BOOK NOTES.

Estimation of Crop Yields. V. G. Panse, Economics Division, Food and Agriculture Organization of the United Nations, Rome, Italy, July, 1954. Pp. ii, 61.

This book is the first of a series to be published by the Food and Agriculture Organization of the United Nations dealing with the application of sampling theory to the statistics of agricultural production. This monograph and others to be published in the series are intended as manuals which attempt to provide under-developed countries with techniques necessary to acquire more reliable agricultural statistics. The fragmention of agricultural holdings, illiteracy and widespread tax evasion are some of the problems which complicate the collection of statistical data in under-developed areas. This publication deals with only one aspect of the problem confronting these countries, namely, the measurement of yield per unit area at harvest. The problem of estimating areas under crop is not considered.

Farmers, especially in under-developed countries, cannot be relied upon to give an accurate estimate of their crop after harvesting. An alternative is for crop yields to be estimated by someone other than the farmer. The use of visual estimation of crop yield rates, which is employed in many countries, is liable to considerable and indeterminate bias, even when carried out by highly trained personnel. In order to obtain objective estimates and so eliminate conscious or unconscious bias in crop yield reporting as much as possible, the author advocates the use of crop cutting surveys at harvest time, using the principle of random sampling.

The book gives a concise account of the advantages of sample crop cutting surveys over eye estimation of yields. A short summary is also given of the work already conducted in different countries along these lines. These techniques have been developed especially in India, where Dr. Panse is well known for his achievements in the use of probability sampling methods in agricultural research.

The problems associated with crop-cutting surveys are briefly discussed, and the author suggests fields where further valuable research should be conducted. One of these is the problem of bias arising from the use of small plots. Whilst most of the problems discussed are directly pertinent to India, they serve as a guide to other countries desirous of employing comparable techniques. There is no attempt to lay down hard and fast rules for the design of crop-cutting surveys or to frame any set of rules of procedure.

Notwithstanding the handicaps which must inevitably face the wider application of such techniques, the author feels that worthwhile results can be obtained. He maintains that "the difficulties initially experienced in introducing this method in under-developed countries, such as ensuring a strictly random selection of plots for crop cutting and the control of the field operations with the required standard of accuracy, can be surmounted through pilot investigation and training of staff".

The success of any survey, whatever the country, depends entirely upon the active co-operation of the farmers in the survey area. The author briefly suggests simple methods of interesting the local people in the field surveys and ways of gaining their confidence.

Crop-cutting surveys are used in the United States of America, the United Kingdom, Germany and other countries. The manner in which the author dismisses the value of eye estimation, which presumably includes that by highly trained personnel, indicates that his remarks are intended primarily for readers in the under-developed countries. Eye estimation of yields and areas plays a major role in crop forecasting in many countries, and can be justified, provided it is conducted by experienced personnel. Bias does occur, but by means of the systematic application of such statistical tools as the graphical regression method, the accuracy of crop reporters' forecasts can be improved. As long as the weaknesses of such methods are realized, their speed, simplicity and cheapness make them extremely valuable.

The early publication of reliable statistics by governments in the more advanced countries has somewhat reduced the value of sample crop cutting surveys. However, governments, industry and private individuals require forecasts of production at dates well in advance of harvest. The use of eye estimation in making such forecasts is of considerable value, providing it is used in conjunction with recognized statistical procedure. On the other hand, reliable statistics are usually not available in under-developed countries. Such countries will therefore probably be forced to adopt methods such as the crop-cutting surveys advocated in this book.

In the absence of any reliable official statistics it is practically impossible to measure the accuracy of the inference of total production from the results of the sample as is normal procedure in those countries which have reliable statistics. Unless satisfactory statistics are available there is no method by which a biased sample can be detected and corrected.

Apart from a series of typographical errors in Part VI, the book is a good statement of the methods and problems of crop-cutting surveys. It is of considerable value, not only to those who have professional interest in crop forecasting and estimating, but also to the general reader who wishes to know more about the problems of collecting reliable agricultural statistics. Only Part VI would offer any real difficulty to the general reader, as it refers specifically to technical considerations involved in the analysis of survey data.

The problems of crop estimating and forecasting have received insufficient attention in the past. Whatever the criticism implied here, this book must be regarded as a valuble contribution to this hitherto neglected field of study.

World Population and World Food Supplies. Sir John Russell, George Allen & Unwin Ltd., London, 1954. Pp. 513, 50s. (Stg.)

The Limits of the Earth. Fairfield Osborn, Faber and Faber Ltd., London, 1954. Pp. 175, 12s. 6d. (Stg.)

The post-war period has witnessed quite a crop of books in which the prospects of the world's food suppliers keeping pace with the rapidly expanding needs of an increasing population have been discussed, with varying degrees of objectivity.

The problem is not new. It has been discussed on many occasions since Malthus published his famous essay on the *Principle of Population* in 1798 and, like Malthus, most of those who have achieved notoriety in this field of discussion have been pessimists who have considered that sooner or later the needs of an increasing population would outstrip the world's food resources.

A large proportion of the world's population is permanently undernourished and it is perhaps for this reason that most writers on this subject adopt a pessimistic outlook. In the immediate post-war period there appeared to be considerable justification for this pessimism. During this period F.A.O. frequently had occasion to emphasize that production of foodstuffs throughout the world, the output of which had been severely affected by wartime havoc and destruction, was failing to recover as fast as might have reasonably been expected. World food production was not keeping pace with population expansion. In 1951-52, F.A.O. estimated that world food output was 11 per cent. greater than in the immediate pre-war period, whereas population had increased by 15 per cent. in the same period. However, by 1953-54 food production was 20 per cent. greater than pre-war, whereas world population in the same period had increased by about 18 per cent. The turning point was 1953. In that year average per caput production of foodstuffs exceeded the pre-war level for the first time in the post-war period; the improvement continued in 1954.

It is unfortunate that, although both *World Population and World Food Supplies* and *The Limits of the Earth* were published in 1954, neither take account of the great change which took place in the world food situation in 1952-53 and which has continued since then.

No doubt Fairfield Osborn would regard the improvement in *per caput* production in the past two seasons as purely temporary, the result largely of particularly favourable seasons. On the other hand, while acknowledging the seasonal effect, Sir John Russell would probably ascribe the change primarily to improved techniques and management methods and to the institutional and other changes which are taking place in the underdeveloped countries.

This difference in outlook reflects the basic difference in the approach of the two authors to the problem of world food supplies. Throughout his book Sir John Russell is mildly optimistic, whereas Osborn is pessimistic, his style frequently verging on the sensational. Although they deal with the same general subject the two books could hardly be more different in their approach, their tone or their style.

World Population and World Food Supplies is an encyclopaedic volume in which the present state of agriculture in most countries of the world is described in some considerable detail. The book can be thoroughly recommended to all those who wish to gain a comprehensive picture of the world's food resources and potentialities. The author has an amazingly complete knowledge of the structure of the rural industries in most parts of the world and he writes in a clear and easy style.

Statistics and tables are used liberally throughout the text to illustrate points and to set national agricultures and their problems in proper perspective. Unfortunately, though, the statistics used are not as up-to-date as one could have wished. The latest figures quoted are for 1952, but in many instances nothing later than 1949 is given. Admittedly the task of writing, compiling statistical tables and publishing a book such as this is very considerable but, particulwarly in view of the great improvement which has occurred in world agricultural statistics in recent years, it is a pity that more up-to-date figures could not have been incorporated.

Although most major food-producing areas are dealt with in considerable detail some peculiar lack of balance exists in some sections. The book is written from the United Kingdom viewpoint and this may account in some degree for the fact that although 54 pages are devoted to the population and agricultural problems of the United Kingdom and Eire, Japan's agriculture is dealt with in little over a page, and this despite the fact that the author considers that "Japan presents the most serious food problems of any country in Asia". However, this is an isolated instance; there are few important food importing and exporting countries that are not dealt with in some detail.

Not only does the author describe and discuss the structure of agriculture in most of the major producing areas but he deals with current problems facing agriculture in each area, with attempts being made to solve these problems, and in particular with the potential for production expansion in each region.

Scope for greater food production lies in two broad directions; firstly in the development of land which, although suitable for agriculture, is as yet unused, and secondly, through the introduction or extension of more intensive and more efficient farming methods.

Sir John examines the potential for the development of new resources and concludes that, apart from considerable possibilities in respect of irrigation development, the potential is very limited in North America, Europe, Australia and most of Asia. However, he believes that there are very considerable possibilities for the development of new areas in South America. "South America holds out greater possibilities of additional food production than any other continent."

More important than the development of new areas is the intensification of agriculture in existing areas through the adoption of improved farming practices and the use of higher yielding, disease-resistant seed varieties and better breeds of livestock. The emphasis through the whole book is placed on the great potential which exists for greater food production by intensifying and improving the efficiency of existing food-producing regions. However, it must be recognized that there are basic institutional and organizational problems to be overcome in many of the older rural communities before much improvement in efficiency or much intensification of agriculture can be expected. It will be necessary "to transform the old peasant system into a more productive modern form, and this involves far-reaching changes in the structure of village life destroying its old self-sufficing character, and making it dependent for its essential appliances on industries often far distant from the village and completely out of contact with it. The transformation has long been accomplished in the United Kingdom, and

North-West Europe; elsewhere it is in very different stages, in some countries it has hardly begun. It is always difficult and rarely accomplished smoothly. But it must be brought about, for the peasant systems are incapable of much improvement; only the modern systems can be intensified, as shown by the fact that only in the agriculturally advanced countries have yields per acre increased since pre-war days; elsewhere, they have remained stationary or even fallen." (p. 64)

Despite the fact that there is a tone of optimism throughout most of the book, the author adopts a rather pessimistic view when discussing the possibilities of increased food production in Australia. His attitude towards Australian food production prospects is summarized when he says "this failure to increase food production in spite of great world need and high prices has caused surprise in view of the excellence of the scientific and educational services and of many of the farmers. It has even been suggested that Australia has reached the limit of development and will henceforth decline through soil deterioation, soil erosion and other causes. There is no evidence to support so pessimistic a view: but equally there is nothing to justify the vision of vastly increased production of food." (p. 420)

Hardly a realistic view, despite the fact that food production has not increased rapidly in the post-war period. Full account does not appear to have been taken of the great potentialities which exist as the result of the rapid expansion of pasture improvement and the increases in output which will occur, ultimately, as the result of many new irrigation projects, including the Snowy River Scheme.

Unfortunately there are several inaccuracies in the section dealing with Australia. The Water Conservation and Irrigation Commission will not doubt be intrigued to read that "the Hunter River flowing eastwards through New South Wales *has* (reviewer's italics) a dam at Glenbaum (sic) for the irrigation of lucerne for which the valley is famous".

The author of *The Limits of the Earth* covers much the same general ground as Sir John Russell, but in quite a superficial manner. No attempt is made to describe existing agricultural practices in detail or to assess the relative importance of different food producing regions in anything but the broadest terms.

The tone of the book is one of pessimism and consequently it is not surprising that Osborne adopts an even more pessimistic outlook than Sir John Russell when discussing Australia's food potentialities. The six pages devoted to a "detailed" discussion of the Australian situation are, like the remainder of the book, full of broad generalizations, most of them in the case of Australia, apparently based on a reading of the popular press during the "food scare" of some two or three years ago. Unfortunately, there is no serious attempt to make an objective assessment of Australia's food potentialities. This broad criticism applies generally to the whole of the book.

Social Structure and Personality in a City. O. A. Oeser and S. B. Hammond, London, Routledge and Kegan Paul Ltd., 1954. Pp. xxii, 344. 30s. (Stg.).

Social Structure and Personality in a Rural Community. O. A. Oeser and F. E. Emery, London, Routledge and Kegan Paul Ltd., 1954. Pp. xiii, 277. 25s. (Stg.).

These two volumes present results of research undertaken by the staff and students of the Department of Psychology, University of Melbourne. The studies were carried out as part of a UNESCO project for an international study of communities and social tensions; the other countries taking part being India, France and Sweden.

The volume on urban life used a sample of 112 school children aged 10 to 13 years from two State schools in Melbourne. Both the children and their parents were interviewed. The authors realize that their sample is not representative as far as age distribution is concerned, but feel that "rather than take a random sample of the population, with of necessity few cases in each (age group), it seemed most effective to choose two (age groups) and to study enough cases in each". Another bias was introduced as only 75 per cent. of Australian children go to State schools and high-income Protestants and Catholic groups of all income levels are under represented. However, these deficiencies are comparatively minor in a pioneering work of this kind.

The information obtained from the sample group relates to attitudes of both parents and children to other nationalities and races, to immigration and to perceived social strata. The organisation of the home, family ties and tensions and methods of child rearing are also examined closely. It is doubtful whether any of this information is really relevant to overall problems of war and peace but this is hardly the fault of Professor Oeser and his co-workers.

One aspect of the published reports which should be criticized is the pretentious and turgid style which is often used. While it is realized that each social science must gradually evolve its own concepts and terminology, it is preferable to use ordinary forms of expression wherever possible. One example should be sufficient to illustrate this point. On page 120 (Vol. I) a problem familiar to many field interviewers is discussed; the problem is that of obtaining information of an intimate nature regarding family tensions—a process which is likely to be resented by the persons interviewed.

"At this stage we decided that the only way to cut across these difficulties was to make a conceptual analysis of this problem. It started from the principle that a group could be regarded as an interdependent whole. From this a number of subsidiary principles followed, which provided an axiomatic system, in which each concept could be defined in terms of others within the same system."

The problem was solved in this case by asking the children a series of questions which the parents might have resented, in the absence of the parents. It is hard to understand why this could not be explained in simple language without resort to subsidiary principles which provide axiomatic systems.

In the study of a rural community the difficulty of obtaining a representative sample arose in slightly different form. A small town in the Victorian Mallee with a population of approximately 500 was chosen as a representative wheat growing community. The authors state that "the diversity of Australian rural pursuits . . . made it impossible to select one (community) which would be truly representative. It was decided to select a town that was dependent on wheat growing, since the biggest part of the Australian rural population is engaged in wheat growing". In this community an attempt was made to obtain systematic evidence, for approximately half the population, by means of parent interviews and child testing. The subjects covered were very similar to those dealt with in the Melbourne study.

Few of the conclusions reached will be either very new or surprising to students of Australian rural life, though many of the comments show considerable wisdom and insight. The authors stress that the predominant social and cultural characteristics of Australian rural life are essentially similar to those existing in Australian urban society. Although differences do exist they are comparatively minor. Rural communities which are generally dominated by individual self-employed producers tend to be more conservative politically and the social pressures to conformity also tend to be stronger. Partly because of isolation the family is a much more important economic and social unit for farmers than for urban inhabitants. On the other hand urban influences are constantly at work in the rural scene. Among these the State-wide educational systems and the mass media of press, radio and cinema have had a major influence making for the spread of urban patterns of life and urban forms of leisure.

One feels, however, that, in some respects the authors have, while describing existing conditions, anticipated changes which may not occur for many years. In several places stress is placed on the fact that average farm size has been increasing.

"In the early part of the century the average farm holding was some 480-640 acres. The minimum holding now considered necessary for economic cultivation is about 1,000 acres and the modal size of the present farms is closer to 1,500 acres."

From this tendency the conclusion is drawn that family farms are being displaced. "The picture of a self-employing, self-determining farmer was, in the past, true only in a very limited sense. There is every reason to believe that it will be even less true in the future."

The increase in the average area of farms which has taken place especially rapidly in the wheat belt, does not necessarily imply that the labour force needed per farm has also increased. Most of the increase in farm areas is the result of technological progress which enables each farm worker—with the aid of more and more mechanical equipment—to look after continually increasing acreages. In fact from Table 5, in the same chapter of the book, we learn that out of a total permanent farm population of 75 in the surve district, only seven are permanent farm labourers and 62 out of the total of 68 farmers have no permanent employees. It is surely a little too early to talk of the doom of the "self-employing, self-determining farmer".

Sydney: A. H. Pettifer, Government Printer—1955