Kolhapur (Maharashtra)*

R. R. Doshi

Agricultural Research Management: Case Studies of Operational Research Projects of ICAR, D. K. Desai and N. T. Patel, CMA Monograph 108, Indian Institute of Management, Ahmedabad; Oxford and IBH Publishing Co., New Delhi, 1986. Pp. xix+212. Rs. 75.00.

The mission of Agricultural Research is to increase food production by impro-

ving production technology of crops and animals, thereby increasing farm income and employment, saving or earning foreign exchange, changing the nutrient content of conventional food crops, conservation or saving of inputs, improving the marketing system for the agricultural products, bringing improvements in supply industries like fertilisers, pesticides and agricultural machinery and influence the distribution of income within a society. The vital aspect of this agricultural research is its management. Agricultural research management has established itself as an important multidisciplinary scientific area, where the principles of management have been modified to be applicable to the field of agricultural research.

In this context the book under review is a welcome addition. The focus of this book, which is based on a case study, is on the Operational Research Projects (ORP)—one of the various technology transfer programmes launched by Indian Council of Agricultural Research (ICAR).

The book is divided into eleven chapters; the first chapter deals with agricultural research management, the second with ICAR, the third with ORPs. Chapters 4 to 9 deal with descriptions, working and evaluation of the six ORPs on crops and animal sciences taken for case study. The last two chapters deal with the reflections on the ORPs and summary and conclusions.

This book, no doubt, is a good attempt from the part of the authors to study the working experiences of ORPs of ICAR and to find out how the experiences of these ORPs influence the national agricultural research policies but the book lacks in highlighting the problems and prospects of agricultural research and its management. Though it is mentioned in the Foreword of the book that this is the first attempt by the authors to study the agricultural research management, there are good number of publications and case studies on the subject already available. Further, though the title of the book reads 'Agricultural Research Management' there is very little coverage on the subject in the book except in its first chapter where a theoretical orientation on agricultural research management has been presented. To that extent, the general title is misleading.

The cases of the book are written in such a manner that the management aspects are less exposed and covered but economic and utility aspects have been highlighted with great stress and emphasis. The other limitation of the book is that no criteria were fixed in the selection of sample ORPs particularly from the statistical point of view. The authors point out that the ORPs were expected to influence material research policies. This is probably too far-fetched an expectation.

The book, however, is a valued piece of document from which any agricultural research worker, social scientist and policy maker will be able to get an insight on how the transfer of technology programmes are being implemented through Operational Research Projects and how much improvement can be done by changing the infrastructural framework and procedures for implementation of developmental programmes.

Technology and Agricultural Development in Pre-War Japan, Penelope Francks, Yale University Press, New Haven and London, 1984. Pp. xii+322. \$ 42.00.

This book contains nine chapters. The author has brought together the macro economic aspect of the development of Japanese agriculture and its relationship with industrialisation, on the one hand, and the main characteristics of Japanese agriculture conditioning its micro economic structure and specific nature of the changes which took place, on the other. The relationship of the macro economic development of the Japanese agriculture with industrialisation has been covered in Chapters 1 to 3. The micro economic structure of Japanese agriculture and the specific nature of changes which took place have been covered in Chapters 4 to 8 with reference to Saga Plain.

It is often argued that the Japanese experience is particularly useful for understanding and promoting growth in developing countries of Asia. The author questions the applicability of Japanese experience to agriculture of other developing countries of Asia. The Japanese model approach argues that upto 1900 agriculture was the main source of resources used for industrialisation. Land tax and other means were used for mobilising savings for industry and transferring labour through small-scale rural industrialisation. In their study,¹ Nakamura and Grace (1985) show that the contribution of land tax increased from 2 million yens in 1868 (Meiji period) to 60 million yens in 1873. In fact, they go to the extent of arguing that tax revenue from agriculture was clearly the basis of the government's capital accumulation. They further observe that it is only after the Sino-Japanese war of 1894-95 that the land tax as a proportion of overall tax revenue fell below 50 per cent. In view of estimates made by Nakamura and Grace, the author's observation that it would be difficult to show empirically that there was a net flow of resources from agriculture to industry becomes a controversial point.

However, there is some logic in the author's argument that the Japanese model is irrelevant for the present day as the economic conditions in Japan differed conspicuously from those surrounding today's developing agricultural sector. The author quotes Hayami and Ruttan² in support of her argument that U.S.A. and Japan selected the paths of development appropriate to the relative availability and prices of factors of production—land-saving in Japan and labour-saving in U.S.A. (p. 9). Hayami and Ruttan also argue that the lessons from the Japanese agricultural development lie in the choice of an appropriate path of technical change to suit the peculiar endowments available rather than in the specification of a particular growth. The author rightly observes that the choice of technology should take into account the variations in existing investments in infrastructure, equipment and institutional factors conditioning access to inputs. Technical changes in agriculture are related to the development of the economy as a whole (p. 12).

Heavy dependence of the Japanese economy on agriculture in the Meiji period can be seen from the fact that in 1868, 70 to 80 per cent of gainfully employed population was engaged in agriculture. It was in this period when the scope for expanding cultivated area was limited that there was concurrent growth of agriculture and

1. Takasusa Nakamura and Bernard R. G. Grace: *Economic Development of Modern Japan* Ministry of Foreign Affairs, Tokyo, Japan, 1985, p. 31.

2. Yujiro Hayami and Vernon W. Ruttan: *Agricultural Development: An International Perspective*, The Johns Hopkins Press, Baltimore and London, 1971, p. 135.

industry. According to a paper submitted by Tadashi Fukutake (Seminar held in Manila in February 1972 on "Effects of Agricultural Innovations in Asia on Population Trends"), it was in 1868 with the Meiji Restoration that Japan started on the road to development towards a modern state. For the preceding two and a half centuries during the Tokugawa period, Japan was a feudal state and peasants were squeezed by the feudal lords. According to Fukutake, at the time of the Meiji Restoration agricultural population was 77 per cent of the total population which went down to 41 per cent in 1920.

In Japan expansion of agriculture and industry continued side by side till 1900 when industry moved to the second stage with the establishment of urban heavy industry. By 1930s the relative position of agriculture and industry had been reversed as agriculture employed less than half the employed population and produced less than 20 per cent of national output.

Tracing changes in technology of rice cultivation, the study indicates that between 1868 and 1939 many significant changes took place in the technology of rice cultivation and the structure of agricultural production. The author throws light on an interesting fact that nearly 70 per cent of irrigation resources which existed in the 1960s were constructed even before 1868 (p. 32). There was a pyramidal structure of communal groups dependent on each branch of the system for ensuring peaceful distribution of water as individual plot or field was the final water consuming unit. Since each household was compelled to come to agreement with others, customary rules rather than national legislation remained the basis for water management (p. 34).

Household was the basic unit of property ownership. At the time of the Meiji Restoration half the cultivated area was under tenancy. This situation remained unchanged till radical land reform was enforced by the American Occupation forces after World War II. According to Fukutake, due to radical land reforms the proportion of owner farms increased from 30 per cent to 75 per cent while the percentage of tenant farmers had fallen from 30 to 3 per cent.

The author shows that the basis for tenancy was created during the Tokugawa period when feudal lords tried to overcome the labour shortage problem by taking in outsiders as household members. The main household started establishing branch households outside their villages which was the beginning of the tenancy system. With the increase in non-agricultural employment opportunities in the late Tokugawa and Meiji periods, it became difficult to operate large holdings even on the basis of extended households. This compelled farm households to depend on their own family labour.

Though it is claimed in the Japanese economic history that the Meiji Restoration of 1868 was a highly significant turning point, the author considers the period 1900-1920 as the turning period as there was shift towards a new kind of industrial structure (p. 48). Industry moved to the second stage with the establishment of urban based heavy industry (p. 22). Due to industrial development the income earning potential of family labour force in small agricultural holdings increased and urban industries turned to the countryside for cheap labour (p. 51).

In Chapter 3 of the book the author has an important contribution to make when she analyses the evolution of the New Agricultural Strategy. During phase I

which lasted till the end of the 19th century the agricultural sector supplied industrial inputs and foreign exchange. According to Nakamura and Grace, agricultural items accounted for 84 per cent of exports in the Meiji period. The set of complementary techniques and inputs which emerged behind the growth of the agricultural output is called as *Meiji Noho* (p. 55). The *Meiji Noho* techniques required high level of irrigation control and access to information outside the village. The new technique led to intensive cultivation, commercialisation and multiple rotation. This required a large amount of meticulous labour. It compelled large holdings to shed land and give it either to family farmers who relied on family labour or give land to tenants. Between 1872 and 1908 the proportion of tenanted land increased from 29 per cent to 45 per cent. This period saw bi-polarisation (rich getting richer and poor poorer) of the agricultural sector as the small farmer failed to cope with the situation and fell into the category of small owners or tenants while those who were in a position to gain from the changed situation increased the amount of land they owned. In each village there would be one or two rich households emerging out of the break-up of old extended families. These households retained the best plots and performed the role of initial innovators.

While cotton textile industry developed during phase I, other industries developed after 1900 during phase II. The Sino-Japanese war and the Russo-Japanese war gave stimulus to expansion of coal, electricity and railways. Rapid industrialisation brought about a sharp increase in the prices of agricultural commodities as demand exceeded supply. According to the author, the period 1900-1920 was the golden age for the farmers. The collapse of World War I boom in 1920 represented the end of the golden age. Hayami and Ruttan attribute this to exhaustion of the potential of agricultural technology. The area under Shinriki high-yielding variety dropped as it did not respond well to fertilisers. New high-yielding varieties which were pest resistant, cold resistant, and early maturing were developed in Eastern and Western Japan. All these varieties were developed at the farm level.

The author has made a good exposition of the role played by the farmers' organisations and extension agencies in the development of Japanese agriculture. Existence of a network of farming organisations through which information could be assimilated made diffusion of Shinriki variety highly organised (p. 78). Along with this was developed a network of experiment stations for analysing and transmitting information. Farmers' organisations played an important role in land improvement as governmental loan was routed through the farmers' organisations. There was a government subsidy of 50 per cent for activities such as land improvement, drainage arrangements and irrigation. According to Hayami,³ 142 lakh hectares out of a total cultivated area of 6 million hectares were improved between 1900 and 1940. Since workers were going out of agriculture, they maintained the area under rice by mechanising the peak agricultural operations. They developed machines needed for small-scale family farms (p. 83). By 1930 domestic chemical industry developed which brought down fertiliser prices. Throughout 1900-39, the growth of inputs was faster than the growth of output. Only seed breeding

3. Yujiro Hayami: *A Century of Agricultural Growth in Japan*, University of Tokyo Press, Tokyo, 1975.

lagged behind the growth of fertiliser industry. According to Hayami and Ruttan, input prices fell more than prices of land and labour, thereby creating a basis for supporting the existence of some kind of induced innovation.

For the general reader Chapters 1 to 3 should be of great interest as the author has based her study on a large number of books. A glance at the Bibliography given at the end of the book shows that these books have been written by competent writers. The author has certainly succeeded in clearing the mystery surrounding the Japanese growth model and the condition of agriculture during the Meiji period. She has also made a distinction between the two phases of agricultural development in pre-war Japan.

While the first three chapters should be of interest to the general reader, Chapters 4 to 8 are equally interesting for those who are interested in studying the agricultural development of Japan in greater depth. These chapters relate to the experience of farmers inhabiting Saga Plain. The Saga case study shows the mechanism through which the Japanese industrial growth influenced the direction of technical changes in agriculture. In the case of Saga Plain also the outflow of agricultural labour into industry was very crucial for developing techniques which were not only labour-saving but also helped to preserve the small-scale family farm. Small-scale family farms enabled Saga farmers to pioneer the development of mechanised technology suited to their needs and capabilities.

Indian agriculture can learn and benefit from the experience of Saga farmers in particular. The Saga experience shows how the illiterate farmers of Saga Plain overcame the lacuna of illiteracy by establishing farmers' organisations at village level. Extension officers were able to operate through these organisations. Technical changes transformed the Saga farmers from subsistence producers to sophisticated commercial producers. According to the author, "the pre-war development of Saga agriculture foreshadowed the shape of post-war Japanese agriculture as a whole." Small-scale owner farmers emerged out of the land reforms. In the words of the author, "In this way Japanese farmers have discovered the means of surviving within a highly industrialised economy." The author has made an interesting observation from the experience of Saga Plain that investment in irrigation improvement can act as a catalyst to a wide range of further technical and economic changes. The Saga experience also shows that the institutional organisation of extension work and group activity within the village ensured that all farmers were able to gain access to them.

No doubt, the book contains a lot of information on technology and agricultural development in pre-war Japan. At the same time, the author has missed one important information about the Meiji period. For example, Nakamura and Grace mention that in 1875, 54 per cent of males and 19 per cent of females had finished elementary schools.⁴ Even in England in 1837 only one in four or five had been to school. Perhaps this high rate of literacy did play a useful role in the development of Japanese agriculture in the Meiji period.

*Agricultural Economics Research Centre,
University of Delhi,
Delhi*

H. Laxminarayan

4. Nakamura and Grace: *op. cit.*, p. 29.

Rural Development Administration under Democratic Decentralization: Expenditure Pattern and Organizational Realities, V. R. Gaikwad and D. S. Parmar, Indian Institute of Management, Ahmedabad; Wiley Eastern Ltd., New Delhi-2, 1980. Pp. xx+160.

This is a slim publication, the main text of which consists of 66 pages. The other part of the book which contains statistical tables, comprises 89 pages. This work is on some aspects of rural development administration under Panchayati Raj in Rajkot district of the State of Gujarat.

A number of crucial questions are sought to be probed by Gaikwad and Parmar. The first question is: how many paid functionaries of the panchayats in the district look after the welfare and the economic development of the rural people, and how are they organised? The second related question is: what is the extent of finance handled by these functionaries and what are the purposes underlying such expenditure? Chapters IV, V and VI deal with these questions. The authors have provided a good deal of data in order to understand and answer the above-mentioned questions. Such data have meticulously been derived from primary investigations. This study shows that there is no personnel shortage in the Panchayati Raj institutions nor is there shortage of finance. Because of huge proliferation of staff the bulk of the rural budget is however spent on wages and salaries of the functionaries. The pertinent question is: how can there be optimal welfare and development of the rural poor if the bulk of the expenditure is on payments for the functionaries.

The authors come out very well not in these chapters, but in Chapter IX where they reflect on the existing situations in rural development. Some of their conclusions merit special mention. One is that in the absence of a synchronised production system which comprises three sub-systems such as producer-farmer sub-system, credit and input supply sub-system, and district administrative sub-system, much of the programmatic goals and targets remain unrealised. The second one is that Panchayati Raj did not introduce any major change in the function and role of the administrative machinery vis-a-vis the common citizen, nor did it in the internal mechanism or work culture of the administrative set-up.

The weakness of the work lies, firstly, in the absence of appropriate theoretical perspectives on the subject, and secondly, in the failure of the authors to relate their institutional analysis to the wider environmental setting and its culture. However, this is a welcome addition to the growing literature on rural development administration.

Institute for Social and Economic Change,
Bangalore

Amal Ray

Strategies for Alleviating Poverty in Rural Asia, Edited by Rizwanul Islam, Bangladesh Institute of Development Studies, Dhaka and Asian Employment Programme, Asian Regional Team for Employment Promotion (ARTEP), International Labour Organisation, Bangkok, Thailand, 1985. Pp. xii 315. \$ 10.00.

The book under review is a collection of eight papers highlighting the trends of rural poverty, analysing alternative policies, and evaluating strategies and pro-

grammes adopted for its removal in the southeastern countries of Asia. Seven papers including one by Keith Griffin and six by eminent experts of Bangladesh, India, Nepal, Pakistan, Philippines and Sri Lanka were presented in a regional seminar, sponsored jointly by ARTEP and BIDS at Dhaka in April 1984. The eighth paper by Rizwanul Islam and Eddy Lee, an introductory "Overview", was added later. The book also includes a summary of the proceedings of the seminar at the end.

The collection does reflect competent analytical power of the authors in respect of appropriateness of policies. The treatment of strategies in specific regional situations is sequential, coherent and thorough.

Poverty alleviation, however, is essentially a management problem to be understood in right perspective and implemented in right proportions. Poverty, absolute or relative, is a consequence of growing population, particularly of the poor, in relation to scarce and under-developed resources in the sectionally-differentiated social structures, on the one hand, and the lack of serious adjustment of socio-economic and political relations in favour of the poor, on the other. A balanced study would involve examining the impact of the contributory inflow factors, and that of the alleviating outflow strategies both in the immediate and long run.

The opening discussion by Islam and Lee, a derived, but expanded, version of presented papers, is exhaustive and fairly balanced. The coverage of their treatment is broader, though restricted to poverty trends, framework development for policy analysis, plan-target assessment, and the strategy impacts. Distribution of land as in Kerala in India, and expanded wage employment as in Korea are their specific recommendations. Creation of non-land asset-base, and guaranteed employment are also advocated.

Keith Griffin in his illuminating but rather lopsided analysis has also given the problem historical colonial dimensions, though long time has passed since European rules ended. His arguments carry little weight in this regard. His reliance upon class analysis to explain the phenomenon of conflicting interests inherent in the traditional social structures and consequent doubtful capability of the existing socio-political system to resolve the poverty problem is largely appropriate. However, the analysis is not applicable to distinctive situations of social circumstance in the region. Punjab in India has rapidly made enormous progress in agriculture, small and medium scale industries, and trade and transport in the recent past within almost similar social and political systems. A state of full employment with substantial regular wage, made possible by the adoption of new biochemical and motive-engineering technology by the peasantry, and the complementary expansion of industrial and commercial activities with their labour absorptive effects, has been achieved.

Griffin's argument that "arable land, grazing land, orchards and wood lands, water resources, livestock, and major pieces of machinery" must be "distributed evenly across the entire rural population" is more radical than rational. The available cultivated area for a five-member rural household in the region according to Table 1.1, works out to only 0.60 hectare (ha.) for Bangladesh, 0.85 ha. for Nepal, one hectare for Sri Lanka, 1.60 ha. for India and Philippines, and 1.70 ha. for Pakistan. Not only such area units will be uneconomic in size and deprived of

economies of scale, but for want of irrigation for much of the same, there will hardly be any possibility of intensive cultivation and increased employment. The suggested "small peasant farming system or some form of communal organisation" will be untenable, and even illogical and further problematic.

With regard to maximisation of social welfare through project analysis in terms of cost-benefit results for selecting investment projects, and the controversial issue of adopting 'shadow' prices in the event of distortions in the prevailing prices, the viewpoints of orthodox and radical economists have been eloquently put forth. Though the development projects benefit in general, the misallocation of resources for education and health centres as claimed tends to restrict the intellectual and moral uplift of rural poor. The setting aside of the role of transport, industry and energy, etc., for having 'little direct impact' on poverty alleviation is notionally wrong, for these activities have the potential for all-round economic growth even in the rural areas, and in organised ways can reach the rural poor to provide new opportunities for gainful employment.

The need for population control and its management to diminish the magnitude and rate of the poverty inflow, and reduce the stress on the available alleviating financial and techno-economic resources seems to have escaped the notice of Griffin. His concern about the unfavourable attitude of the power elite towards the landless poor, however, is genuine. His contention that improvement in the "well being of poor should begin by ensuring their freedom from violence and repression" reflects his civil and humanitarian outlook. This must indeed be ensured. The proposed political and economic organisations of the rural poor will be surely useful for them.

With regard to country studies the strategies varied over time mostly between food, land reform, IADP, SFDP, MNP, guaranteed employment, and self-employment activities in the non-farm sectors; and culminated around 1977 in the general acceptance of IRDP which also included industry, services, and business opportunities. The programmes though considerably subsidised and supported with loans from peculiar set-ups of credit institutions, reportedly failed to produce the enduring effect for poverty alleviation.

In Bangladesh the popular FFW programme has been characterised by Qazi Kholiquzzaman Ahmad and Mahabub Hossain as 'mere palliative'. Even the *Grameen* Bank-supported strategy which reportedly reached the target groups and provided much creative initiative to women and men, has been discredited for being unable "to serve as model for a viable national antipoverty programme".

D. Bandyopadhyay has shown that the rural households below the poverty line in India decreased between 1973 and 1978 only marginally from 54.09 per cent to 50.82 per cent. Between 1965 and 1975 the days of rural employment declined by ten per cent for men and 7.5 per cent for women. One-fifth of the total target groups in the country living in remote areas have still not been reached by the anti-poverty programmes. The cost of securing a sum of Rs. 2,000 to Rs. 3,000 as loan from the banks for starting self-employment enterprises includes bribe which amounts to as high as 14 per cent, interest being additional. All these reflect the low level of enthusiasm and attitudinal gap. However, the 20-point programme within the IRD framework offers considerable hope. The families reached are reported

to have increased between 1981 and 1984 from 27.72 lakhs to 121.48 lakhs. The hope is also based on the new approach to the programme in prescribing "a target, a time frame, a package of programmes, and separate allocation". The proposed 'collectivity in economic action' for 'securing enduring economic benefit' if genuinely organised within democratic processes will surely enhance hopefulness.

In Nepal the acuteness of the problem as brought out by M. Banskota is reflected in inadequate nutrition of the rural people, particularly in hill regions. The programmes tried included Village Development Programme, Remote Area Development Programme, Small Farmer Development Programme and Food for Work Programme. Presently IRDP supported by specially created Agricultural Development Bank is being pursued. In spite of the reported beneficial effects of SFDP, its acceptance is restricted mainly for want of organisation, and the tendency of the 'well off elite to monopolise' everything in this regard.

Regarding Pakistan M. Shaukat Ali has highlighted the continued gravity of poverty problem in spite of land reforms effected twice, and the adoption of Rural Works Programmes, People's Works Programmes and IRD programmes. The creation of such funding institutions as *Zakat* and *Ushr* mainly through voluntary contributions for direct help to the poor is a new feature of the Islamic tradition. In spite of all these efforts, the programmes are reported to have 'failed to bring about the desired results'.

In the Philippines, as shown by M. Mangahas, poverty of rural people is reflected in under-nourishment, and low purchasing power. In spite of a major 'Operation Land Transfer' programme, poverty continues because the land did not reach the landless.

In Sri Lanka, as reported by P. Wickramasekara, the anti-poverty strategies included land resettlement, tenancy reform, the IRDP, and some food supply schemes. In spite of substantial coverage of IRD, the programme reportedly 'cannot have any substantial impact on the rural poor' because of some presisting weaknesses.

Obviously the strategies need to be revised. The papers, on the whole, can produce tremendous enlightening effect on the minds of those who are dedicated to the cause of poverty alleviation.

*Department of Economics and Sociology,
Punjab Agricultural University,
Ludhiana*

Sadhu Singh Kahlon

Rural Development Policies and Programmes: A Sociological Perspective, Shiv R. Mehta, Sage Publications India Pvt. Ltd., New Delhi-24, 1984. Pp. 192. Rs. 95.00.

In a printed space of 192 pages, the author has sought to present a macro, holistic analysis of the whole range and content of India's rural development policies and programmes from a sociological angle. The attempt is commendable for it gives a quick overview. India's rural development has remained an enigma for both planners and academic analysts with the result there is an ever-swelling literature seeking to unfold its dynamics. Further, the field was not pre-empted by

any single social science discipline. The author's legitimate claim in offering this publication is that it presents a policy analysis in a sociological perspective "after reviewing planning and implementing strategies and methods" (p. 3). From the author's own Preface and from what is stated on pages 27 and 28, it is understood that the book constitutes a report on a research inspired by a methodology of inductive generalisation based on holistic, qualitative, key-informant data, supplemented by field observations and relevant records and reports.

A sociological perspective is warrantable for several reasons. Viewing development in human terms, it is felt that the welfare effects of economic activity and growth, unreflected as they are in quantitative measures or statistics of national accounting, are not the inevitable and automatic outcomes of economic growth and must be worked for in their own right (p. 5) with the help of structural and educational component of the development process. The ushering in of a new social order, the object and essence of development, requires integration of growth with welfare and equity which in turn necessitates social changes brought about on a well-informed basis (p. 4). Rural development will reduce itself to a fad or political hypocrisy if it is unrelated to the social, ecological, political, technical and value systems of the country (p. 26). In fact, the author chooses to define development in non-economic terms: "In the operational sense, development may be conceived as a social process which produces results that can be described and measured in economic terms" (p. 8), and quotes approvingly Laufer's view: "Above-all, development means people. The preparation and activation of the people is the cause of economic and social development" (p. 4).

The crucial question in this discussion which the author fails to address himself explicitly and convincingly is about the relationship between social change and economic change—whether social change must precede or antecede economic development and what sociological theory informs on this issue. For an explicit reference to this issue one has to wait patiently till one comes to page 164 where the author views economic change as a determinant of social change, but it is doubtful that this is an acceptable proposition to the author himself and his stance on this question was not consistent (see p. 174). Given the sociological orientation to the subject, one expects the author to also elaborate on the relative strengths and weaknesses of the growth economist's model of development vis-a-vis the political economist's model, and the author's preference for and defence of a democratic, evolutionary mode of development for India is sociologically unconvincing in the light of the stark facts of experience with rural development. The author's discussion on the relationship of development planning to ideology and sociological theory from pages 8 to 13 is very skimpy and sloppy. The author himself acknowledges that "Political ideology is significant in determining the goals of development including rural development" (p. 25) but there is no detailed and critical analysis of this.

The first introductory chapter explains the concepts of planning, development and planned change, etc. The second chapter outlines the main problems of rural India by trotting out the usual demographic and statistical data. The third chapter provides an overview of the successes and failures of rural development. A significant observation of this chapter is that the socialistic slant of the Five Year Plans remained unrealised because in actual operation the plans were essentially fiscal

budgets for public investments (p. 66) and their implementation ran in a conservative and pragmatic direction. One wonders whether a more or less similar observation does not apply to the various rural development programmes conceived and implemented as appendages of the Five Year Plans. In the analysis of plan performance, there is not much evidence of extensive use of the data claimed to have been collected from key informants. The fourth chapter undertakes an evaluation of special programmes and the fifth chapter examines the performance of social services. In most of these evaluations, there is a heavy dependence on government evaluation reports. From the references cited one notices little use being made of the enormous quantity of impact studies conducted by independent researchers and scholars which are available in published and unpublished Ph.D. dissertations, periodicals and seminar reports on the subjects of rural industrialisation, IRDP, CAD, NREP, co-operatives, rural health, nutrition, family planning and child care, Panchayati Raj, rural power and leadership, etc. Further several of these references repeat monotonously from one chapter to the next. In the sixth chapter on an alternative approach to rural development, the irresistible impression has been that there is a strong streak of misplaced enthusiasm, over-confidence, and utopian thinking about the various policy prescriptions suggested. The workability and result-effectiveness of the suggested alternatives are suspect. However, the author's observations that rural development should ultimately be rooted in the history and tradition of the people, self-reliance is the basic concept of rural development, and that rural development should be fundamental, primary and essential and treated as an integral part of the total development of the nation, cannot be disputed.

The book serves as a good introductory material for post-graduate students in various social sciences.

*Department of Sociology,
Andhra University,
Waltair (A.P.)*

C. R. Prasad Rao

Health Status of Kerala: The Paradox of Economic Backwardness and Health Development, P. G. K. Panikar and C. R. Soman, Centre for Development Studies, Trivandrum, 1984. Pp. 159. Rs. 100.00.

In recent times, it has been widely recognised that human capital plays a key role in the process of socio-economic development. One of the important components of human capital is health. The interaction between health and economic development evolved as a theme of research especially after the sixties. The Thirtieth World Health Assembly, 1977 has in a resolution opined that the attainment by all citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life should be the main social target of all national governments in the coming decades. The International Conference in Alma-Ata, 1978 reiterated the goal of 'Health for All', and formulated an integrated approach to this end. India has committed herself to this goal.

Kerala presents an interesting and paradoxical case where we find significant health development, while the State continued to remain economically backward. Against this background, the authors have endeavoured to analyse the indicators and determinants of Kerala's health status in a comprehensive way. This study is a most valuable contribution in the area of human resource development.

First of all, they have reviewed the socio-economic and political setting in which health development has taken place. They have also attempted to present a historical analysis of the improvement in Kerala's health status as a sequel to changes in social organisation, employment, level of income, its distribution, ownership of land and nutritional status.

The authors have brought out the most interesting result that the prevailing health situation in Kerala is comparable to that obtained in developed countries. There has been a great reduction in mortality rates and consequent rise in the expectation of life at birth by the seventies itself. Not only has there been a significant reduction in the infant mortality rate but the rural-urban difference in infant mortality rate is much less in Kerala than in other States and the mortality rates of female infants is less than that of males—a unique feature of Kerala. Though the mortality rate is comparable to advanced countries, the infant mortality rate is not comparable.

As regards the nutrition levels in Kerala, they have found a decline in the nutritional status, *i.e.*, on the basis of food intake. However, the presence of moderate to severe malnutrition among pre-school children is lower in Kerala than in other States. Paradoxically, the anthropometric measurements of different age groups in Kerala are not significantly below the values of their counterparts in other States. The authors have attributed this to the control of infections in an efficient way which prevented the nutritional status from worsening.

As regards the second indicator of health status, namely, morbidity, the authors made it clear that reliable data are not available. There is an omission of three important diseases, *i.e.*, tuberculosis, leprosy and filaria, which has been admitted by the authors. With the limited data that are available they have tried to present the prevailing morbidity pattern in Kerala, which does not show a decline in the incidence of sickness in Kerala.

Another significant result of the study is that Kerala has achieved remarkable progress both in the field of general education and health education. This has contributed to efficient utilisation of the existing health facilities. The authors feel that taking an overall view, the health care delivery system emerges as the principal factor underlying the improvement in Kerala's health status.

According to the authors, the goal of 'Health for All' has wider connotations in the context of Kerala (which has already reached the targets in terms of infant and general mortality rates and life expectancy at birth). Mere linear expansion of curative medical facilities cannot take the State closer to the goal, as the ingredients of better health are inherent in the non-health care sectors also. The authors have suggested synergistic approach to the problems embracing all the factors affecting the health status. They have assumed that given the commitment, will and effort, the basic needs such as housing, protected water, sanitary disposal of human excreta, etc., can be met without waiting for a take off into rapid economic growth.

Their approach is not contingent upon rapid economic growth, full employment, etc. The significance of their strategy lies in the fact that it relies on local initiative, community involvement, and emphasis on micro level approach to health improvement than through national or State level planning. The authors have stressed the role of non-health care sectors in the context of inter-sectoral action for the promotion of the health goal in Kerala, and an integrated approach to tackle health problems.

The authors have indeed produced a very interesting and highly commendable work, combining theoretical insights with empirical analysis. The study is a rich addition to the existing limited literature in this area of research.

*Department of Economics,
Andhra University,
Waltair (A.P.)*

K. Rani Gopal

Development of Hill Areas: Issues and Approaches, Edited by T. S. Papola, B. K. Joshi, H. S. Verma and R. C. Sinha, Himalaya Publishing House, Bombay-4, 1983. Pp. xii+496. Rs. 175.00.

"Hill areas have problems of their own and so backwardness there must be distinguished from the backwardness in general." This was the theme discussed by 28 papers in this volume presented in three sections. Admittedly, such a 'centrifugal pull' could come only through some deliberate effort. The National Committee on Development of Backward Areas of the Planning Commission contributed to that end through a seminar in collaboration with the Giri Institute of Development Studies. However, one could not resist the temptation to wonder at the time lag involved in this sort of 'economic literature production'. The seminar was organised in 1980. Granting that availability of Indian data is invariably lagged by three to four years, the data on which the articles are based are almost a decade old in many cases. This should be kept in mind while reading the book.

In his Inaugural Address, B. Sivaraman, Chairman of the National Committee on Development of Backward Areas sets the tone, and draws attention to (i) human resource constraints; (ii) drudgery of women for fuelwood and drinking water collection; (iii) poor land-man, productivity-man ratios; (iv) problems of communication and (v) scope to develop subsidiary occupations, particularly animal husbandry, horticulture and tourism. He says that unwillingness of administrative system to move into the hills should be removed.

G. S. Bhalla points out that regional science is evolving as a major discipline and the need is for building regional accounts for economic analysis. Central place theory, location analysis and migration policy are stressed and ad hocism in development efforts is deplored. Other papers in the section follow the theme to point out specific deficiencies in development planning.

'Economic development' is a marshy land with no reliable path to traverse to 'developed' lands particularly when a country starts with widespread poverty. The approaches advocated are many and vague. However, there is a general consensus that the state should intervene. Ever since India adopted the notion of 'plan-

ned development', pressures have been mounting on the allocation of scarce resources. Economists also contribute their shares, though not always based on unbiased, objective reasons. This is amply illustrated in this volume. The question of whether to have a separate treatment for hill regions is left largely unsettled. Though many authors are inclined to favour the idea, their analysis is largely based on some subjective criteria and indicators to establish the backwardness of hill areas.

Setting aside the question of regional delineation, accelerated development of hill region calls for an understanding of the underlying forces, some to be accelerated and others to be suppressed. The treatment of this aspect fills up considerable pages of this volume in Section II which has 11 papers dealing with experiences of different hill areas and about the projects implemented. Hill regions pose a separate problem because structural backwardness is emphasised and natural resource development is shown as the most demanding question in hill area development. An attempt is made to contrast the hill economy with the State economy. The plight of 'half the world' is stressed. It is observed that Integrated Hill Area Development Project has created an awareness among the local people.

The inference is that an integrated area approach seems to be the most appropriate strategy. Therefore, integrated area development and decentralised district level planning are stressed. It is generally agreed that the geophysical peculiarities of the hill regions pose unique problems. Infrastructural developments like roads, power, communication are generally found lacking. Expanding these and other social overheads and directly productive activities are considerably difficult and costly. It is demonstrated that the ethno-linguistic-religious background of hill areas is widely different from their encompassing States, making them politico-administrative minorities. The lack of political will and administrative inefficiencies (with their colonial accent) are the focal points of many authors. Even in the analysis of regional profiles and specific programmes like the Indo-German Agricultural Development Agency and Integrated Hill Area Development Project in the North-Eastern region, the papers record widespread ad hocism and hapazard implementation. Lack of people's participation, their widely differing perceptions with the planners, the neglect of women-folk, who are 'half the world' are regretted by the authors. This list could be supplemented with many more by persisting readers. Appropriate remedies are also suggested.

But one feels some occasional uneasiness while encountering a plethora of sweeping statements and often unsubstantiated convictions. Consequently, the reader develops an intuitive vagueness that masks the seriousness of the discussion. At this length of planning history and the sophistication in planning (as one of the papers in this volume rightly admits), criticisms need to be sharp, bottlenecks pinpointed and politico-administrative systems given directions for specific tasks and accomplishments. Unfortunately, the papers fall short of such expectations.

Attempts to break an established, time-tested equilibrium—whether it is at subsistence or higher levels in our relative perceptions—might not be an easy task. The understanding of why the equilibrium exists and how does it operate, what consequences will follow if it is disturbed and how the forces (natural and man-made) will realign again are demanding tasks. Unpredictable dynamism and the time-old compromise among the forces are always eluding the human understanding.

as the editors point out in their Introduction. The volume has indeed accomplished this goal. As the Director of Giri Institute of Development Studies points out in his Preface, the collection of papers raised many more questions than they could answer. Issues are many and well brought out, but approaches identified are few and ad hoc. Reaching the mount of development is a tedious task. Nevertheless, occasional camps are indispensable to take stock of the situations and relaunch the expedition. This volume might serve the purpose of an invaluable base camp. Further, formidable troubles lie ahead for the academicians, researchers and administrators.

*Department of Agricultural Economics,
Centre for Agricultural and Rural Development Studies,
Tamil Nadu Agricultural University,
Coimbatore*

S. Varadarajan

Estimation of Pesticide Demand: An Evaluation of Methodologies, G. A. Patel, U. K. Srivastava and K. R. Pichholiya, CMA Monograph 97, Indian Institute of Management, Ahmedabad; Oxford and IBH Publishing Co., New Delhi, 1983. Pp. xv+123. Rs. 45.00.

Notwithstanding the fact that the success of the high-yielding varieties (HYVs) of crops in increasing agricultural production is critically dependent on adequate plant protection measures being adopted, the subject of pesticides use in Indian agriculture has remained a relatively unexplored area of research. The non-availability of even the basic data such as cropwise and Statewise consumption of pesticides in India on a regular basis has contributed partly to this sad state of affairs. It is therefore heartening to find a book devoted exclusively to the evaluation of methodologies used in India to estimate the demand for pesticides.

The book under review, besides evaluating methodologies, also seeks to explain the variations in pesticides use in India using cross-section as well as time-series analysis. For this purpose, the data collected by the Twenty-Sixth Round of the National Sample Survey on use of inputs in 1971-72 and the data collected by the National Council of Applied Economic Research (NCAER) in the course of a study on pesticides in 1976-77 were used.

While examining the earlier attempts made in India to estimate the demand for pesticides, the authors point out that the Sixth Plan Working Group on Pesticides estimated the demand for pesticides on the basis of previous consumption figures and a stipulated growth rate. The NCAER, in their study, 'Demand for Pesticides', related pesticides consumption to the consumption of fertilisers. The authors question the theoretical basis for the model used by the NCAER as well as the empirical tenability of the hypothesis that increased use of fertilisers leads to increased incidence of pests and thereby to increased use of pesticides.

It needs to be pointed out in this context that the NCAER model may not necessarily be based on such a hypothesis. The observed relationship between fertilisers and pesticides could very well be due to the interdependence in the use of various inputs in the agricultural production process. Further, the authors do not recognise the unique yield-saving nature of pesticides, the use of which will be

influenced by the extent of use of yield-increasing inputs such as irrigation, fertilisers and labour. Had this essential feature been noticed by the authors, it would have been clear that the use of pesticides is influenced by the potential yield, which in turn is determined by the extent of use of inputs like fertilisers.

The authors analyse the consumption of pesticides in Indian agriculture with the help of cross-section data for the years 1971-72 and 1976-77. The Statewise consumption of pesticides at these two time points is explained solely in terms of area under various crops. The variables that emerged as being important in explaining pesticides consumption in 1971-72 were gross sown area, irrigated area under rice, area under wheat, area under cotton and the percentage of area under non-foodgrains. In 1976-77 the variables, irrigated area under sugarcane, gross sown area under special crops and other special crops explained most of the variation in pesticides consumption.

In the time-series analysis of pesticides consumption, the authors have estimated the growth rates of consumption of various categories of pesticides in India between 1965-66 and 1976-77 using a semi-log regression model. The authors found that the growth rates of various categories of pesticides such as insecticides, fungicides, etc., varied very widely. This has been attributed to the differential effectiveness of various pesticides in treating a unit of cropped area. The authors have explained the variation in pesticides use across the years with the help of multiple regression analysis. The analysis indicated that the area under HYVs had a significant positive impact on pesticides consumption. Despite this, it is surprising that the authors caution the readers against deriving any implications from the above result. They cite the example of wheat where though the cultivation of HYVs is popular, the consumption of pesticides is relatively low. It needs to be noted here that when one takes account of the fact that the cultivation of HYVs of crops is generally associated with the use of irrigation and chemical fertilisers, the higher use of pesticides on such crops may be explained easily.

While dealing with production and imports of pesticides, the authors have used the concept of area protectable by insecticides in order to analyse the trends in the coverage of area through domestically produced and imported insecticides. The concept is interesting and is worth pursuing further.

The book makes an appreciable effort to identify the various factors influencing the consumption of pesticides in Indian agriculture. However, the analysis would have been more meaningful if the inter-relationship between inputs used in the agricultural production process had been taken into account. The authors do not adequately recognise the complex factors affecting pesticides consumption in agriculture. More reliable forecasts of the demand for pesticides in Indian agriculture can be obtained when the use of various yield-increasing inputs such as irrigation, fertilisers and labour is estimated jointly with the use of yield-saving pesticides in a model that emphasises their interdependence.

*Planning and Development Department,
Department of Economics,
University of Bombay,
Kalina, Bombay*

K. Seeta Prabhu

Rice Bran Oil Industry: An Insight into Technology and Commercial Aspects, Abhay Sah and U.K. Srivastava, Concept Publishing Company, New Delhi-15, 1985. Pp. xx+219. Rs. 150.00.

This book is intended to serve as a reference for entrepreneurs and managers concerned with establishing a rice bran oil extraction and refining unit. It is divided into two parts: the first dealing with the technological aspects and the second with commercial aspects. The introductory chapter highlights the importance of rice bran as a source of edible oil, more so, in the context of massive imports of edible oil and the country being one of the major producers of rice. The second chapter deals with the quality of rice bran obtained from milling paddy under different technologies of milling. A total systems view of rice milling is very well presented in Figure 2.2, which details the scope of using by-products of rice milling industry. The need for stabilisation of rice bran before extraction of oil has been stressed so that edible grade rice bran oil can be obtained from rice bran, the major by-product. The next chapter elaborates on the technology of rice bran oil extraction. Different types of technology used in the extraction of rice bran oil are presented with supporting diagrams.

A complete chapter is devoted for solvent extraction of rice bran oil. It has been proved in this chapter that the rice bran must be made into pellets to save on the time of oil extraction. This chapter also deals with different sizes of pellets and its effect on the time taken and residual oil with a view to arrive at the optimum size of pellets. This analysis is based on experimental data. Through similar experimental data, it has been concluded that hexane is the best solvent. The next chapter is on refining rice bran oil through several processes like degumming, de-waxing, neutralisation and bleaching and deodorisation. These processes are elaborately dealt along with the relevant chemistry. Next, a whole chapter is devoted to describe a new approach to convert rice bran oil into edible grade oil.

In Part II, the first chapter (Chapter 7) under commercial aspects lists the steps to be followed in project formulation, which is of common knowledge and the authors have tried to relate it to rice bran oil extraction project. At the end of the chapter, a case study is presented to illustrate the project formulation steps. The next chapter is on financial and economic analysis of the project. The financial viability is presented in terms of pay-back period, return on investment, net present value method and internal rate of return. These techniques have been explained which is superfluous. Similarly, financial ratios have also been worked out and presented for the data of the case study. These analyses have been done for three different capacities of the proposed plant at 50, 100 and 200 tons per day. In addition, the technique of social benefit-cost analysis has been described but not applied. In short, this chapter only repeats the management techniques and concepts available in any standard textbook on management. The relevance of these techniques and concepts to rice bran oil industry is demonstrated, which are equally applicable to any investment proposal.

The last chapter deals with the operational aspects touching upon the managerial issues like an organisation design, project implementation through PERT chart and management information system.

The first part of the book dealing with technological considerations educates a reader about rice bran oil and its importance as edible oil. These aspects are quite informative and relevant. The second part of the book appears to be a repetition of management techniques and concepts available in any standard book on management. The data used for this analysis is hypothetical, except probably the estimated cost of the project. There are several assumptions under which these analyses are carried out. This part of the book could have been made more useful, if the authors could have carried out a sample survey of existing rice bran oil extraction units of different capacities. This would have enabled the authors to obtain factual data. Based on this survey data, the application of management techniques and concepts could have been demonstrated. For a new entrepreneur or manager, knowledge about the operation of existing units would be more useful. This would have made the book more relevant, informative and useful to entrepreneurs and managers venturing into rice bran oil industry.

*Indian Institute of Management,
Bangalore*

T. P. Gopalaswamy

Impact of Operation Flood I at the Village Level, Katar Singh and V. Mukunda Das, Research Report 1, Institute of Rural Management, Anand, July 1984. Pp. iv+87.

The 'Operation Flood' (OF) Programme designed by the National Dairy Development Board to create a virtual 'flood' of rurally produced milk in India, has been in operation since July 1970. The first phase of programme (OF-I) was in operation up to March 1981. Critical doubts about the benefits of the OF programme, specially at the village level, have been expressed from various quarters ever since its beginning. Empirical evidence to assess the benefits of the programme is scanty. In this context, the monograph under review is welcome.

The study highlights the findings of a field survey undertaken by the Institute of Rural Management, Anand, at the instance of National Dairy Development Board, to collect data on the key variables concerning the economics of dairying and on the level of income and employment at the micro level of producers of milk. The field survey also covered aspects such as the level and sources of nutrition of the producers' family members and the producers' awareness of the receptivity to innovations having a bearing on social and economic life in villages.

The field survey was conducted in four rounds during the quarter June-August 1980 in six selected villages, two each in the Bikaner (Rajasthan), Periyar (Tamil Nadu) and Sabarkantha (Gujarat) districts. One of the two villages in each district had the Anand pattern of milk producers' co-operative society (called the 'co-operative' village), while the other did not have such a society (called the 'control' village). The three districts represented milksheds at different stages of implementation of OF, the Bikaner district being the most recently covered under OF-I and the Sabarkantha district having a district level dairy union even before the launching of the programme. While all households in the selected villages of Bikaner and Sabarkantha districts were selected for the study, samples of households were randomly selected from the two large-sized Periyar villages.

The findings of the field survey suggest that OF-I has been fairly successful in raising the efficiency of dairying at the milk producers' level. Generally speaking, the milk herd in the co-operative villages had a higher proportion of animals in milk; the daily milk yield, the proportion of liquid milk sold, the price received per litre of milk and net income from a litre of milk were higher than the corresponding parameters in the control villages. Further, the average employment of family labour in milk production was markedly higher in the co-operative villages than that in the control villages. The nutrition level in the diet of milk producers' households in the co-operative villages was also higher. The success of OF-I was also reflected in the better receptivity of milk producers in the co-operative villages to new ideas and innovations in socio-economic spheres.

These are encouraging findings. However, the findings of studies like the one under review are as good as the care taken and the methodology employed for collection and analysis of data. And it is in these respects that some deficiencies in the study are noticeable. The choice of the month June for collection of data on milk production and disposal is questionable. June is a 'lean' period from the point of view of production of buffalo milk. While the daily average milk yield of buffaloes in milk is lower, the fat percentage of milk is appreciably higher than the average for the whole year. It would, therefore, be inappropriate to estimate the production of milk and gross revenue from milk for the whole year on the basis of the data for June. Data on cost of production of milk for sample households for a single day ('typical day') in June have been used to estimate the cost of milk production and net income from milk for the households for the entire month. On the basis of the net income so worked out, the net income for the whole year has been estimated. But like the data on milk production, the data on cost of milk production also cannot be regarded as representative of the whole year. Just how unrepresentative the figures are likely to be can be gauged from the fact that the (out of pocket) cost of production of milk in respect of landless households in the Sabarkantha district was zero. To obtain realistic estimate of annual net income from milk, data on milk production, disposal and cost of production of milk production for at least three time periods—one each representing the lean season, the flush season and the transitory period between the two seasons—should have been collected. The authors of the study, keenly aware of the limitations of the data, have sounded caution at several places to consider the conclusions as tentative and not to generalise on their basis. One wonders why, despite the awareness of the limitations, the authors did not design the study in a manner that would have enabled them to derive firm conclusions and estimates.

A few of the findings are not convincing. For example, the study reports that in the Bikaner and Sabarkantha districts the landless households in the co-operative villages received higher average price per litre of milk than the landed households. The price of milk in the co-operative villages was based on the fat content of the milk supplied by milk producers to the milk co-operatives. This implies that the landless households gave better feed and fodder to the animals than the landed households—that too in a drought year in the case of the Bikaner district. Another illustration of this nature is to be found in the data on consumption expenses of landless households of the co-operative village in the Bikaner district. The average

annual income per landless household is estimated at Rs. 721.41 (p. 46); the average monthly cash expenses per landless household is Rs. 503.40 (p. 57), or 70 per cent of the annual income.

Deficiencies of the above nature notwithstanding, the study serves a useful purpose of indicating the nature and direction of the impact created by Operation Flood at the village level.

*Economic Research Department,
State Bank of India,
Bombay*

Mahendra D. Desai

Dynamics of Green Revolution in India, B. Venkateswarlu, Agricole Publishing Academy, New Delhi-24, 1985. Pp. xii+309. Rs. 200.00.

This book seeks to present the basic features of changing agriculture particularly the various problems and perspectives which have shown up in recent times. The book is spread over 14 chapters.

The first chapter provides the introduction. It traces the transformation in energy use and underlines that modern technology is predominantly tilted towards non-problem situations and emphasises the need to develop effective farm infrastructure with sound foundations to harmonise the use of water, land and manpower resources. "The Green Revolution in Perspective" (Chapter 2) discusses the various myths and mysteries concerning the revolution. The third chapter evaluates the Statewise growth performance of foodgrain crops in India in terms of area, production and productivity over the period 1950 to 1980. The next chapter examines the relative roles of different factors controlling production. Chapter 5 examines the implications of various techniques and problems encountered at the field level. Chapter 6 on "Agricultural Research and Education" examines the role of research, extension and education in view of the requirements of the present day agrarian transformation. The chapter on "Farm Prices at Cross-Roads" deals with the complexity of farm prices. Chapter 8 on "Gap Analysis for Transformation in Agriculture" discusses various gaps in production and highlights the various measures for bridging them. "Farming: A Farmer-Scientist Enterprise" examines the essentiality of the farmer-scientist combination and association for effective transformation. "Population and Food Production Dynamics" discusses their equation, projection and the nature of trends. Chapter 11 on "Enormity of Agriculture" brings out the enormous nature and complex character of developing agriculture. The next chapter on "Ending Adhocism in Farm Planning" highlights the importance of systematics in farm production, crop choice and cropping patterns. "What is Wrong and What is Right with Indian Agriculture" gives a general discussion covering the dimensions of the problem at technique level and at adoption level in larger areas. The rights and wrongs in modern technology for bringing about transformation are discussed. The concluding chapter on "Strategies for Increased Farm Production" examines the various principles that are to be observed while planning the strategies for higher production.

The author has claimed that by presenting such an analysis he would be bringing to the knowledge of the people the various problems that deserve serious attention on priority basis and expressed the hope that this book will serve as a reference for agricultural scientists, extension workers, development officers, students in agriculture, planners and policy makers, and all those interested in the field of agriculture.

After going through the book, one is left with the impression that it is neither a lucid general account of the green revolution nor a specialised research endeavour. The proof of its lack of scientific rigour is the total absence of any reference to literature on the subject. The discussion on the relative contribution of different factors of production in rice is rather weak. The relative contribution can be captured more accurately and hence appropriately through decomposition or regression techniques.

The author has rightly argued that modern technology is scale neutral, *i.e.*, useful irrespective of the size of holding, while it is not cost-neutral and management neutral (p. 120). Thus, modern technology could be applied irrespective of the size of farm but dividends would be higher based on costs and management levels. Again, one is prone to agree with the author that modern technology is trickling down slowly to grass-root level due to several constraints in adoption and is characterised by complexities, non-availability of material, higher costs and lack of feasibility.

The author has also effectively argued for farm research to cater to the needs and requirements of highly diversified situations. He has also brought out that the education system in the agricultural universities is a hybrid system as almost all of them adopted a rigid course work system rather than the optional, flexible, purpose and aptitude-oriented one as in Land Grant College. He also bemoans, and rightly so, the lack of proper integration of research, teaching and extension. In many universities, integration means free and optional flow only among research and teaching wings. Extension rests with the departments of agriculture and a ripened policy to integrate is not so far developed. Sometimes, Departments of Agriculture and the Universities run parallel to each other (p. 144).

Quoting M. S. Randhawa in regard to the various factors pressurising Indian agriculture, the author states that "one finds that in 1978 the index of credit, an input price in Punjab rose to 213.07. The increase was in the price of tractors, electric motors, pesticides, insecticides, and wages of agricultural labourers The sharp increase in the case of agricultural inputs has seriously eroded the farm productivity" (pp. 147-148). Obviously, what he is talking about is index of input prices but in the above quotation he is erroneously calling it index of credit.

On page 150, referring to Indian foodgrains price situation, he says "Producer prices slumped and consumer prices galloped It appeared that the price system is middlemen oriented as either an increase or decrease in producer or consumer price only benefited the middlemen but not the actual parties. It reminds of the old feudal system even in this socialistic/democratic age." The author seems to be blissfully ignorant of the dominant role assigned to the state-sponsored Food Corporation of India, State Co-operative and Marketing Federations, State Civil Supplies Departments/Corporations, etc., in operating the Public Distribution System.

Further, the author has argued that "A single price for the entire country amounts to benefiting the people at few places where non-problem agriculture is possible while all other regions are at a serious disadvantage" (p. 154). This argument cuts at the economic rationale in accordance with which the areas or regions which enjoy comparative advantage should be allowed to produce those commodities.

The study presents a useful discussion of gap analysis for transformation in agriculture. The gap between national average and the enterprising farmers' yield has been termed as Gap I, the disparity between enterprising farmers' yield and that of Research Stations Gap II, the difference between Research Stations' yields and that of maximum yields (including those of Krishi Pandits) Gap III and the difference between maximum yields recorded under favourable conditions and theoretically possible yield, Gap IV.

Population and food production dynamics is discussed without any reference to the basis of the projections and it is conjectured that "it is not likely that there will be problems of hunger, inadequacy as the present trend indicates, the growth rate of population would be gradually decreasing from 1.8 per cent to 1.4 per cent as some people put it. It, therefore, suggests that the action plans should be appropriately oriented to increase the growth rate of foodgrain production three times by tapping both the problem and non-problem areas of all food crops" (p. 226).

The author has emphasised that agriculture is a complex, enormous, multi-dimensional enterprise and encompasses several factors which interact and condition production. Problems of extension and food planning have been pin-pointed. The extension agencies are in several instances burdened with various multifarious commitments or activities. Although they should be involved only in the farming system, they are also involved in family planning, *vanmahotsava* and the like. He has underlined the need for food planning and production organisations or institutes which could survey potential areas, prepare specific action plans and get them executed by the extension agency.

The book gives a clarion call to end ad hocism in farm planning and endorses M. S. Swaminathan's suggestion for the establishment of a crop planning board for each State with National Crop Planning Board at the Centre.

On the whole, this book provides lot of information on the dynamics of green revolution. The author has been successful in stressing his view on how to get agriculture moving. The utility of the book would have been more if it had been properly referenced.

*Department of Economics and Sociology,
Punjab Agricultural University,
Ludhiana*

D. S. Sidhu

Instability in World Food Production: Statistical Analysis, Graphical Presentation and Interpretation, Adolf Weber and Manfred Sievers, Wissenschaftsverlag Vauk Kiel, Kiel, Federal Republic of Germany, 1985. Pp. xv+154. DM 59.00 or US \$ 30.00.

This study deals with a very important problem of instability of food production in world agriculture. The crops included in the study were cereals, potatoes, cassava, sugarcane and sugar beet. In terms of the spatial coverage, the study in-

cludes 120 countries representing more than 99 per cent of the world population. The crops included in the study provide between 50 and 75 per cent of the daily food energy intake of the countries included in the analysis.

This study is divided into six chapters. The first chapter deals with the scope of the study and the causes of instability. The different methods of production instability analysis are discussed in Chapter 2. Chapter 3 presents an overview of the long-term development of grain yields and its consequences on the stability of grain production. Chapter 4 discusses and reports graphically the results of the instability analysis. All the selected crops are separately identified and analysed. This chapter contains the core of the instability analysis. The impact of production instability on the food consumption in the poor countries is also discussed in this chapter. Chapter 5 deals with the production instability in four large countries, Canada, U.S.A., U.S.S.R. and Australia. The U.S.A., Canada and Australia are grain exporters and the U.S.S.R. has become a net grain importer since the early sixties. The production instability of these countries has, in their capacity as main exporters or as main importers, immediate repercussions on the world grain market. Chapter 6 represents the summary and conclusions.

Instability in agricultural production has been described as deviation from an equilibrium. The equilibrium is mainly conceived as the stratified measurement of a time-bound average. This study uses the index developed by Cuddy and Della Valle¹ for measuring the instability. The main advantage of this index is that it eliminates the effects of trends on the measurement. The data used in this study are mainly derived from FAO Production Year Books and *FAO Monthly Bulletin of Statistics* upto 1983 issues. The importance of this study lies in the graphical depiction of the spatial distribution of the instability of field crop production in world agriculture. This study has made an attempt to avoid the problems of analysis based on aggregate data food production. It has tried to disaggregate field crop production into the predominant kind of grain, cassava and potatoes, sugar crops, and the yield, and acreage harvested of each of these crops considered.

While the analysis of instability using cropwise and countrywise data has yielded some useful insight for policy intervention to promote greater food security, it is inadequate to arrive at specific policy measure in a particular country. In the analysis there are large countries with marked heterogeneity among their own agro-climatic regions.² Therefore, the aggregate country data from Production Year Book is not sufficient to make more micro analysis. This study is, however, of methodological value for promoting more country studies using similar conceptual framework. Such country studies may not support the conclusion of this study that large countries have experienced lesser instability than the smaller countries.

Since the study is of considerable methodological value on the subject, this reviewer feels that it deserves to be widely read by the planners and policy makers dealing with agricultural sector in both developed and developing countries.

Indian Institute of Management,
Ahmedabad

U. K. Srivastava

1. J. D. A. Cuddy and P. A. Della Valle, "Measuring Instability of Time Series Data," *Oxford Bulletin of Economics and Statistics*, Vol. 40, No. 1, February 1978, p. 79.

2. E. O. Heady and U. K. Srivastava: *Spatial Sector Programming Models in Agriculture*, Iowa State University Press, Ames, Iowa, U.S.A., 1975.