

NATURE

No. 4102 SATURDAY, JUNE 12, 1948 Vol. 161

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MACMILLAN & CO., LTD.,

ST. MARTIN'S STREET, LONDON, W.C.2.

Telephone Number: Whitehall 8831

Telegrams: Phisus Lesquare London

Advertisements should be addressed to

T. G. Scott & Son, Ltd., Talbot House, 9 Arundel Street, London, W.C.2

Telephone: Temple Bar 1942

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FOOD PRODUCTION AND LAND UTILIZATION

A DANGEROUS situation appears to be developing in world food production. Almost everywhere populations are increasing, and in many regions the area of land available for food production is shrinking: agriculturists are being faced with the problem of producing more and more food from less and less land. The population of England and Wales has gone up by about 14 millions since 1891, but the area of land under field and crops has shrunk by nearly 4 million acres. We now have little more than half an acre of cultivated land per head of population, and it required about 1.6 acres per head to produce the pre-war dietary. Our present reduced scale of feeding, with its cut of about 20 per cent of calorie supply, calls for less land per head, but even so we are producing on our present acreage only 40 per cent of our food. And the area of cultivated land still shrinks: housing estates, road widening, surface mining, demands of the Services and other activities absorb much land and often spoil more. Of the land still left in cultivation, little more than half can be called good; the rest is only moderate, and although we still have some reserve of potentially utilizable land, the cost of reclaiming it and keeping it in cultivation would be high, often very high. At the present rate of loss, we shall be fortunate if technical advances in agriculture enable us to continue producing as much as 40 per cent of our food, unless the public will tolerate a lower dietary.

So long as Britain was the chief buyer in the world's food markets, we had a considerable voice in fixing the price; but there are now other buyers, and the commercial arrangements are different; prices have moved against us and may rise still further. Europe (excluding the U.S.S.R.) was formerly almost self-supporting in food, importing less than 10 per cent of the grain consumed and having a small net export of meat and dairy produce. Now, however, the position is entirely different: the import requirement of grain is more like 20 million tons to satisfy the reduced—in many cases drastically reduced—rations now available. In so far as this situation is due to war devastation, one can hope that before long it will be remedied.

A new problem, however, is just beginning to emerge. It has already appeared in India and may soon appear elsewhere. Until recently India was practically self-supporting in food; there was, indeed, an export of wheat and of oil seeds, but also an import of rice. But, thanks to efficient health services organised by devoted British workers, the population has risen rapidly and enormously: in 1931 it was 338 million, but by 1941 it had increased to 389 million. It has now outstripped the present food-producing capacity of the land. India has ceased to export food and has begun to import it. Until recently the growth of world population was mainly met by bringing new land into cultivation; the late Sir Daniel Hall calculated that each new head of population in Great Britain brought into use an additional 2–2½ acres of land, the yields being

lower than ours. Much virgin land was still available and easily utilizable. But that kind of land is now all taken up. A great deal of what remains will need large and costly development schemes to make and keep it productive. Unfortunately, too, as in Great Britain, much of the land that has been brought into cultivation has been lost, partly through the same causes as operate here, but largely through another cause from which happily we do not suffer greatly, namely, soil erosion. This has been particularly destructive in the rather dry regions well suited to wheat, and in the wet tropics where lie our largest reserves of potential food-producing land. Prof. C. B. Fawcett has estimated that the area of potentially cultivable land in the world is about 10,000 million acres. (H. L. Shantz's quite independent estimate is higher—17,000 million acres—but includes all land under a 'crop climate', while Fawcett has eliminated mountains and other areas physically unsuitable for cultivation.) About half of this may be regarded as fairly workable. The world population is estimated at something more than 2,000 millions and increases at the rate of 20–25 millions per annum. There appears, therefore, to be about $2\frac{1}{2}$ acres of fairly workable land per head—but constantly shrinking while the population constantly increases. Prasolov estimates that about 10 per cent of the land surface of the world is already cultivated, that is, about 3,600 million acres, 1.8 acres per head.

Britain is for its size the most crowded country in the world, and the most dependent on outside sources of food. We are therefore vitally affected by this fact of decreasing available land and increasing demands upon it. To a large extent the situation is outside our direct control, but under the very able and energetic guidance of Sir John Boyd Orr, the Food and Agriculture Organisation has striven to arouse recognition of the urgency of the problems among all nations.

We can, however, try to do something in Britain itself. It is clearly essential that the remaining soil resources of the nation should be carefully assessed and that the destruction of food-producing land should be halted. Unfortunately, 'planning' has not been conspicuously successful in this direction. Perhaps some better procedure may be evolved, but in the meantime methods of evaluating different soils are being elaborated. This is by no means a simple matter, for soils, climate, and management are so interlocked in food production that it is impossible to express any of them numerically. Soils can, however, be grouped, and two methods have been adopted for doing this. One is by soil analysis. This has hitherto been used chiefly for indicating fertilizer and lime requirements, and for that reason was long subordinated to the advisory section of the county agricultural activities; only recently has it been given an independent status. Large numbers of analyses have been made, but few have been adequately discussed in publications generally available; this defect will, it is hoped, be remedied in time; but meanwhile, methods are continuously under review, and fuller knowledge of the soil factors involved in crop production is being gained. Much

good work done in other countries is now available; the most recent summary is contained in the new edition (the fourth) of M. Demolon's well-known treatise "La Dynamique du Sol"; American, Canadian, Australian, Russian and other work has been collated and described by the Commonwealth Bureau of Soil Science.

The other method of evaluating soils is frankly empirical but of great practical value. It is based on their performance in the use to which they are actually put, and it necessitates accurate surveys to discover that use. Agricultural surveys, of course, have long been carried out in Great Britain; the most complete were those made by the first Board of Agriculture in the early years of the nineteenth century, which still remain unequalled. In recent years agricultural officials have collected a great mass of information which has been statistically summarized in the "National Farm Survey of England and Wales" (1946), a most useful publication which provides students, experts and officials with much valuable information, and would have been even better if the parallel survey for Scotland could have been made on the same lines and for the same period, so that the results could have been strictly comparable. It has, however, little descriptive detail, and one could wish that, having collected the material, the Ministry would issue a series of volumes comparable with the old ones. Another survey, more restricted in scope, but more homogeneous in execution, was made of the grass lands of Britain by Sir George Stapledon and his colleagues. The fullest land utilization survey yet made in Britain was carried out under Prof. Dudley Stamp and is discussed below. It is the outcome of much valuable study by British geographers which has not yet received the recognition it deserves, but which has revolutionized geographical science in Britain and has furnished a solid foundation on which a sound scheme of land utilization can be built up. The need is great, and time is pressing.

THE LAND OF BRITAIN AND HOW WE USE IT

The Land of Britain

Its Use and Misuse. By Prof. L. Dudley Stamp. Pp. viii+507. (London, New York and Toronto: Longmans, Green and Co., Ltd., 1948.) 42s. net.

B RITAIN has been fortunate in its geographers. As soon as the subject emerged from the purely descriptive to the more scientific stage, the need was realized for detailed studies of the land to find out the uses to which it was being put, and to discover, if possible, why a particular use was adopted. Among the pioneers were H. J. Mackinder who, in his classical work "Britain and the British Seas", discussed the marked differences between the uplands and lowlands of Britain; and H. R. Mill who, in a paper before the Royal Geographical Society, prepared a specimen description of a 1-in. Ordnance Survey map sheet. But it was Patrick Geddes who gave definite form to the idea of setting out the principles