

Book Reviews.

Agriculture and Land Use in Ghana.

Edited by J. Brian Wills. Oxford University Press,
for the Ghana Ministry of Food and Agriculture :
London, 1962.

504 pp. (illus.) 102s. Aus.

Senior civil servants, scientific research staff, and University lecturers working in Ghana have combined to produce in this volume an invaluable account of the background, state and problems of agriculture and land use in Ghana.

By presenting a tremendous amount of information of the type which is so often available only by personal contact with agricultural workers at research centres, regional and district agricultural offices, and agricultural stations, the book fulfills a requirement which is common to many tropical territories.

The 26 chapters, all of which have been contributed by workers who are authorities in their field, are divided into two parts. The first deals with the physical and human background to agriculture while the second covers a wide field of forestry, plant, and animal husbandry.

As an introduction to the first part of the book, a short outline is given of the background history and the physical environment. Ghana, with a group of exports consisting mainly of primary products, and a population density of 73 per square mile, is still a relatively under-developed country. However it is claimed that "it enjoys a standard of living very much higher than its neighbours", a fact with which it is difficult to agree in view of the low standard of living and poor development in the Upper and Northern regions of the country. To the south of this area in the forest zone it is true that the integration of cocoa growing into subsistence agriculture, and a natural endowment of exploitable mineral deposits has enabled the rapid development of good communication systems and the completion of a comprehensive range of public works projects.

The introductory outline is followed by a chapter on weather and climate, which explains the development and characteristics of the dry harmattan and moist monsoonal air masses originating to the north and south of the country,

and also the warm, moist equatorial air masses which move slowly and irregularly during the year within the Inter Tropical Convergence Zone. The distribution and inter-relationship of the weather zones which are associated with that Zone, and which determine the climate of the country, are discussed together with an exhaustive tabulation of climatological statistics.

A condensed outline of the general geological structure of the country follows with short descriptions of the principal geological formations which are supported by well tabulated data on the chemical constitution of the associated rocks. For the agriculturalist a pleasing feature of this section is that for the main part only those aspects of geology which are of immediate interest, are presented, e.g., the chemical nature, distribution, and weathering of the rock types immediately below the surface. Detail of rocks and minerals at greater depth have been omitted.

The greater part of Ghana, including all the northern and eastern districts and some coastal areas, suffers a chronic shortage of water, especially water fit for drinking. It is therefore appropriate that the discussion on rural water supplies should include detail of simple methods by which water can be obtained and stored. The types and occurrence of springs, wells and boreholes are mentioned together with an outline of various methods employed for trapping surface water supplies such as ponds, tanks and dams. However the discussion is incomplete, and this section could have been more appropriately coupled with the later chapter on soil erosion and conservation in which details of the programme of work undertaken to conserve water in the land planning areas of Tamme, Bumboga and Zurunga in the north of the country are outlined. There, contouring, road building and dam building schemes have been instituted over large areas in an effort to greatly increase water supplies for agriculture and for human and stock consumption.

Turning to the soils of Ghana the book presents an excellent and authoritatively written chapter containing concise descriptions of the major soils of the country. The author has, in addition to descriptions of the physical and

chemical characteristics and profiles of the major soil groups, included a wealth of information on the associations or catenas in which these soils occur. A clear indication is given of their agricultural value, the crops most suited to them and the effects on organic matter, nutrient status and structure of various methods of handling or farming the soils. This information is of great value and application.

The importance of soil chemical properties is again emphasised in relation to the fertility of Ghana's soils, as it is these properties which can be more easily altered than physical characteristics in programmes of fertility improvement. The distinction between total nutrients and available nutrients is outlined. Included also is an interesting section on the availability of nitrate and ammonium nitrogen in forest and savanna soils and the variation between nitrogen levels in wet and dry seasons. The phosphorus cycle is clearly discussed with reference to the mineral and organic forms and the manner in which they contribute to the pool of exchangeable phosphate in the soil solution. Of particular value in the consideration of soil fertility is the account given of the changes which occur in soil nutrient levels during the fallow and cropping periods in the traditional system of agriculture, and the comparative effectiveness of forest and grass fallows. Both authors have done much in the past to obtain the data necessary for a better understanding of systems of subsistence agriculture. The superiority of a natural fallow over any form of planted fallow is indicated, together with pertinent comments on the effectiveness of methods such as mulching, green manuring, grass fallows and forest fallows which may be used to improve the physical condition of the soil.

Part II of *Agriculture and Land Use in Ghana* is concerned with forestry, the agronomy, diseases and pests of cocoa and all other crops, food storage, weeds, grasslands, stock and tsetse flies. It begins with further consideration of the role of the forest fallow in the maintenance of soil fertility for foodcrop farming. The author sets a fifteen year fallow period alternating with a three year cropping period as an essential basis for the farming system and these must be considered very generous limits which could not possibly be maintained in the more densely populated areas. However, whether an eight, ten or fifteen-year fallow is issued, the system remains one which is wasteful of land and

labour, but which is the only practical way of food farming in the absence of proven improved systems or the utilization of animal manures, composts, etc. Consequently the preservation of forest areas is of prime importance. It has been achieved by the demarcation of reserves which in the closed forest zone are used to safeguard water supplies, protect forest and agricultural crops grown either in or near the forest, and secure the supply of forest produce to villagers of the area. In the savanna zone watersheds, shelterbelts and barrier reserves have been set aside, the latter to prevent further conversion of closed forest in savanna woodland. In Ghana, as elsewhere, the continual cutting, cultivating, and cropping of closed forest results in the establishment of grasses under the influence of fire and associated forest destruction. Closed forest is already well to the south of its natural northern climatic limits, and it is emphasised that because there is no part of Ghana in which the dry season is not sufficiently long and intense to dry grass to burning point, forest areas could gradually disappear. Barrier reserves are intended to prevent this and the manner in which these should be managed with regard to burning is outlined.

With regard to the timber industry itself, rapid post-war growth and a tenfold increase in exports between 1945 and 1957 have established Ghana as one of the largest exporters of tropical hardwoods. The industry is now the country's third largest revenue earner. The principal export timbers, and the organization of the timber trade from pit sawyers to million pound companies is described. Also the physical mechanism of the export log trade, handling, shipping, etc. and the problems associated with saw-milling and local production of well seasoned sawn timber.

As might well be expected the greater part of the second section of the book is devoted to cocoa which alone accounts for some 70 per cent. of the value of total domestic exports. Cocoa in Ghana is a peasant crop and is not organized on a plantation basis. Selection and preparation of land for establishment of a peasant cocoa farm, maintenance work and harvesting routines are haphazard. There is some indication that the procedures adopted are based on experience of the farmers, necessity for pest control, economic considerations, weather conditions and so on. Even so there is little doubt

that general management is of a fairly low standard. Valuable information on physiology, pollination, breeding, propagation, soils, manuring and fermentation is presented, with a wealth of detail and excellent references lists. The early introduction and spread of Amelonado cocoa and Trinitario and Criollo types is outlined. Also the performance of more recent introductions, with emphasis on the high performance of Amazonian lines. Introduction of these Amazonian lines has by now been achieved in many of the world's cocoa growing areas and it is well worth noting that these countries, particularly those producing a well recognized standard flavour type cocoa, will have to take care in utilization of Amazonian material. Maintenance of uniformity of flavour and bean size is important, and careful selection necessary so that Amazonian types distributed to growers will not alter this uniformity. These factors are taken into consideration in Ghana's cocoa breeding programme which is essentially based on the production of hybrid seed from crosses between Amelonado, local hybrid types, and Amazonian selections.

Principal soil series of the cocoa belt and the manner in which topographical factors have influenced these series and given rise to catenary sequences, are discussed. In Ghana the productivity of peasant cocoa farms usually declines after some years because of pest and disease infestation and unfavourable soil conditions. New areas are then established in high forest because of the extremely poor growth of cocoa when replanted in secondary forest on old farm areas. The reasons for this poor growth are not clear. Capsid attack and a "fertility problem" are mentioned, together with the possibilities of an unsuitable microclimate under secondary forest, competition against a different group of lower storey species and a shade density effect. However, nothing conclusive arises out of this and it is apparent that a problem exists which will have to be solved to enable successful utilization of such areas.

Almost half the chapter on diseases and pests of cocoa is devoted to an extremely thorough and detailed review of the virus diseases, their symptoms, effects on growth and yields, transmission, alternative hosts, control measures and so on, with excellent plates and references. Likewise, the review of the current knowledge on capsids is a thorough and invaluable one and

includes several plates and a list of references. The nature of capsid damage and description of the field symptoms of "Blast", "Stag-headed cocoa" and "Capsid pockets" are discussed with a section on capsid control. Of particular interest is the association between capsid damage and the infection of lesions by the fungi *Calonectria rigidiuscula* and *Botryodiplodia theobromae*. Attention is drawn to the fact that capsid lesions are better sites for fungal infection than mechanical wounds and that the pathogen *Calonectria rigidiuscula* may either remain dormant or spread through the wood depending on environmental conditions. In fact it is claimed that infection can be followed, after a lapse of up to ten years and under certain conditions, by rapid spread of the fungus and severe die-back. How this has been proven is not clear. *Calonectria rigidiuscula* is most frequently found in its imperfect stage *Fusarium decemcellulare*, the spores of which do not appear to be air borne but which under laboratory conditions have been readily spread by water splash or run-off and under field conditions have been found on the legs or bodies of capsids. Conversely, with black pod, the evidence suggests that dispersal of the fungus from tree to tree by insects is not an important factor and that dispersion by wind and air currents is probably more significant. Within the tree, contact and drip infections assume importance. For the control of black pod, regular and frequent harvesting of infected material will reduce the direct loss of crop and removal of shade trees may lower air humidities to levels unfavourable for growth and development of the pathogen. Weekly harvesting has been found better than monthly harvesting but it is hardly a procedure to be recommended when harvesting costs can be as high as eighty per cent. of the total cost of harvesting, processing and bagging. Effective chemical control by spraying is likewise generally uneconomic.

There is little doubt that cocoa growing in Ghana is at a fairly low level of efficiency. Farmers harvest their trees only three to four times each year and as a consequence losses from black pod and rodents are high. These losses coupled with the debilitating effects of the capsid, die-back and swollen shoot complex combine to depress yields to a very low level. That yields can be improved is well demonstrated by the fact that regular fortnightly harvesting, capsid control, spraying against pod disease and

reduction of overhead shade can more than double yields. Losses from pod diseases over a four year period were reduced from 41.2 per cent. to 2.3 per cent. A further example comes from the West African Cocoa Research Institute where yields for three years running from a shade fertilizer trial have been 3,091, 3,088 and 3,474 lb./acre.

By comparison with the chapters on cocoa, the discussion on other crops is relatively brief. Coconuts, coffee and rubber are mentioned as crops of potential economic importance and it is obvious that they can be grown successfully. This also applies to the oil palm, which in Ghana occurs as a carefully preserved palm throughout the farmed areas in the forest zone. Palms are protected from destruction when land is farmed although they are usually damaged by fire when the forest is burnt or severely pruned during clearing operations. However a large number of oil palms are cut down each year for palm wine, and this destruction is particularly severe in some areas. In terms of the country's primary industries the oil palm fills a very minor role, there being less than 5,000 acres of plantation palms. Average annual exports of palm kernels between 1950 and 1959 was 6,748 tons. No palm oil has been exported since 1954. By comparison Nigeria exports some 200,000 tons of palm oil and 450,000 tons of kernels. The fact that the oil palm in Ghana is primarily a foodcrop and production is mainly dependent on wild palms causes a basic weakness in the industry. However if the crop was put on an organized basis with the development of plantations and utilization of improved planting material and production methods, Ghana could add a significantly valuable commodity to its list of exports.

The latter part of this book is concerned with grasslands, pastures and fodder production, animal husbandry and diseases and pests of stock. Two main grassland areas exist, the interior savanna and coastal savanna; each of which is described together with the relationship between the distribution of human and stock populations and the soils of the area, systems of stock husbandry and other local conditions. A programme for future work on pastures and fodder production is suggested and the present state of knowledge reviewed. The author considers that enclosure of livestock and rotational

grazing would be too difficult to introduce, and fencing too expensive to install. However this is an aspect which requires serious consideration and effort if any attempt is to be made to rationalize the relatively inefficient management systems in current use. Ghana has some 430,000 head of cattle which supply about one-third of the carcass beef consumed in the country. Over 60,000 head are imported each year from territories to the north together with 250,000 sheep and goats, and cattle consumption is limited by the association of high prices with a supply considerably smaller than potential demand. The industry is depressed by diseases, unskilled husbandry and poor grazing and water supplies. To improve this situation there is a tremendous task ahead.

This well produced demy-quarto volume concludes with a first class bibliography, indexes and maps—geological, administrative, great soil groups and vegetation zones. The text, which is in double columns on each page, is relatively free from misprints, and the photographs, drawings and diagrams are of a high standard. *Agriculture and Land Use in Ghana* is a monument to the exacting task which its preparation must have been. Similar in concept to *Agriculture in Uganda* and *Agriculture in the Sudan* by J. D. Tothill, it will become and remain for many years a standard reference work on Ghanaian agriculture.

K. Newton.

Economic Development of Latin America.

(Proceedings of a Conference held by the International Economic Association.)

Edited by Howard S. Ellis and
Henry C. Wallich.

Macmillan and Co. Ltd., London, 1961. 479 pp.
45s. Stg.

It is unfortunate that the title of this publication is misleading, as its main emphasis is not towards the problems of economic development in Latin America. From several papers read at this Conference one gained the impression that reference to various Latin American countries was made out of deference to the location of the Meeting, Rio de Janeiro.

Nevertheless this book of the Proceedings is of considerable interest to students of economic development and growth. No new concepts emerged as the general theme of the papers was problem-raising rather than solution. One of the main interests to economists with limited knowledge of foreign languages is that such gatherings give some insight into the thoughts of leading authorities in other countries.

The publication can be roughly divided into four groups of papers. The first covers the general theoretical concepts of economic development and growth. The second relates to the supply of capital and the role of financial institutions in the mechanism of economic development. The third examines international trade theory and its place in economic development. The fourth, of three papers, is a mixed bag dealing with investment priorities, agricultural versus industrial development and the use of exchange controls in economic growth.

The third section is the most interesting and contains papers by Professors Nurske, Haberler, Schultz and Wallich. The paper presented by Nurske is perhaps the most challenging as it attempts to strike some balance between the classical theory of international trade with its resultant specialization and the notion of balanced growth. Nurske maintains that "expansion cannot be relied upon through international trade" but it still should not be overlooked as one method of economic development. He sees a programme of balanced growth as the principal weapon in economic advancement.

Professor Haberler's paper has a defensive note as he contends that there is no clear evidence of a secular downward movement in the terms of trade for primary products. The general lack of confidence in international trade as an "engine of growth" in this century is most apparent in the policies of the underdeveloped nations. From the discussions of Haberler's paper it would appear that he represents a minority group at this Meeting. His comments on international commodity agreements must be quoted simply because they come from no less than one of the world's leading authorities on international trades. Speaking of underdeveloped nations he said, "Instead of learning to live with a certain amount of instability, making the economy flexible, and evolving methods to offset some of the consequences of the fluctuations in international

demand and export proceeds, administratively and politically, if not economically, *hopelessly* (my italics) unworkable schemes of price stabilization are being proposed and discussed" (p. 296). Such statements from Haberler must cause one to pause and think.

Professor Schultz's paper is somewhat at variance with Haberler's as he sees no real improvement in the terms of trade for primary products. However, some cold comfort can be taken by the underdeveloped nations in his statement "the price indices of farm products, minerals, and even fuels may well recede somewhat but probably will not fall enough to change substantially the price picture now before us" (p. 324). This picture is anything but bright.

Unfortunately none of the papers deals with the implications of agricultural and commercial policies of the industrialized nations, particularly the United States of America, on the developmental programmes of the underdeveloped countries. The informal discussions of the papers in this third section of the Proceedings clearly showed the wide gap between economists working full time in underdeveloped nations and those in developed countries. The latter can look at the problems in an impartial manner. For this reason the informal discussion is of the most interest.

The editors of the book, Professors Ellis and Wallich, are to be congratulated on the presentation of the Proceedings. In each case, the informal discussions are split into the main themes and then brief comments on each are included.

G. R. Spinks.

Meat Handling in Underdeveloped Countries.

I. MANN.

F.A.O. Rome, 1960. Price unknown.

The Food and Agricultural Organization of the United Nations has given a great deal of attention to animal production, because of the urgent need to increase supplies of protein for human consumption throughout the world. While aspects of animal production such as nutrition, disease control, and animal breeding are of fundamental importance, it is essential that the end products be so handled that all possible waste is prevented.

This publication represents the first part of a two part treatise on the handling of these end products. The second part, published in 1962 by F.A.O. is titled "The Utilization of Meat By-products". The author, Dr. I. Mann, is employed in the Department of Veterinary Services, Ministry of Agriculture, Animal Husbandry and Water Resources, Kenya, and consequently this publication is based mostly on experiences in Africa.

The Author's aim is to provide a guide to those interested in meat and meat by-products in the less developed regions and to assist the man on the spot in the choice of equipment and methods best suited to the environment in which he has to work. Chapters deal with the following subjects: Simple slaughter facilities, Basic factors in abattoir design, Designs of different types of slaughterhouses, Poultry slaughtering, Field abattoirs, Environmental sanitation, Post abattoir handling of meat, Preservation of meat, Fats and oils. Finally there is a series of plans of buildings, some equipment for meat handling, and a selected bibliography.

In the Territory of Papua and New Guinea at the present time most slaughtering is carried out in small slaughterhouses located on European owned cattle raising properties. Construction of the central abattoir at Lae will completely alter this situation in the Morobe District, which is the Territory's greatest stock raising District. Many of the subjects discussed by Dr. Mann could find application in these small slaughterhouses. For example Chapter VIII, "Environmental Sanitation" deals with Water Supply, Disposal of Effluents, Extermination of Rodents, Insect Control, etc. Cattle slaughtering in the Territory, although carried out in widely dispersed locations is at present on a small scale. Slaughterhouses are under close Government control and usually a Meat Inspector is present at slaughtering. The cattle dealt with in these slaughterhouses are of a very high quality and because of the Territory's relatively disease free state are seldom diseased. Hence some of the dangers described by Dr. Mann are non-existent in Papua and New Guinea.

The Chapter dealing with Preservation of Meat is interesting reading. The four general processes which are widely used are described, i.e. drying (including smoking), curing, refrigeration, heat sterilization (canning). Some

mention is made of the use of microbial inhibitors and of radiation. Some of the methods of drying and curing could conceivably be used by natives in this country for the preservation of pig meats and ultimately beef. However, native cattle projects when established will probably be considered as a "cash" rather than a subsistence crop.

In conclusion, parts of this book dealing with simple slaughter facilities, slaughterhouse operations, slaughterhouse hygiene and post abattoir handling of meats would provide valuable reading for those concerned with meat handling in New Guinea. Most of the other parts of this book have no real application to this Territory. Nevertheless the book as a whole provides interesting reading and has good general knowledge value for anyone in this Territory directly concerned with livestock.

T. L. Rothwell.

The Economics of Agricultural Land Tenure.

GRAHAM HALLETT.

Land Books Limited, London, 1960. 206 pp. 25s. Stg.

One would expect a publication with the above title to present an economic examination of various land tenure systems. However, the book discusses nothing but the farm tenancy system in the United Kingdom.

Few would disagree with the author's main argument that farm rents in the United Kingdom are too low and this situation can have serious economic and social effects on agriculture in that country. It is maintained that the determination of rents must be left, or if set by statute must be based, on economic factors as far as possible. The theoretical framework behind this pricing system is carefully examined and is presented in a manner which can be understood by the layman. This is perhaps the most interesting section of the book for readers not acquainted with the land tenure system in the United Kingdom.

The Agriculture Acts of 1948 and 1958 are compared and discussed in light of their effects on present farm rental levels. The latter Act attempted to use some economic arguments in rent determination.

The remainder of the book covers a wide range of topics directly related to land tenure in the United Kingdom. A brief history of the various economic and philosophical arguments behind land tenure in that country is presented with passing reference to the influence of the theories of David Ricardo and Henry George on agricultural land ownership. A number of practical matters relating to estate management are discussed, including cover methods of rent determination, suggested system of keeping estate accounts, the influence of the British taxation system on estate management, and a consideration of rent as a return on capital. A chapter is devoted to land nationalization and the change in the reasons for this action over the last century in Great Britain is mentioned. This section is concluded with a suggested agricultural policy for the British Labour Party.

The author sums up his thesis with the statement "the book has argued the economic advantages of tenancy" but in fact it has failed to do just this. No comparative study of farm tenancy and owner-occupancy is presented. But nevertheless, generalizations such as the following are made, "if letting of agricultural land is not allowed to be profitable, land will eventually cease to be let and this, it has been argued, would be a grave blow to British agriculture". Why this should be the case is not shown by the author. Perhaps it may be in the interests of British agriculture to keep rents low so that "land will cease to be let". This action could allow a new class of owner-occupants to emerge.

The smallness of many British farms is a major economic and social problem and under the present system of tenancy, which accounts for more than half the agricultural land, consolidation as a solution is not occurring. However, in the U.S.A. and Australia where owner-occupancy is the dominant land tenure system, farms are increasing in area. This is taking place because of normal economic forces.

The unfortunate title of this publication directs criticism and the author's defence of farm tenancy is considerably weakened by the absence of any comparative study of tenancy and owner-occupancy. The book is of little interest to anyone outside of the United Kingdom.

G. R. Spinks.

Report on an Economic Study of Small Farming in Jamaica.

DAVID EDWARDS.

Institute of Social and Economic Research, University College of the West Indies, Jamaica, 1961. 370 pp. 28s. Stg.

The book is based upon results of a study of small farms in Jamaica carried out by Mr. Edwards in 1954 and 1955, and is similar to a thesis approved for the degree of Doctor of Philosophy in the University of London. The text, well supplemented with statistical data and illustrations, is of four parts dealing respectively with the background of the study, resource use and returns, possibilities of change, and conclusions.

As first conceived by the Colonial Economic Research Committee the purpose of the investigation was to secure "... as full as possible an understanding of all the determinants in Jamaica of ... the economics of farming and of farm families." (p. 7). Edwards has chosen to study intensively a small number of carefully selected farms hoping "... to get beyond the level of understanding possible in the more extensive study." (p. 25). He first describes economic conditions on the small farms studied, and then discusses the technical improvements needed, together with the possible reaction of farmers to proposed changes. He concludes that "... the small farming studied was technically bad, but economically ... a reasonable response to the conditions under which farming is practised ...", whilst to improve the level of technique he says that "... the farmer's entrepreneurship will have to be changed in appropriate ways so that it becomes obvious to the farmers that their ends can be achieved by introducing the technically more desirable practices." (p. 282). However, Edwards neither defines clearly what he means by the term "farmer's entrepreneurship", nor attempts to substantiate methods that would bring about the desired change.

For those not familiar or concerned with conditions in Jamaica the broader issues are of interest. In recent years, with more attention being focused upon the development of suitable farming systems in many of the underdeveloped countries the great need has been for basic information describing the systems being evolved

by independent farm communities. In most cases the amount and accuracy of agricultural statistics is limited; thus pilot studies of this kind are of great value. Moreover, as well as defining those improvements that are technically or economically more desirable, there is a need to understand what is acceptable to farmers, and the factors important in influencing acceptance or rejection of improvements. In this regard the study is valuable for its contribution towards understanding the way in which Jamaican farmers react to obstacles that confront them, and the effect this has upon the adoption of improved farm practices.

R. J. Cheetham.

Migrants and Proletarians—

Urban labour in the economic development of Uganda.

WALTER ELKAN.

Oxford University Press, London. 145 pp. 39s. 3d. Stg.

ONE of the many reasons delaying the development of a general theory of economic growth for under-developed nations of the world is the defensive position into which economics has been forced by some of the other social sciences, particularly anthropology and sociology. Behaviour is often explained in non-economic terms, when in fact, closer examination would reveal that economic reasons are the major motivating force. Furthermore, policy is sometimes made on assumptions that economic factors play little, if any part, in the behaviour patterns of individuals. Nowhere is this more the case than in the field of labour policy in the under-developed nations.

The author of this publication has attempted to rehabilitate the place of economics in explaining the motivating force behind urban labour in Uganda. Although many of the conclusions are tentative, and require further research, they are sufficiently provocative to raise some doubts about the acceptance of non-economic factors in explaining behaviour of urban labour. It is this that makes the book worthy of study.

The plan of the book follows the traditional pattern of labour economics, and covers supply, demand, wages levels, degree of skill, labour relations between the different types of employers—government, European, Asian and African—

and general government policy. In each case these are considered against the background of the migratory nature of the labour force. The author sees this as a permanent feature of urban labour in Uganda.

Although a class of proletariat is emerging in the urban centres of Uganda, the larger section of the labour force consists of the migrant. The findings of the study indicate that economic factors are the major motivating force for migration but close ties with home villages remain. Migration is only a temporary phase and is considered as a means of accumulating capital. Many of the labourers set themselves up as minor entrepreneurs on return to their home villages.

The transient nature of the labour force creates problems for employers and although government policy is directed towards the establishment of a stable supply, the author suggests that this is unlikely to occur. Private employers have adapted labour management to the migratory nature of the labour force.

The fundamental issue of labour in the under-developed nations of Africa is closely connected with the role of the welfare state and the economic growth of these countries. Although this is not specifically raised in this publication, it is a problem of which the author is well aware. This attitude is most apparent in the section on labour relations.

G. R. Spinks.

The State of Food and Agriculture, 1962.

F.A.O. Rome, 1962. 198 pp.

There is no doubt that this annual report is the most important of all the F.A.O. publications. The introduction of special articles since the 1956 issue has improved greatly its value for those interested in world economic events. Within this report the two articles deal with the role of forest and livestock industries in the less developed countries. The former is of particular value and covers a number of little known aspects of forest industries. The latter covers familiar ground.

The general theme of the survey of world food and agricultural production during the year under review continues to show that the

pressing problem of raising living standards in the less developed nations is no nearer solution. World agricultural production has maintained a steady growth, apart from a check in 1957-58, but this increase has come mainly from the developed nations. In the less developed countries, population growth continues at a faster rate than agricultural production. Despite some reservations by the underdeveloped nations, international trade is of great importance to their economic growth. Here again the survey presents a dismal picture. For the seventh successive year, the terms of trade for agricultural exports has declined. In fact, in 1961 the terms of trade were "24 per cent. less than in 1952-53". This fall in the year under review resulted from increased exportable surpluses of agricultural products facing a world import demand which was increasing at a much slower rate. At the same time, world average prices for manufactured goods, which are essential for economic growth, rose by about 2 per cent from 1960 to 1961.

The world demand for agricultural raw materials also suffered from the general slowing down of economic activity in the industrialized nations. In the first half of the year, the level of activity in North America failed to reach the heights expected, while in western Europe and Japan economic expansion did not maintain the rate of the previous years.

On top of these problems, the report has some strong words to say about the commercial policies of the industrialized nations. In particular, the agricultural and trade policies of the European Economic Community have caused considerable uncertainty to many of the less developed nations.

There is a growing faith in world stabilization schemes for the major agricultural products entering world trade, but this will only be a temporary solution to the inherent problem of the economies of the underdeveloped countries. Some measure of instability is and will remain a feature of world trade and all countries must be prepared to live with it. It is up to the underdeveloped countries to make their economies more flexible. They cannot do this alone and the developed countries must assist. Much of this can be done simply by the "have" nations being more aware of the implications of their agricultural and commercial policies.

The chapter, "The Role of Forest Industries in the Attack on Economic Underdevelopment", is refreshingly down-to-earth in its appraisal of the forestry sector in developing nations. Warning is given against grandiose plans incompatible with the socio-economic background where both skilled labour and capital are commonly scarce resources. The latter aspect is given special emphasis in the excellent subsection "Making Capital Go Further".

Very useful data on production, consumption and trade trends of various categories of forest products are presented in some of the ten tables incorporated in the text. Comparisons between the advanced and underdeveloped nations are freely drawn. The latter bloc, while generally favourably endowed with natural hardwood forest reserves and having very low levels of consumption of forest produce, nevertheless experience a net trading deficit in value but not in volume terms. The developing nations are exporters of low unit value sawlogs but larger net importers of the higher valued products processed from wood. The significance of this need hardly be stressed where there are foreign exchange difficulties.

The implications of the importance of forest industry development are carried further by an interesting evaluation of capital requirements by the "have-nots" to 1970 to satisfy increasing consumption while maintaining the present volume of net trade. The capital cost of expanding productive capacity over that period of time would appear to be little greater than that of importing the required additional quantity of product in one year. In addition, the propulsive nature of investment in the forestry sector is given strong emphasis. For quantitative support indices of the degree of indirectness and of interdependence with other sectors are derived.

Foresters in particular will find the suggestions for profitable avenues of applied research of considerable practical interest. Perhaps the most important is the great need for research into the scaling down of the economic production of pulp within the known processes.

In the humid tropical areas there still remains a formidable volume of testing to be carried out on the complex range of "secondary" species which do not normally enter the trade. Attention

might have been given to the problems associated with sorting and grading, and the sale of those species which occur infrequently in the forests of this climatic region. It is gratifying to note however that research into low-cost and low-capitalized extraction and logging road construction is suggested. There is no doubt that the opening up of forest tracts in countries or localities not endowed with natural forests of high productivity, must follow these lines.

In a broad appraisal such as this is, readers should not expect to discover a neat answer to the particular problems of their own countries. Forest resources, and conditions and the availability of production factors are widely variable throughout the developing bloc. A detailed path of development cannot be located without sound knowledge of the underlying economic and social structure. But generalities and broad principles have their place, and for this reason the chapter is an excellent contribution to the fairly sparse literature in this field of forest economics.

E. C. G. Gray.

G. R. Spinks.

Rural Settlement and Land Use.

An Essay in Location.

MICHAEL CHISHOLM.

Hutchinson & Co., Ltd. (London), 1962. 207 pp.
12s. 6d. 5tg.

There are many factors which influence location patterns. In this book the author has attempted to provide a systematic account of the way in which distance affects rural settlement and land use. The use of theory is minimized, and for the most part descriptive data and research results, drawn from a wide variety of sources, are used to illustrate the impact of distance on patterns of land use. Consequently, most of the ideas and arguments presented in the book will be familiar to students of location. The author suggests that the book may fill a gap between location studies that examine all the factors important in determining the location of an individual firm, and studies that attempt

to develop a general theory embracing all the main features of spatial distributions (notably those of Losch and Isard). However, any gap that the book may fill is only in terms of a collection of somewhat unrelated descriptive material demonstrating the importance of distance in determining patterns of land use and settlement.

After an introductory chapter the elementary theory of location developed by von Thünen and Weber is described, together with their methods of partial equilibrium analysis. It is assumed that the location of a settlement, or major concentration of population, is given and fixed. Thus, the aerial distribution of crops and livestock as determined by the competition between products and farming systems for the use of any particular piece of land, is examined at the individual farm and village level and then at the regional and world levels. The way in which distance affects land use patterns about settlements is examined, with particular attention given to the effects of fragmentation and consolidation on the pattern and level of production. There follows a chapter dealing with the impact of distance on marketing arrangements and zoning on a regional and world basis. The analysis is then inverted so that patterns of land use are predetermined by natural conditions and the location of settlements is variable. An attempt is made to measure some of the economic costs attributable to different degrees of nucleation of rural settlement, and the location of lines of communication with respect to rural and urban needs or potential needs is examined. In the final chapter, dealing with the impact of technical change on patterns of location, it is suggested that there is a tendency towards an increasing degree of agglomeration at all scales of operation in land use.

The book is valuable in that it does provide interesting background material for those who wish to become acquainted with the role of distance in determining patterns of rural settlement and land use without becoming involved in an abstract theoretical treatment of the subject.

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