AGRICULTURE IN SOUTH AFRICA.*

TO one accustomed to the agricultural conditions of the West Indies there are several features in South Africa that strike one forcibly. First of all there is the relative shortage of water. South Africa, on the whole, is a dry country and the rainfall is divided pretty sharply into that of the dry winter period, May to October, when, over the greater part of the Union, less than five inches fall, and that of the summer period when the better water regions get 30 to 40 inches; some get 20 to 30, but there are large tracts getting only 10 to 20, some only 5 to 10 inches, while there are large areas along the western side of the country where the summer rain is less than 5 inches and that of the whole year is under 10 inches. Another striking feature is the extensive character of agricultural operations as contrasted with the intensive methods of the West Indies and Great Britain.

Except in districts where irrigation is possible agricultural operations have to be adapted to the seasonal rainfall; during the dry winter period many operations have to be suspended. The grain crops are sown so as to take advantage of the summer rains.

With all its limitation as regards rain, South Africa is a great agricultural country, the value of agricultural products being upwards of £67,000,000. Animal husbandry is of much importance. Great quantities of sheep are raised, mainly for their wool, which is of very fine quality, and cattle are produced in great numbers, being used for draught purposes, also for their meat and hides which are important articles of commerce, while dairying is carried on, on a considerable and increasing scale, large quantities of milk being required to meet the demands of the large towns, while butter and cheese are produced for home consumption and also for export on a large scale.

MAIZE PRODUCTION.

On the arable side maize forms the main object of cultivation. It is the crop of preponderating importance in South Africa, the total production of grain being about two and a half million tons (1924-25), which, taken at a moderate valuation of £6. 5s. 0d. a ton, is equivalent to £15,400,000. Of this some 60 per cent. is consumed in the country and some 40 per cent. exported in the form of grain and meal.

Maize is grown in almost every district of the Union: the most important producing area lying within what is known as the Maize Triangle, which may be defined by a line drawn from Mafeking in Bechuanaland to Machadadorp in the Transvaal and completing the triangle by lines connecting these extremities with Zastron in the Orange Free State. Some 60 per cent. of the Union's production comes from within this area and it is practically all produced by Europeans. Of the remaining 40 per cent. grown outside this triangle about 20 per cent. is produced by native tribes, principally in the Transkeian Territories, Zululand and Swaziland. A considerable quantity produced in the Northern Transvaal, also in the midlands of Natal and in the eastern districts of the Cape Province between East London and Queenstown.

* By Sir Francis Watts, D.Sc., being extracts from an address delivered to the Trinidad Science Club in February, 1929. From *Tropical Agriculture*, vol. VI, no. 6, June, 1929.

The cultivation of the crop is restricted to the period of the summer rains, 15th December being commonly regarded as the latest date for sowing. Under favourable circumstances a good deal of work can be done before the advent of the rains by way of weeding and cleaning the land and preparing it for sowing, thus minimising the subsequent work of weeding and cultivating. The land is ploughed with oxen as these are abundant and largely used for draught purposes; they are also used for drawing harrows, cultivators and planters; in a few cases only are horses used for these purposes.

The crop is usually reaped by hand, the stover being used for fodder, the cattle being either turned into the fields to eat it down, or it may be cut and fed to the stock. Shelling or cleaning the grain from the cob is done by machinery, usually by contract with the owners of the machines.

Attention is now being paid to the use of fertilisers and considerable use is made of farmyard manure.

Apart from the use of the maize on the farms very large quantities are required for the use of the Kaffir labourers in the gold mines of Johannesburg, the diamond mines of Kimberly and the coal mines of the Transvaal and Natal. Approximately one million tons of maize are exported in the form of grain and meal.

Careful organisation is required for the handling of these large quantities and much has been done in this direction by the development of the elevator system at the hands of the Government, under the immediate control of the Department of Railways and Harbours. Under this system grain is received from the producers, cleaned, graded and stored. On receipt a certificate is issued for the quantity and quality of the grain received and this document can be used as security against a bank advance, or it can be sold outright; by this system financial operations are greatly facilitated. As the grain is handled in bulk the cost of bags is eliminated and the cost of loading into railway trucks and steamships is greatly reduced.

At present there are thirty-four elevators distributed through the principal maize-producing districts. These elevators vary in storage capacity from 1,800 tons to 5,800 tons, the aggregate being 109,200 tons; in addition to these there are two large elevators at Capetown and Durban, that at Capetown having a capacity of 30,000 tons and the one at Durban 58,000 tons. The total storage capacity of the system is 181,200 tons.

The working of the elevator system has not been free from difficulty and has been carried on at considerable loss to the Government. Complaints are made that some owners of grain take undue advantage of the system to hold their grain in the elevators waiting for a rise in price and thus prevent their legitimate use in the ordinary way of handling the product. It has been suggested that higher charges may have to be made for storage after the first ten days so as to discourage the improper use.

KAFFIR CORN.

A considerable quantity of Kaffir Corn (*Sorghum vulgare*) is grown by the natives. This indigenous plant is receiving attention from the European farmers on account of its value as a fodder and for its use for making ensilage. The grain is useful as food both for men and animals. The varieties now grown are improved ones introduced from America. A considerable quantity is used for making Kaffir beer, of which great quantities are consumed by the natives. This is a slightly fermented, turbid liquid, slightly acid containing less than 2 per cent. of alcohol.

OTHER CROPS.

Of the other crops wheat is grown to a small extent mainly in the South-western and Queenstown Provinces of the Cape Province and in the "Conquered Territory" of Basutoland (3,000 sq. m). The yield is but small, averaging about 8½ bushels of 60 lb. per acre. It may reach double that amount on irrigated lands of the Karoo.

Barley and oats are also grown in considerable quantity. In addition to the grain, much of the oat crop is cut while green and used for hay.

The value and importance of the lucerne crop is being increasingly recognised. Formerly grown in great quantities as fodder for ostriches, largely in the southern and eastern parts of the Cape Province, great fortunes were made in certain irrigated districts. It has been said that "since 1923, and before the loss of the ostrich industry, lucerne has made more fortunes than any other product except gold or diamonds." It is now largely used to supplement food supply in dry seasons; on good irrigated land it is cut for hay and also grazed off by pigs without damage to the crop.

CATTLE INDUSTRY.

Cattle raising forms a very important branch of South African agriculture. It is estimated that there are between nine and ten million head in the Union; nearly one-half of which belong to natives, who from time immemorial have raised herds under conditions closely akin to those of modern ranching, which consists in running herds over extensive pastures allowing them to roam almost at will, though herdsmen look after their movements, care being taken to provide such water as the districts afford, and as far as possible to direct their movements to the best available feeding grounds.

Ranching is largely followed by European stock owners on the grass lands of the Kalahari, many hundreds of square miles of which occur mainly to the east and north of Kimberley, in the Bechuanaland Protectorate where the winter rainfall is under 5 inches and that of the summer period reaches only 10 to 20 inches. For the most part these Kalahari grass lands require from 20 to 40 acres for each head of stock, but better grazing lands are met with as one approaches the border of the Transvaal, though even here from 10 to 20 acres are required. Grazing conditions improve as one follows the boundaries of the Transvaal along the drainage areas of the Crocodile or Limpopo River, the better lands supporting one animal on less than 10 acres.

Constant efforts are made to improve the stock-carrying of these areas, particularly of those more favourably situated. These efforts take the form of improved water conservation and attention to the pastures, including the introduction of good fodder grasses and work of that kind. As one approaches the better lands the farms improve until dairy-farming and mixed agriculture become possible when conditions approximate more closely to those of Europe.

These cattle-raising areas lie mainly along the eastern and northern borders of what has been referred to as the great maize-bearing tract and even in the better farms encroach within that area.

The cattle run on these ranches are mostly of the native long-horned type which the early settlers found the Hottentots possessed of when they arrived in the country at the close of the seventeenth century. From the outset the Dutch have endeavoured to improve the native races by the introduction of good strains from Holland, and it is interesting to note

that the best of this foundation stock owes its origin to imported cows looted by the Hottentots from Dutch settlers in the neighbourhood of Mossel Bay in 1668. These animals are those found most suitable for transport purposes on account of their hardiness and resistance to disease.

The transport ox has been of fundamental importance in South African settlement and development. From the early days the Dutch farmers were entirely dependent on the ox-waggon for all means of transport. In the remoter districts, roads, as one ordinarily understands the term, are non-existent, there being only unmetalled tracks crossing the veld; the ox-waggon can travel over these with impunity. In spite of the development of railway and motor haulage, cattle are still largely employed for transporting produce and goods to and from railway centres and the farms and remote districts. In addition to transport purposes the ox is valuable also for beef and for hides.

The pastures of the lands devoted to ranching are too poor to enable the animals raised on them to be brought into good condition for market, consequently it is the custom on the part of ranchers to sell them to farmers situated either in or near the maize-producing areas or where good crops of sorghums (Kaffir corn) and other fodders can be raised; this work is carefully undertaken, and now constitutes an important branch of South African farming. The areas suitable for this work are for the most part in the Transvaal and part of the Orange Free State where farming conditions are good and where good markets for beef exist in the mining districts of the Transvaal and Northern Natal. In addition there is a large consumption of beef throughout the Union, so that special and well-planned arrangements are made for marketing and cold storage; chilling and storage establishments being provided at several large towns.

Attention is being given to the establishment of an export trade in meat, but there is, so far, but a limited supply of beef of a quality required by the British market. An interesting development in this connexion has been the opening up by the Imperial Cold Storage of a market in Italy; shipments have also been sent to France.

The incidence of cattle disease, notably rinderpest in 1896, seriously retarded the progress of cattle-raising; hundreds of thousands of cattle died from 1896-98, but with the control of disease conditions are rapidly improving.

Dairy farming is receiving much attention and care is now being devoted to the creation of good dairy herds by the selection of good breeds and by the elimination of the less profitable milkers, the Government and the various Dairy Associations being active in all this.

It is in connexion with the raising of dairy stock that perhaps the greatest advance has been made, and particularly in the direction of producing high-class pedigree stock; the Government, the shipping companies and other organisations, including many prominent South Africans, have all actively collaborated in this work, until now South Africa is recognised as one of the finest and most important districts for the production of pedigree cattle.

Reverting to dairy work, there is a good demand for milk in all the large towns and steps are being taken to supply it on modern sanitary lines; help and instruction in this direction being afforded by the Government and the agricultural colleges and schools; for example, the Glen School of Agriculture specialises in dairy work, as does also that at Potchefstroom. Creameries and butter factories are also to be found scattered throughout the country.

SHEEP INDUSTRY.

Sheep farming is carried on over the greater part of the Union; it is the most general of all the South African farming enterprises, and South Africa is steadily taking its place as one of the great sheep and wool producing countries of the world. The country may be divided into three distinct sheep farming types of district, namely the Karoo, mixed veld, and grass country.

The Karoo is an arid, or semi-arid region mostly within the Cape Province extending from the coastal plateau for many miles. The pasturage consist mainly of low shrubs which afford feeding for great flocks of sheep and goats. Further north lie the mixed veld lands on the western and south-western borders of the Orange Free State. These lands bear mixed pasture of Karoo bush and grass and have a higher carrying capacity than the Karoo. The grassland veld comprises the bulk of the pastoral area of the Union; it ranges from the coastal belt of the Western Province, the whole of the Eastern Province, Central and Eastern Orange Free State, the whole of the Transvaal and Natal.

The sheep are raised mainly for their wool and, although South Africa has now become one of the important wool-producing countries of the world, its output is capable of expansion and this expansion is being hastened by the failure of the ostrich industry and the consequent grazing of sheep over what were until recently ostrich farms.

Wool of good average quality is obtained from the greater part of the Union. Fine wools are produced in the western and eastern parts of the Cape Province, the Eastern Free State, the Eastern Transvaal, the whole of Natal and East Griqualand. The fine wools raised in the region around Grahamstown, Graddock and Colesberg are especially appreciated by English manufacturers, and active efforts are being made to improve their quality still further. Notable work in this connexion is being done under the direction of Dr. J. E. Duerden of the Rhodes University, Grahamstown, who is carefully studying wool and its growth on genetic lines and already important facts have been discovered having direct bearing on the production of fine wool and the remedying of defects.

In order to improve the breed of sheep large numbers of high-class animals have been imported. The production of high-class stud animals is now an important part of the South African sheep industry, enlightened sheep farmers paying great attention to the quality of their animals and the wool produced by them. Locally raised rams have brought prices ranging from 1,000 to 1,500 guineas. Thus, while the industry carries on in an extensive way, it is evident that money and intelligence are given to the industry in no stinted manner.

GOAT INDUSTRY.

Angora goats, which produce the mohair of commerce, were introduced at great trouble and expense in 1838 from Cashmere and Asia Minor. The present flocks are the results of crosses between ordinary Boer ewe goats and high-class Angora rams. At present South Africa produces two-thirds of the world's supply of mohair, the remainder coming from Turkey.