whole winter through. On. the other hand, the eastern part of this zone is the part of Spain which is liable to be visited from time to time by the scorching *leυeche,* the name given in Spain to the sirocco, as well as by the *solano,* a moist and less noxious east wind.

The fourth zone, that of the north and north-west maritime provinces, presents a marked contrast to all the others. The temperature is mild and equable; the rains are abundant all the year round, but fall chiefly in autumn, as in the west of Europe generally. Roses bloom in the gardens at Christmas as plentifully as in summer. The chief drawback of the climate is an excess of rain in some parts, especially in the west. Santiago de Compostela, for example, has one of the highest rainfalls on the mainland of Europe (see table below).

The figures given in the following table,@@1 although based only on data of short periods (from 3½ to 20 years), will help to illustrate the preceding general remarks. Greenwich is added for the sake of comparison.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Station. | Height in feet. | Mean Temperature, F. | | | Rain­fall in inches. |
| Jan. | July. | Year. |
| Table-land zone · ·  í San Fernando  Southern zone ∣ Malaga  Mediterranean Ç Murcia . zone ( Mahon .  í Bilbao  Northern mari- j Oviedo time zone ( Santiago .  Greenwich . | 2600  2150  90  75  140  50  750  750 | 0  37  41  52  54  49  46  43  45’5  39 | 0  73  76  75  79  79  77  70  66  66  63 | 0  53  56  63  70  63  64  58  54  55  50 | 19 IS 30  14  27 ≠  36  66  25 |

*Flora.—*The vegetation of Spain exhibits a variety in keeping with the differences of climate just described. The number of endemic species is exceptionally large, the number of monotypic genera in the Peninsula greater than in any other part of the Mediterranean domain. The endemic species are naturally most numerous in the mountains, and above all in the loftiest ranges, the Pyrenees and the Sierra Nevada; but it is a peculiarity of the Spanish table- land, as compared with the plains and table-lands of central Europe, that it also possesses a considerable number of endemic plants and plants of extremely restricted range. This fact, however, is also in harmony with the physical conditions above described, being explained by the local varieties, not only of climate, but also of soil. Altogether no other country in Europe of equal extent has so great a wealth of species as Spain. According to the *Prodromus florae hispanicae* of Willkomm and Lange (completed in 1880), the number of species of vascular plants then ascertained to exist in the country was 5096.

Spain may be divided botanically into four provinces, corresponding to the four climatic zones.

In the table-land province (including the greater part of the Ebro valley) the flora is composed chiefly of species characteristic of the Mediterranean region, and largely of species confined to the Peninsula. A peculiar character is imparted to the vegetation of this province by the growth over large tracts of evergreen shrubs and large herbaceous plants belonging to the Cistineae and Labiatae. Areas covered by the Cistineae are known to the Spaniards as *jarales,* and are particularly extensive in the Mancha Alta and on the slopes of the Sierra Morena, where the ladanum bush *(Cistus ladaniferus)* is specially abundant; those covered by the Labiatae are known as *tomillares* (from *tomillo,* thyme), and occur chiefly in the south, south-west and east of the table-land of New Castile. In the central parts of the same table-land huge thistles (such as the *Onopordum nervosum),* centaureas, artemisias and other Compositae are scattered in great profusion. From the level parts of these table-lands trees are almost entirely absent. On the lofty parameras of Soria and other parts of Old Castile the vegetation has an almost alpine character.

The southern or African province is distinguished chiefly by the abundance of plants which have their true home in North Africa (a fact explained by the geologically recent land connexion of Spain with that continent), but is also remarkable for the occurrence within it of numerous Eastern plants (natives of Syria and Asia Minor), and plants belonging to South Africa and the Canaries, as well as natives of tropical America which have become naturalized here (see *Agriculture).* In the maritime parts of Malaga and Granada the vegetation is of almost tropical richness and beauty, while in Murcia, Alicante and Almeria the aspect is truly African, fertile oases appearing in the midst of rocky deserts or barren steppes. A peculiar vegetation, consisting mainly of low shrubs with fleshy glaucous leaves (*Inula crithmoiaes,* &c.), covers the swamps of the Guadalquivir and the salt-marshes of the south-west coast. Everywhere on moist sandy ground are to be seen tall thickets of *Arundo donax.*

The Mediterranean province is that in which the vegetation agrees most closely with that of southern France and the lowlands

of the Mediterranean region generally. On the lower slopes of the mountains and on all the parts left uncultivated the prevailing form of vegetation consists of a dense growth of shrubs with thick leathery leaves, such as are known to the French as *maquis,* to the Italians as *macchie,* and to the Spaniards as *monte bajo,@@2* shrubs which, how- ever much they resemble each other in external appearance, belong botanically to a great variety of families.

The northern maritime province, in accordance with its climate, has a vegetation resembling that of central Europe. Here only are to be found rich grassy meadows covered with flowers such as are seen in English fields, and here only do forests of oak, beech and chestnut cover a large proportion of the area. The extraordinary abundance of ferns (as in western France) is likewise characteristic.

The forest area of Spain is relatively small. The whole extent of forests is estimated at little more than 7½ million acres, or less than 6% of the area of the kingdom. Evergreen oaks, chestnuts and conifers are the prevailing trees. The cork oaks of the southern provinces and of Catalonia are of immense value, but the groves have suffered greatly from the reckless way in which the produce is collected. Among other characteristic trees are the Spanish pine *(Pinus hispanica),* the Corsican pine (P. *Laricio),* the Pinsapo fir *(Abies Pinsapo),* and the *Quercus Tozza,* the last belonging to the slopes of the Sierra Nevada. Besides the date-palm the dwarf-palm grows spontaneously in some parts of the south, but it nowhere makes up a large element of the vegetation.

The Spanish steppes deserve a special notice, since they are not confined to one of the four botanical provinces, but are found in all of them except the last. Six considerable steppe regions are counted : (1) that of Old Castile, situated to the south of Valladolid, and composed chiefly of hills of gypsum; (2) that of New Castile, in thè south-east (including parts of La Mancha) ; (3) the Aragonese, occupying the upper part of the basin of the Ebro; (4) the littoral, stretching along the south-east coast from Alicante to the neighbourhood of Almeria; (5) the Granadine, in the east of Upper Andalusia (the former kingdom of Granada); and (6) the Baetic, in Lower Andalusia, on both sides of the valley of the Jenil or Genii. All of these were originally salt-steppes, and, where the soil is still highly impregnated with salt, have only a sparse covering of shrubs, mostly members of the Salsolaceae, with thick, greyish green, often downy leaves. A different aspect is presented by the grass steppes of Murcia, La Mancha, the plateaus of Guadix and Huescar in the province of Granada, &c., all of which are covered chiefly with the valuable esparto grass *(Macrochloa tenacissima).*

*Fauna.—*The Iberian Peninsula belongs to the Mediterranean sub-region of the Palaearctic region of the animal kingdom. The forms that betray African affinities are naturally to be found chiefly in the south. Among the mammals that fall under this head are the common genet *(Genetta vulgaris),* which extends, however, pretty far north, and is found also in the south of France, the fallow- deer, the porcupine (very rare), and a species of ichneumon *(Herpestes Widdringtonii),* which is confined to the Peninsula, and is the only European species of this African genus. The magot or Barbary ape *(Inuus ecaudatus),* the sole species of monkey still found wild in Europe, is also a native of Spain, but only survives on the rock of Gibraltar *(q.υ.).* Of the mammals in which Spain shows more affinity to the fauna of central and northern Europe, some of the most characteristic are the Spanish lynx *(Lynx pardinus),* a species confined to the Peninsula, the Spanish hare *(Lepus madritensis),* and the species mentioned in the article Pyrenees. The birds of Spain are very numerous, partly because the Peninsula lies in the route of those birds of passage which cross from Africa to Europe or Europe to Africa by way of the Straits of Gibraltar. Many species belonging to central Europe winter in Spain, especially on the south- eastern coasts and in the valley of the Guadalquivir. Innumerable snipe are killed in the Guadalquivir valley and brought to the market of Seville. Among the birds of prey may be mentioned, besides the cinereous and bearded vultures, the Spanish vulture (*Gyps οccidentalis)*, the African or Egyptian vulture *(Neophron percnopterus),* which is found among all the mountains of the Peninsula, the Spanish imperial eagle *(Aquila Adalberti),* the short-toed eagle *(Circaetus gallicus),* the southern eagle-owl *(Bubo atheniensis)*, and various kites and falcons. Among gallinaceous birds besides the red-legged partridge, which is met with everywhere on the steppes, there are found also the *Pterocles alchita* and *P. arenarius;* and among the birds of other orders are the southern shrike *(Lanius meridionalis),* the Spanish sparrow *(Passer cyaneus),* and the blue magpie *(Cyanopica cooki).* The last is highly remarkable on account of its distribution, it being confined to Spain while the species most closely allied to it *(Cyanopica cyanea)* belongs to the east of Asia. The flamingo is found native in the Balearic Islands and on the southern coasts, and a stray specimen is occasionally seen on the table-land of New Castile. Other birds peculiar to the south are two species of quails, the Andalusian hemipode (*Turnix sylvatica),* confined to the plains of Andalusia, the southern shearwater *(Puffinus cinereus),* and other water-birds. Amphibians and reptiles are particularly numerous in the southern provinces, and among these the most remarkable are the large southern or eyed lizard *(Lacerta*

@@@1 By conversion from Th. Fischer’s *Klima der Mittelmeerländer.*

@@@2 As distinguished from *monte alto,* the collective name for forest trees.