chief fodder of horses and mules. Both of these grains are cultivated in all parts, but chiefly on the more level districts of the two Castiles and Leon, and on the plains of the Guadalquivir basin. Oats and rye are cultivated only in the higher parts of the mountains, the former as a substitute for barley in feeding horses and mules, the latter as a breadstuff. Maize also is cultivated in all the provinces; nevertheless, its cultivation is limited, since, being a summer crop, it requires irrigation except in the Atlantic provinces, and other products generally yield a more profitable return where irrigation is pursued. Rice is cultivated on a large scale only in the swampy lowlands of Valencia. Among cereals of less importance are buckwheat (in the mountainous regions of the north), millets, including both the common millet *(Panicum miliaceum)* and the so-called Indian millet *(Sorghum vulgare,* the *joári* of India, the *durrαh* of Africa), and even (in La Mancha) guinea-corn *(Penicillaria spicata).*

Among the natural products of the soil of Spain, in regard to quantity, wines come next to cereals, but the only wines which have a world-wide reputation are those of the south, those of Alicante, of Malaga, and more particularly those which take the name of “ sherry,” from the town of Jerez, in the neighbourhood of which they are grown (see Wine). From 1880 to 1890 when the French vineyards suffered so much from various plagues, and when Spain gave a great impetus to her foreign trade by numerous treaties of commerce, none of her products showed such an increase in exports as her wines. The vine-growing districts had formerly been mostly in the provinces of Cadiz, Malaga, Barce- lona, Aragon and Navarre. Then the vineyards spread all along the Ebro valley and in the Mediterranean seaboard provinces, as well as in New and Old Castile and Estremadura to such an extent that wine is now produced in all the 49 provinces of the kingdom. The average result of the vintage was estimated between 440 and 500 million gallons in 1880 to 1884, and it rose to more than double that amount towards 1890, and amounted in 1898 to 880 million gallons. In that year the total area under the vine was 3,546,375 acres, in 1908 it was 3,136,470 acres. In the hey-day of the cultivation of the vine Spain sent the bulk of her wine exports to France. The imposition of high duties in France on foreign wines in 1891 dealt a severe blow to the export trade in common Spanish wines. The export of wines of the south—Jerez, Malaga and other full-bodied wines styled *generοso*—did not suffer so much, and England and France continued to take much the same quantities of such wines. There is also a large export of grapes and raisins, especially from Malaga, Valencia, Almería and Alicante. The Spanish vines have suffered, like those of France, from mildew and phylloxera. The latter has done most damage in the provinces of Malaga and Alicante, in Catalonia, and in some parts of the Ebro valley in Navarre and Aragon. The vines whose fruit is intended for table use as grapes or raisins are trained on espaliers or on trees, especially the nettle-tree *(Celtis australis).*

Among fruit-trees the first place belongs to the olive. Its range in Spain embraces the whole of the southern half of the table-land, the greater part of the Ebro valley, and a small strip on the west coast of Galicia. Along the base of the Sierra Morena from Andújar to the vicinity of Cordova there run regular forests of olives, embracing hundreds of square miles. Cordova is the headquarters of the oil industry, Seville of the cultivation of olives for table use. In 1908 the yield of oil amounted to 36,337,893 gallons. Oranges and lemons, excluded from the plateau by the severity of the winter cold, are grown in great quantities on the plains of Andalusia and all round the Mediterranean coast ; the peel of the bigarade or bitter orange is exported to Holland for the manufacture of curaçao; and figs, almonds, pomegranates, carobs and other southern fruits are also grown abundantly in all the warmer parts, the first two even in central Spain and the more sheltered parts of the northern maritime provinces. In these last, however, the prevailing fruit-trees are those of central Europe, and above all the apple, which is very extensively cultivated in Asturias, the Basque Provinces and Navarre. In these provinces large quantities of cider are brewed. The date-palm is very general in the south­eastern half of the kingdom, but is cultivated for its fruit only in the province of Alicante, in which is the celebrated date-grove of Elche (q.ν.). In the southern provinces flourish also various sub- tropical exotics, such as the banana, the West Indian cherimoya, and the prickly pear or Indian fig (Opuntia *vulgaris),* the last frequently grown as a hedge-plant, as in other Mediterranean countries, and extending even to the southern part of the table-land. It is specially abundant on the Balearic Islands. The agave or American aloe is cultivated in a similar manner throughout Andalusia.

Cotton is now cultivated only here and there in the south; but sugar-cane is, with sugar-beet, becoming more and more of a staple in the provinces *of* Granada, Malaga and Almería. Its cultivation was introduced by the Arabs in the 12th century or later, and was of great importance in the kingdom of Granada at the time of the expulsion of the Moors (1489), but has since undergone great vicissitudes, first in consequence of the intro­duction of the cane into America, and afterwards because of the great development of beet-sugar in central Europe. The industry received a powerful stimulus from the loss of the Spanish colonies in 1898, which freed the Spanish growers from the rivalry of their most successful competitors in the home market. In 1901 the official statistics showed 22 cane-sugar factories and 47 beet-sugar factories with an annual output of about 100,000 tons.

In the production of pod-fruits and kitchen vegetables Spain is ahead of many other countries. The chick-pea forms part of the daily food of all classes of the inhabitants; and among other pod-fruits largely cultivated are various kinds of beans and peas, lentils *(Erυum lens),* Spanish lentils *(Lathyrus satiυus)* and other species of *Lathyrus,* lupines, &c. The principal fodder-crops are lucerne *(Medicago sativa)* and esparcette (a variety of sainfoin). Clover, particularly crimson clover *(Trifolium in- carnatum),* is grown in the northern provinces. Among vegetables garlic and onions take the chief place, and form an indispensable part of the diet of all Spaniards; besides these, tomatoes and Spanish pepper are the principal garden crops. Among the vegetable products not yet mentioned the most important are the mulberry, grown in almost all provinces, but principally in those bordering on the Mediterranean, and above all in Valencia, the chief seat of the Spanish silk production and manufacture; tobacco, which is also imported, hemp and flax, grown chiefly in Galicia and other northern provinces; among dye-plants, madder, saffron, woad *(Isatis tinctoria),* and wild woad or dyer’s weed *(Reseda luteola);* ground-nuts *(Arachis hypogaea),* grown for their oil, for the pre- paration of which the nuts are exported in considerable quantity to France; liquorice, cummin, colocynth, &c. Esparto, chiefly from the arid lands of the south-east, is largely exported to Great Britain.

Despite all the efforts of the breeders and of the government, a decline has gone on not only in horse-rearing, but also in other classes of livestock since 1865. Among the causes assigned for this decay is the fact that horse, sheep, goat and swine rearing is becoming less remunerative. Heavy taxation, aggravated by unequal distribution of the burden, owing to insufficient survey of the assessable property, has also contributed to the decline of this and other branches of Spanish farming.

The only animals belonging to Spain still noted for their excellence are mules and asses, which are recognized as among the best to be found anywhere. Goats are mostly bred in the mountainous districts all along the Spanish side of the Pyrenees from Biscay to Catalonia, and in Badajoz, Cáceres, Ciudad Real, Granada and Leon; swine in Badajoz, Lugo, Oviedo, Cáceres and Corunna. The pork and hams of Estremadura are famous; goats’ milk and cheese are important articles of diet. In some districts a single peasant often owns as many as 3000 head of goats. Besides the cattle reared for field-labour and (in the northern provinces) for regular dairy farming, bulls for bull-fighting are specially reared in many parts of the country, particularly in the forests of Navarre, the mountains separating the two Castiles, the Sierra Morena, and the Serrania de Ronda in Granada, and also in separate enclosures on the islands of the Guadalquivir. Spanish sheep, which once formed so important a part of the national wealth, are far from having the same importance at the present day. The most famous breeds of Spanish sheep are the merinos or migrating sheep, which once brought immense revenues to the state as well as to the large proprietors to whom they mostly belonged (see Merino). These sheep are pastured in different districts in summer and winter. Their winter-quarters are in the lower parts of Leon and Estremadura, La Mancha, and the lowlands of Andalusia, their summer quarters the more mountainous districts to the east and north (Plasencia in the province of Cáceres, Avila, Segovia, Cuenca, Valencia), which are not so much affected by the summer droughts of the Peninsula. The mode of the migration and the routes to be followed are prescribed by law. Each flock consists of about 10,000 sheep, under the command of a *mayoral,* and is divided into sections containing about 1000 each, each section under the charge of an overseer *(capataz),* who is assisted by a number of shepherds *(pastores)* attended by dogs. The shepherds, rudely clad in a sleeveless sheepskin jacket, the wool outside, and leather breeches, and loosely wrapped in a woollen mantle or blanket, arc among the most striking objects in a Spanish landscape, especially on the table-land. The migration to the summer quarters takes place at the beginning of April, the return at the end of September. At one time the owners of merino flocks enjoyed the right of pasturing their sheep during their migrations on a strip of ground about 100 yds. in breadth bordering the routes along which the migrations took place, but this right (the *mesta,* as it was called) was abolished in 1836 as prejudicial to cultivation. The numbers of the merinos have been greatly reduced, and they have been replaced by coarse-woolled breeds.

*Fisheries.—*The catching of tunnies, sardines, anchovies and salmon on the coasts employs large numbers of fishermen (about 67,000 in 1910), and the salting, smoking and packing of the first three give employment to many others. In 1910 there were about 400 sardine-curing establishments in the kingdom.

*Minerals.—*The mineral resources of Spain are as yet far from being adequately turned to account. No European country produces so great a variety of minerals in large amount, and in the production of copper ore, lead ore and mercury Spain heads the list. In the production of salt and silver it is excelled only by Austria-Hungary, and, as regards silver, not always even by it. Iron ore is chiefly obtained in Biscay and Murcia, the former yielding by far the greater quantity, but the latter yielding the better quality.