

Conclusion

The future of production in New Zealand is bright. Food production will increase steadily, and, provided seasons remain temperate, shipping facilities and standards improve, and refrigeration store space is available in Britain, the targets aimed at in New Zealand will be possible of attainment.

Much depends, too, on the improvement of marginal land and the continuous supply of superphosphate. The New Zealand farmer is a sane and well-informed member of the community, willing to pull his weight whenever difficult situations occur. He is backed by useful agricultural colleges and a live Agriculture Department, and the sale of produce is organized by representative bodies, the Meat Board and Dairy Commission. This has led to a stable primary industry.

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South Africa's Contribution to the British Diet

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The Union of South Africa can make only a limited contribution to the food requirements of the United Kingdom and that to a large extent only of luxury or semi-luxury articles of food. To appreciate the reason for this it is well briefly to examine the geographical background of South African farming.

Physical features of South Africa

General climatic conditions. The Union, including South West Africa, together with the three Protectorates of Basutoland, Bechuanaland and Swaziland, occupies an area of 1,100,000 square miles. This vast expanse can be divided into two main geographical areas, a coastal belt and an interior plateau, or rather series of plateaux, separated by an escarpment over 2000 miles long which begins in the west as a low ridge in South West Africa, gradually increases in stature towards the south and ends in the majestic Quathlamba Mountains or Drakensberge, in the north-north-east, in Basutoland and beyond along the border of Portuguese East Africa. In expanse the interior plateaux by far exceed the long but narrow coastal belt. Climatically the coastal belt can be subdivided into three main regions, a hot desert region in South West Africa and northern Cape Province, a 'Mediterranean' region in the so-called western Cape Province and south-western districts round Cape Town and a warm temperate region from roughly the border districts above East London, through the native territories of the Transkei and East Griqualand, Natal and Zululand to the Mozambique border.

Similarly, the interior plateaux can be subdivided into three climatic regions—a hot desert region in the west, a temperate continental region in the middle and east and a small tropical region in the north.

Hot desert region. Each of these six natural regions—three in the coastal belt and three in the interior plateaux—can be further subdivided into agricultural areas, but for the purpose of this paper these need not be considered in detail. Briefly it may be said that the two hot desert regions are contiguous and together form the biggest and poorest geo-agricultural area of the Union, suitable only for a very extensive pastoral industry and a very minor agricultural industry proper under irrigation. It is in this area of the Union that the South Africa-Persian-lambskin farming is centred.

Temperate continental region. Next in size to the hot desert region is the temperate continental region covering the Upper Karroo in the central and northern Cape Province, the whole of the Orange Free State and about three-quarters of the Transvaal. In the southern part this region, too, is an extensive pastoral area, but suited to a better type of sheep, the merino, and even in parts to some cattle farming, and some cultivation under irrigation. The central and northern parts form comparatively good mixed farming areas, the principal crop of which is maize, with sunflower-seed, wheat, small grains and lucerne (under irrigation) and, of late, even groundnuts as secondary crops. Merino sheep do well and dairy cattle and pigs are kept, particularly in the north-eastern and northern parts. In the north-western parts tobacco and citrus fruits are important crops alongside maize.

Warm temperate region. The warm temperate region on the east side of the Drakensberge contains the principal so-called native territories, or reserves, in which the European is not permitted to settle. These reserves contain some of the most valuable agricultural land in the Union, but are the least productive parts of the country because of the primitive agricultural practices of the natives, which the Government, however, is doing its best to improve. Surrounding these territories European farmers, by contrast, are making good use of the valuable agricultural possibilities. In the north, in Zululand, the Union has some 400,000 acres under sugar-cane; to the west of this area, wattle-bark culture, maize production, dairy farming, woolled-sheep farming and in parts tobacco culture and citriculture flourish. Towards the south in the Cape Province, woolled-sheep farming, beef and dairy farming and maize cultivation, and in the most southern part citriculture, and even in parts tobacco, yield excellent returns.

'Mediterranean' region. The 'Mediterranean' region in the southern Cape Province, in effect from Cape Town to Port Elizabeth, provides the greatest variety of agricultural enterprises. It contains the Union's two most important wheat-producing areas side by side with the rich deciduous-fruit producing and viticultural districts. It corresponds to the Mediterranean region of Europe and is similarly characterized by small farms, specializing in delectable summer fruits, wines and in some cases dairy produce and vegetables—it is the garden of South Africa.

Tropical region. One region remains to be considered briefly, the tropical region at the opposite end of the map to the 'Mediterranean' region. It is a region, in the north, of extensive cattle ranching, but to the south-east along the border of Mozambique, one

of subtropical fruits and vegetables from which in winter the rest of South Africa is supplied with fresh vegetables.

Rainfall. The foregoing brief and inadequate description of the Union's agriculture in relation to its geo-physical features does not fully emphasize, as should be done, the country's great variety of climate and its subjection to great vicissitudes of nature. The Union is not a naturally rich agricultural country and is even to-day, and will always be, dependent for its bread, for example, upon the importation of a substantial quantity of wheat. This fact is largely explained by the absence of sufficiently frequent and heavy falls of snow to cover the ground for even a few days and the—largely consequent—lack of permanent rivers. The rainy season in the northern coastal belt and in the interior plateaux is the summer months, October to March, but the rains usually fall in heavy showers accompanied by thunderstorms. These showers as a rule last for only a short part of an hour with the inevitable result that most of the rain-water is lost as run-off water and but a small fraction is absorbed by the soil. The Government has tried partially to mitigate this great drawback by the construction of numerous irrigation schemes of varying size, but irrigation schemes under South African conditions are expensive ventures, and the reservoirs are subject to silting-up since they obtain their supplies from soil-laden run-off water and not from clear streams. Nevertheless, some of these schemes support important agricultural enterprises, lucerne cultivation coupled with dairy farming in some cases, citrus-fruit production in others. The country is also subject to severe and often-recurring drought, lasting sometimes 8 or more months and even up to 2 years.

Food production

It may be objected that what has been said thus far does not answer the main question which we have been asked to answer to-day, namely, what contribution the Union of South Africa can make to the British diet. That superficially is the case—so far I have not indicated what foodstuffs the Union can supply and what foodstuffs it cannot offer to the British housewife; but what has been said will help to answer any questions, as to why or why not, which may emerge from what is to follow on food production in the Union.

Mutton. The Union, it should be evident from the foregoing, is for the greater part a pastoral country under a system of very extensive pastoralism. Its most important farming product is fine merino wool—merino be it noted—sheep skins and also cattle hides; other important animal products are mohair, goat skins, and Persian lambskins. Only a very small portion of these products is retained in the Union, the greater part being exported. Merino wool is the Union's principal export commodity of farming, having yielded in 1948 over £30,000,000 of income to farmers.

We emphasize the word merino, because the merino sheep provides the bulk of the Union's mutton, but mutton which is not suitable for export. The British types of sheep, all mutton, are hardly to be found in the country, which, but for very limited areas, is climatically not suited to them. Before the second great war the Union did export a small—relatively to British requirements negligible—quantity of lamb. To-day even that small quantity is required within the Union because of the heavy decline in

numbers of merino sheep as a result of recurrent severe droughts. Mutton and lamb, therefore, the Union cannot supply.

Beef. This, too, the Union unfortunately cannot ship. In the thirties, it did export to the United Kingdom about 40,000 quarters annually, but that quantity was negligible in relation to British requirements and it is doubtful whether that small export trade will ever again be resumed. The Union is not a natural beef-producing country—it lacks the natural vegetation, such as the Argentine pampas enjoy, upon which beef cattle can be fattened. Some excellent beef cattle are to be found in South Africa, but they have in the main to be fattened on maize and lucerne and are hardly sufficient in number to meet the local demand for first-grade beef. The greater part of the country can support only a type of cattle which is greatly inferior—as a beef-producer—to the beef type proper, and for several years before slaughter is used as a draft-animal.

Dairy produce. It would seem obvious from what has been said so far about the country's climate that butter and cheese also are not available for supply to the United Kingdom. Before the war, the Union did ship annually about 6000 tons butter and some cheese, but these were produced under relatively very extensive conditions of farming. Although the butter—to confine my remarks to butter—was of good quality it could not compare with, for example, the New Zealand product and ranked below the Australian. This was due not to lack of efficiency on the part of the creameries, but to extensive conditions which permitted the cream to be collected only once or twice weekly. Top-grade butter, produced under, say, ideal conditions is not sufficient to supply all the Union's requirements, which have, therefore, partly to be met from butter produced under the conditions described, quite suitable for the table, but not of the same high quality as New Zealand butter. Owing both to the ravages of drought and to increased local demand, the Union no longer has a surplus for export—in fact has taken to the production of margarine to supply the increasing wants of the lower-income groups.

Cereals. The union is an importer of wheat, but before the war used to be an exporter of maize, of which it shipped considerable quantities to the United Kingdom. Ground maize, or Indian corn, generally called mealies (mealies) in South Africa, makes a very popular porridge and forms the staple diet of the natives. Maize and meal shipped to Britain were used mainly in industry (e.g. the starch mills) and as animal feed. It is not seen on the British breakfast table except as 'corn flakes'. For the past 8 years approximately the Union has not shipped any mealies to Britain, partly because of a great increase in local demand, partly because of poor crops as a result of drought. The Union Department of Agriculture is investigating the suitability of hybrid maize for production in the Union. Farmers have not yet taken to hybrid maize, but in view of its great success in the United States, there would appear to be no reason why ultimately it should not also be in general use in the Union. When that day arrives, the Union is bound again to have a big surplus available for export.

Foods available for export

So far the picture has been a dismal one—broadly speaking the Union cannot supply the United Kingdom with most of the basic articles of diet. But let us now turn from this negative side to the positive side of the food-ledger.

To begin with, the Union has less maize to export partly because it is using maize more and more as an animal foodstuff, with the result that it has again begun to ship eggs and pork products to the British market.

Eggs. Before the war, the Union sold annually about 150,000–200,000 cases, i.e. 4·5–6 million dozen eggs, to this country. That is not a very big quantity relatively to British requirements, but the eggs arrived on the market over a period of 3–4 months, namely late September to December, when supplies from other sources were scarce. As their quality, owing to an efficient inspection service in the Union, was of a high standard, they found a ready sale. After a small beginning during the past 3 years, the Union hopes soon again to be a regular supplier of eggs of the same high quality and in at least the same quantity as in prewar years.

Pork. Before the war the Union was never a heavy shipper of pork and pork products, and how regularly and in what quantity it will be able to ship these products in future it is difficult to say. Much will depend upon the availability of maize for feeding the pigs, and that in turn will be determined by climatic conditions. Nevertheless, during the latter half of 1949 some 10,000 bacon carcasses, both cured and uncured, were shipped to the British Ministry of Food, and on the whole seem to have created a favourable impression. Sample carcasses of porkers and larders were also supplied for testing to the Ministry of Food, whose reports, however, are not yet available. Subject to agreement on price being reached and to the vicissitudes of the South African climate, there would appear to be no reason why the Union should not become a regular supplier of all four types of pork products mentioned and, in addition, of pork sausages.

Whale oil. Another very important commodity which the Union supplies in substantial quantity is whale oil. Before the war the Union had two factory ships operating during the Antarctic whaling season; both were sunk early in the war and only one has been replaced, but that by one of the most up-to-date German factory ships that fell into allied hands. This ship has been operating regularly in the Antarctic since the post-war resumption of whaling. The company that operates this factory ship also conducts some whaling from a land station at Durban. There is also some whaling on a limited scale on the west coast. South Africa's own needs are met from the supplies obtained from these sources, but the bulk of the oil is supplied to the British Ministry of Food. In 1949, 22,320 tons were so supplied.

Fish-liver oils. The Union is a source also of fish-liver oils. The production of these oils on a large scale is almost a new postwar industry, greatly stimulated by the passing of the Fish Industry Development Act, no. 44, of 1944. The quantity of vitamin A in the shape of fish-liver oil which the Union industry can supply has been steadily increasing during the past 5 years and as much as 8 million million i.u. have been shipped in a year, but the Union could supply much more fish-liver oil, both unrefined and refined, if the encouragement of demand were there. Supplies from other sources, however, are plentiful and competition is keen, so that comparatively low price is the determining factor of sale. Union producers, however, are confident of their ability to meet this competition.

Canned fish. The seas round the Union's coasts abound in a great variety of fish and

are a rich, as yet inadequately exploited, source of food. The supplies have begun to exceed local demand and factories have been established to can surplus fish. During the past 4 years some of this canned fish has been shipped to the United Kingdom, although, owing to an initial mistake by some canners when first the fish was admitted on trial under open general licence, the fish, particularly snoek, acquired an undeservedly bad name. Some of this fish, e.g. snoek, though admittedly not suitable to replace salmon, forms (at least as judged by a South African) a possible alternative. With greater experience Union canners should be able to produce satisfactory types of canned fish in suitable variety and quantity for the British market, but that market is limited by the big supply of local fresh fish. The future of canned-fish exports from the Union seems to be in the supply of pilchards which are plentiful during their season and have already been satisfactorily canned.

Sugar. Another very important product which the Union can supply in fair quantity is sugar. Unfortunately the area in which it is produced is subject to drought and, therefore, the production, and consequently the exportable surplus, is a very variable quantity. Under the International Sugar Agreement of 1937 the Union was granted a so-called guaranteed quota of 200,000 tons/year in the British market. During the first 3 years of the agreement, the Union was able to ship more than this quantity, but thereafter its surplus gradually declined to 154,420 long tons on the average for the years 1936-44. Several reasons, e.g. drought, increased local consumption, diversion of sugar to the manufacture of increased quantities of fruit preserves for Britain in war-time and supply of convoys, account for this decline, but available surplus is again on the up-grade and the Union's industry may be expected within another 3 or 4 years again to have available for export a surplus quantity equal to at least its present international quota of 200,000 tons.

Fruit. From the foregoing consideration of more or less essential foodstuffs, we may now pass to a brief review of the supplies of less essential, but in some cases highly desirable, foodstuffs which the Union can supply in substantial quantity. These are mainly fruit and fruit products.

There are first the deciduous, or summer, fruits during the British winter and early spring months, when other fresh fruit is scarce. From November to June the Union can ship considerable quantities of apricots, peaches, plums, apples, pears, grapes and pine-apples. In 1948-9, 4,606,530 cases, in all, of these fruits were supplied to Britain, grapes heading the list with 3,213,101 boxes of 10 lb. each. Although these quantities far exceed prewar shipments, they can be increased still further. The Union can also during the December season supply a fair quantity of pine-apples.

As important to the Union as deciduous fruit is citrus fruit, which normally is shipped to the United Kingdom from late April to late November, in other words during a period when comparatively little citrus fruit from other sources is available. The bulk of the fruit comprises oranges (2,289,682 cases in 1949 as compared with 3,871,543 cases in 1939), but in addition grape-fruit (439,542 cases in 1949), lemons and tangerines are supplied. Arriving in the United Kingdom mainly during the British spring and summer months, these fruits appear to serve a very useful purpose either as fresh fruit or natural citrus juice. Although supplies to the United Kingdom in 1949

were much lower than in 1939, the decline would not appear to be permanent; it is partly explained by heavy sales to the Continent.

The Union can supply processed fruit—jam, marmalade, canned fruit, dried fruit, fruit pulp and fruit juices—in substantial quantities. With some, e.g. dried fruit and fruit juices, the price obtainable militates against their sale in this market.

Other commodities. The Union can further supply a variety of other commodities in greater or smaller quantity. Substantial quantities of wines and brandy can be shipped and a number of minor products, such as tomato puree, chutney, jelly, at times pulses, and a newcomer, agar, are available, to mention only a few at random.

To summarize, although the Union cannot hope to equal the record of certain other countries in the supply of large quantities of basic foodstuffs to the United Kingdom, it nevertheless can make a substantial contribution, partly in basic, partly in semi-luxury, foodstuffs to give variety to the British diet.

Recent Trends in the Sugar Industry of the British West Indies

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The British Caribbean area is here regarded as consisting of Jamaica, Trinidad and Tobago, Barbados, the Leeward and Windward Islands, British Guiana and British Honduras. Although this area contributes to the British diet in many ways, for example by its exports of bananas, cocoa, citrus fruits, coconuts and, more recently, of tinned fruit juices and tomatoes, its chief contribution is sugar; no small quantity of rum obtained by the fermentation of molasses is also sent from the West Indies.

The value to this country of the sugar production of the West Indies and other Commonwealth countries and colonies has recently been brought home to us by the diminution in our sugar ration owing to our inability to buy very much sugar from dollar countries such as Cuba. Of the total sugar intake of this country in 1948, namely, 2,086,576 tons, hard currency areas contributed 1,083,121 tons. It will therefore be to our advantage at this time of economic difficulty to increase our empire production of sugar so far as agreements with United States territories permit.

The value of sugar in nutrition has recently been emphasized by work carried out in America under the aegis of the Sugar Research Foundation (1949). For instance, Mack (1948) found, after large-scale experiments, that children given extra calories in the form of sugar attained a better skeletal development and general physique than others not so treated. Sugar grown either as beet or cane is certainly the most efficient food crop, giving rise to more calories/acre than any other.

Possible measures to increase productivity of the West Indies

The British West Indies has been described, doubtless truly, as the depressed area of the British Empire, and the people certainly deserve whatever help can be given to improve their prosperity. Since they depend, in some cases entirely, on sugar for their