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Содержание

PREFACE	5
CHAPTER I.	6
Mountain Chains	7
Rivers of Spain	9
CHAPTER II.	15
Конец ознакомительного фрагмента.	23

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PREFACE

THERE is a difficulty in writing a book of this character on Spain, which does not exist, we think, to the same extent with any other European country. In most European nations the official returns and government reports may be accepted as trustworthy, and the compiler has little more to do than to copy them; but in Spain this is far from being always the case. In some instances, from nonchalance and habitual inexactitude, in others, and especially in all matters of finance and taxation, from designed misstatement, all such reports have to be received with caution and scrupulously examined. The reader must remember also that in Spain smuggling and contraband dealing in various forms is carried on to such a vast extent as seriously to vitiate all trade returns. Thus it is that Spanish statistics can be considered only as approximate truths.

Another difficulty arises from the very varied character of the Spanish provinces. Hardly any statement can be made of one province which is not untrue of another. The ordinary descriptions of Spain present only one, or at most two, types, the Castling and Andalusian, and utterly neglect all the rest. The provinces of Spain have been well described as divided into "five Irelands" whose habits and modes of thought, political aspirations, and commercial interests and aptitudes, are often utterly opposed to those of the capital. A brief survey of the whole of Spain is attempted in the following pages.

In a work of this kind one other obvious difficulty is to know what to omit. Some well-worn topics will be found to be absent from these pages. No references are made to the great Peninsular War. This can be easily studied in the admirable pages of Sir W. Napier in English, and of Toreno in Spanish, or in compendiums of these, which again are filtered down in every guide-book. For a like reason Prescott's brilliant works are not alluded to.

For the chapter on Geology and Mining the reader is indebted to one of the most distinguished Associates of the School of Mines, who has been recently engaged in practical geological survey and mapping in Spain.

Much also of the present work is due to private information most kindly furnished by Spanish friends of high position in the literary and political world, and with whom some of the subjects treated have been frequently discussed. To these the author offers his warmest and most grateful thanks.

CHAPTER I. THE GEOGRAPHY OF SPAIN

SPAIN, with the neighbouring kingdom of Portugal, constitutes the most westerly of the three southern peninsulas of Europe, and in Cape Tarifa, latitude $36^{\circ} 1'$, it attains the most southerly point of the whole continent. Separated from France and from the rest of Europe by the chain of the Pyrenees, and surrounded on all other sides by either the Mediterranean or the Atlantic, it presents at first sight the appearance of an exceedingly compact and homogeneous surface. It seems strange that this well-defined peninsula should contain two separate kingdoms, with peoples who speak languages allied, yet so distinct as to be mutually unintelligible to the uneducated classes.

The peninsula lies between latitude $43^{\circ} 45'$ and $36^{\circ} 1' N.$, and between $3^{\circ} 20' E.$ and $9^{\circ} 32' W.$ longitude. In shape it is thus nearly a square; a diagonal line from the N.E. Cape Creuz to the S.W. Cape St. Vincent measures 650 miles, while from Cape Ortegal, N.W., to Cape Gata, S.E., would be 525 miles. The whole area of the peninsula contains 219,200 square miles, of which 36,500 on the west belong to Portugal, and 182,700 to Spain.

The peninsular form of the country would lead us to expect that it would partake of all the characteristics of a maritime climate; but such is not the case. From the comparative evenness of the coast-line, unbroken and unindented by any deep inlets except on the extreme north-west, in Galicia, the coast-line bears a less proportion to the whole surface than that of many lands less surrounded by the sea. It counts only 1300 miles, 700 of which are washed by the Mediterranean, and 600 by the Atlantic; that is, 1 mile of coast-line to 134 square miles of area; while Italy contains 1 to 75, and Greece 1 to 7. From the configuration of the coast, and from the character of the great central plateau, a large part of Spain has really an extreme continental climate.

For while it is distinctly separated from the rest of Europe by the line of the Pyrenees, Spain is no less distinctly divided into different districts in the interior—districts which differ most widely in climate and elevation and products. Six of these are usually named: (1) The N.W. Atlantic coast, comprising Galicia, the coast of which presents a continuation of the Fjord system of Norway, and of the Firths of Scotland and Ireland; (2), the northern slope of the Cantabrian Mountains, and the narrow slip of land contained between them and the Bay of Biscay, comprising the Asturias, Santander, and the Basque Provinces; (3) the Valley of the Ebro, with Navarre, Aragon, and Catalonia; (4) the great Central Plateau—Leon, Old and New Castile, Estremadura, and La Mancha; (5) the Mediterranean Provinces, including Valencia, Murcia, and the parts of Andalusia between the Sierra Nevada and the Mediterranean; (6) the rest of Andalusia sloping towards the Atlantic.

We will treat of these in order.

Mountain Chains

But first we must speak of the various mountain systems and river basins of Spain, without which it is impossible to understand either the physical conditions of the country, or the social and political state of the various populations which has resulted from them.

First, on the north is the chain of the Pyrenees, a continuation of the great Alpine system of Central Europe, stretching from Cape Creuz, 3° 19' E., to the Bay of Biscay, 2° 12' W., a distance of 320 miles, and prolonging itself westward in lower chains of different denominations until it finally sinks into the Atlantic at Cape Finisterre. The culminating points of the Pyrenees are towards the centre of the chain, in Mounts Maladetta, 11,150 feet, and the Pic de Posets and the Mount Perdu, each about 11,000 feet, whence the heights gradually descend, on the east to the Mediterranean and on the west to the Bay of Biscay. With the exception of the little Bidassoa, which in the lower part of its course forms the boundary between France and Spain, at the bottom of the Bay of Biscay, all the other waters of the Spanish side of the Pyrenees belong to the Ebro and to the Mediterranean. Parallel to the coast of the Bay of Biscay the Pyrenees are prolonged, first, by the Cantabrian Mountains, which run through the Basque Provinces, and the Province of Santander; thence by the Picos de Europa, 8300 feet—from the south-eastern spurs of which the Ebro and Pisuerga take their rise—and the Asturian Mountains, to the Sierra de Penamarella, at the junction of the three Provinces of Leon, Asturias, and Galicia. The chain here attains its greatest elevation, 9450 (?) feet, then descends to a plateau of about 4000 feet, whence it sinks rapidly to the Atlantic, forming the headlands of Ortegal, the extreme north-western, and of Finisterre, the extreme western, point of Northern Spain. The mountains of Leon form the western watershed, between the waters of the Ebro and those which fall into the Atlantic. The line is continued eastward by the Oca Mountains, the Sierra de Moncayo, and the Idubeda Mountains. These mountain chains divide the basin of the Ebro from that of the Douro. They also form the northern buttress of the great plateau of Central Spain, which attains an elevation of from 2000 to 4000 feet. The rise to the plateau from the Bay of Biscay is very abrupt. Within fifty miles of leaving the coast the railways from the north attain a height of 2000 feet, and reach the Central Plateau, at Quintanapalla, at an elevation of 3000 feet; while La Cañada, the highest point on the line to Madrid, is nearly 4460 feet, or about sixty feet higher than the tunnel of the Mount Cenís. From the eastern side the rise is less abrupt, and the plateau is entered at the lower elevation of 2330 feet, on the line from Alicante to Madrid. The famous Pass of Somosierra, on the old northern coach-road from Madrid, is about 4700 feet above the level of the sea. From these figures it is easy to perceive how very different is the aspect of these buttress chains when seen from the plateau, and when looked at from the plain from which they rise. Thus the Sierra de Moncayo, 7700 feet, stands out with boldness from the Valley of the Ebro, but viewed from the plateau of Castile it is scarcely noticeable. From its summit, however, the finest view of the whole range of the Pyrenees to be found anywhere on the Spanish side of the chain, is to be obtained.

Turning thence towards the south and south-east, these mountain chains—under the various names of the Sierras de Cuenca, de Molina, and Albarracín—divide the river basins of the Mediterranean from the far larger ones of the Atlantic. They have their culminating point in the Muela de San Juan and the Cerro de San Felipe, nearly 6000 feet, at the junction of the three provinces of Teruel, Cuenca, and Guadalaxara. From the sides of these mountains the waters fall with rapid course, on the north to join the Ebro, on the east and south to the Mediterranean; while with gentler slope, but in far greater volume, the Douro, the Tagus, and the Guadiana roll their waters to the Atlantic. From these Sierras the plateau tilts gradually westward and southward, but is intersected by mountain chains, peaks of which towards the west attain a higher elevation than those which form the real culmination of this part of the peninsula. The bare and bleak granite range of the Guadarrama, which divides the basin of the Douro from that of the Tagus, and from whose summits steals the icy

wind so fatal to Madrid, attains in its highest summit, Peña Lara, 7800 feet, near Segovia; while in its western prolongation, the Sierras de Credos and de Gata, the Plaza del Moro reaches 8700 feet. The chains which divide the valley of the Tagus from that of the Guadiana are not nearly so well marked as are those more to the north, and rise to a much less elevation above the plateau. Beginning with a south-westerly prolongation of the Cerro de San Felipe, under the successive titles of Montes de Toledo, Sierras de Guadaloupe, Montanchez, and San Mamed, about 2000 feet, they reach the Portuguese frontier near Portalegre. The highest point seems to be in the mountains of Toledo at Villuercas, where a height of a little over 5000 feet is attained. The mountains which separate the basins of the Guadiana and the Guadalquivir, under the names of the Sierras de Alcaroz, Morena, de Cordova, Guadacanal, and Aroche, and which form the southern buttress of the central plateau, present a still greater difference than those of the northern buttress when viewed from the plateau and from the plains of Andalusia. From the former they appear only rolling undulations, and the traveller scarcely notices the rise till he finds himself descending one of the steep and savage gorges, like that of the Pass of Despeña-Perroz, on the road and rail between La Mancha and Andalusia. The Col of Despeña-Perroz is nearly 2500 feet above the sea, and but few summits along the ranges of the Sierra Morena and its prolongations attain a greater elevation, the general range being about 2000 feet, except towards the west and north of Seville, where the Sierra de Aracena reaches 5550 feet. Eastward of the Guadalquivir the ranges which divide its waters from those of the Segura, the Sierras de Segura, and Sagra, attain a greater height, the former 6500 feet, the latter to 7800 feet.

Thus as supports to the great plateau, or on it, we have the following successive ranges as we proceed from north to south. First, the Sierra de Moncayo and the Idubeda mountains, dividing the basin of the Ebro from that of the Douro; next the Guadarrama chain, with the Sierras de Credos and de Gata, separating the Douro from the Tagus; then the Mountains of Toledo, and the Sierra de San Mamed, between the Tagus and the Guadiana; and lastly, the southern buttress, the Sierra Morena, dividing the Guadiana from the Guadalquivir.

But it is south of the last stream that the culminating points of the whole peninsula are to be found—in the mighty Sierra Nevada, which separates the lovely valley of Granada from the Mediterranean, shielding it from the scorching winds of Africa, and giving it its eternal freshness and verdure. The highest of its summits are Muley Hacen and Velate, lying to the south-east of Granada, the former attaining nearly 11,670 feet, and the latter 11,400. The altitudes diminish rapidly east and west. Towards the east, outlying ranges, such as those of the Sierras de Filabrés and of Gador, attain heights of 6000 and 7000 feet respectively; while in the westward prolongations, the Mesa de Ronda is only 5000; and the chain gradually drops till it reaches the sea at Cape Trafalgar, and the rock of Gibraltar, 1400 feet.

But besides these greater chains of mountains Spain is traversed by numerous offshoots and lateral ranges, and a great portion of her territory is more or less of a mountainous character. In districts where rain is unfrequent these hills are absolutely bare of verdure for a great part of the year, and remain untenanted and uncultivated. Among the more elevated of these lesser chains are those of Monseni, Monserrat, and Montagut, in Catalonia, which attain respectively 5500, 4000, and 3000 feet in height. On the borders of Leon and Galicia, and in the latter province, there are numerous mountains and smaller ranges, which vary from 3000 to 5000 feet. The whole frontier of Portugal is covered by lower ranges, connecting the great chains of which we have already spoken with hills of from 2000 to 3000 feet. From the great eastern buttress two spurs, or rolling plateaux, run down to the Mediterranean, and terminate in the different headlands—such as Cape Gata in the south-east, Cape Palos near Carthagena, Capes de la Nao and San Antonio near Denia, Peniscola, and others. Some of these smaller ranges are exceedingly rich in minerals, and as they approach the sea form sites of picturesque and enchanting beauty, such as can be surpassed only by the better-known and historic glories of the coasts of Italy or of Greece.

Rivers of Spain

Of the five great rivers of Spain only one, the Ebro, pours its waters into the Mediterranean; the other four, the Douro, Tagus, Guadiana, and Guadalquivir, discharge theirs into the Atlantic; but of these last the Guadalquivir alone is wholly a Spanish stream. In the lower and more valuable part of their course the Douro, Tagus, and Guadiana, belong to Portugal—a fact which must always be remembered when treating of the internal commerce of Spain. But besides these larger streams there are several of slightly smaller dimensions, of which we will treat in order.

Few countries present within so short a distance so great a difference in rainfall and moisture as does Spain. In some parts of the Asturias and Galicia the rainfall is probably as heavy as that of any part of Europe—as much as 147½ inches are said to have been measured in a single year; and the average fall on the northern slopes of the Cantabrian mountains is said to be sixty inches annually. Yet the average of the whole basin of the Ebro—which rises from the southern slopes of the Picos de Europa, one of the most rainy of the rainy districts—is only eighteen inches annually, the last 300 miles of its course being through almost barren districts, where rain seldom falls.

The principal river of Galicia is the Minho, with its tributary the Sil. Each of these rises, though at some distance apart, from the southern side of the Cantabrian mountains, much nearer to the waters of the Bay of Biscay than to those of the Atlantic, into which they flow. They take thence a southerly and south-westerly course, until they unite a few miles above Orense. The lower part of the united course, which bears the name of the Minho, forms from Melgaco to the sea the frontier between the kingdoms of Portugal and Spain. The remaining rivers of Galicia are numerous but of little importance: the Tambre is the largest of those which fall into the Atlantic on the west; while on the north the sources of the Eo and the Navia overlap those of the Minho, and take their rise from the mountains which border on Leon. The whole country is exceedingly well watered. Both in its agricultural character as a grazing country, and in its flora and fauna, it resembles the milder portions of southern Ireland and of Devonshire, but with occasional products of a warmer zone. The rivers of the Asturias, Santander, and of the Basque provinces, all partake of the same general character. In the upper part of their courses they are mere mountain torrents, their course is rapid but short, and they are of but little use for navigation, though occasionally small but insecure harbours are formed at their mouth. The only great exception to this is the Nervion, on which Bilbao is situated, and which is navigable for eight miles from its mouth. The waters of the Bidassoa, the Deva, and others, are, however, utilized for the transport of ore from the mines and ironworks along the course. The Bidassoa, for some ten miles before it enters the Bay of Biscay at Cape Figueras forms the boundary between France and Spain; about four miles from its issue, between Irun and Behobie, is the celebrated Isle des Faisans, where, in 1659, the marriage was arranged between Louis XIV. and the Infanta, which eventually placed the Bourbons on the throne of Spain. The Bidassoa is the last of the northern rivers of Spain which falls into the Atlantic.

The Ebro has its rise from the source, Fontibre, in the province of Santander, and takes a south-easterly course of 466 miles, through the provinces of Santander, Burgos, Navarre, and Aragon, almost parallel with the Pyrenees, till it falls into the Mediterranean, through a sandy delta stretching some fifteen miles into the sea below Amposta. The descent for the first 200 miles of its course is exceedingly rapid, but after that the fall is gradual till it reaches the sea. In its course it receives the waters of many tributaries, both on the left from the Pyrenees, and on the right from the Idubeda mountains and the sierras of Southern Aragon. Were it not for these tributaries little of its waters would reach the Mediterranean, so dry and arid are the Bardenas of Navarre, and the Dehesas of Aragon, through which it flows. The Spaniards have a proverb that it is the Navarrese and Aragonese streams—the Arga, the Ega, and the Aragon—which make a man of the Ebro. Farther down, the Gallego runs in near Saragossa; while the united waters of the Cinca and the Segre at Mequinzenza

pour a far larger volume of water into the parent bed than it contains itself. From the right, the principal streams are the Xalon, with its tributary the Xiloca, which joins the Ebro between Tudela and Saragossa, the Marten, and the Guadalope near Caspe. The Ebro, notwithstanding its length, the number of its tributaries, and the extent of its basin, 25,000 square miles, is of little use for navigation. A magnificent canal—first projected and commenced by the Emperor Charles V. (I. of Spain) then after a lapse of more than two centuries taken in hand by Charles III., in 1770—runs from Tudela to Saragossa; thence to the sea it still remains in project only. The part already finished is falling into decay; and it is only the excellent quality of the masonry, and of the cement or mortar employed, that retards its utter ruin. The traffic is very small; and even as a means of irrigation its waters are allowed greatly to run to waste. At the apex of the delta from Amposta to San Carlos de la Rapita a canal of eight miles has been cut for purposes of navigation; but the formation of a bar, and the silting up of the bay, have rendered it almost useless. The other rivers which flow into the Mediterranean, between the lower course of the Ebro and the Pyrenees are the Fluvia, which flows into the gulf of Rosas, the Ter, which passes by Gerona, and the Llobregat near Barcelona. All are torrential streams, unfit for navigation; but their waters, if all utilized for irrigation like those of the Llobregat, would be sources of immense wealth to the country.

From the fact that the lower part of the course of the great rivers of the plateau—the Douro, the Tagus, and the Guadiana—flow through Portugal, their streams are hardly at all available as a means of communication or of navigation for Spain; and from the nature of the deeply cut beds which the waters have worn through the soil, flowing, especially as they approach the frontiers of Portugal, through gorges approaching in length and depth the cañons of North America, the rivers are little available for irrigation, although far more use might be made of them for this purpose than is actually done. Owing to the prejudices of the Spanish husbandman, and to his reluctance to accept any change, however profitable, in his ancient routine, neither the little that has been done in the present century, nor the remains of a wiser agriculture in former times are used by the peasantry. In the province of Zamora, for instance, both the ancient "acequias" and the modern canal of the Esla are equally neglected. The rich results that have followed the employment of the waters in the few cases in which they have been intelligently directed, stirs no one up to follow the example. It is one of the many contrasts between different parts of Spain, that the value of irrigation should be so well understood in some parts and so utterly neglected and under-valued in others. But we shall have more to say of this when we treat of the eastern and southern streams: at present let us return to the Douro, and to the other rivers of the plateau.

The Douro takes its rise in the Lago Negro, or Black Lake, on the southern flanks of the Mount Urbion, in the north-western angle of the province of Soria. It first runs eastward to the city of that name, the ancient Numantia, then turns almost directly south as far as Almazan, whence it runs westward to Portugal, receiving meanwhile the waters of the Esla, below Zamora; at the frontier, again it turns south, through deep gorges which form the boundary between Spain and Portugal, until it receives the waters of the Agueda, where it finally enters Portugal, and after a westerly course thence of about 100 miles, falls into the Atlantic below Oporto.

The basin drained by the Douro is the most extensive of all those of the rivers in Spain. Including the portion in Portugal, it comprises 35,000 square miles; the length of the river is about 500 miles; the average rainfall is stated at twenty inches. The chief affluents of the Douro descend from the north from the mountains of Burgos and the Cantabrian range. The largest are the Pisuerga, which rises not far from the sources of the Ebro among the Picos de Europa, and flows almost directly south by Palencia and Valladolid until it joins the Douro, some miles above Tordesilla; the Esla, which also rises from the western flanks of the same chain, not far from Covadonga, takes a somewhat more westerly direction, and after receiving several smaller streams unites with the Douro below Zamora. These two rivers supply water for two of the most successful canals in Spain, especially that along the Pisuerga, for over ninety miles from Alar del Rey to Valladolid. There is a considerable traffic

on it, especially for passengers. It was planned in 1753 by Ensenada, but completed only in 1832. The canal of the Esla, for purposes of irrigation, begun by English engineers in 1864, and finished in 1869, has hardly been so successful. The latest report (June, 1880) states that the peasant proprietors, notwithstanding examples of the great utility of irrigation, obstinately refuse to use it. The principal affluents of the Douro on the west and south are the Tormes, which flows by Salamanca, and joins it about midway in its course as a frontier of Portugal; and the Agueda, which runs in just where it takes its final departure for the west.

The Tagus, the central river of Spain, and which divides its territory into two nearly equal portions, rises from a fountain called the Fuente Garcia, or Pié, on the south side of the Muela de San Juan, between the Sierras de Molina, Albaracin, and San Felipe, the knot of mountains which, as we have indicated above, form the great watershed of the peninsula, whence the waters flow northwards to the Ebro, east and southwards to the Mediterranean, and westwards, in the Tagus and its tributaries, to the Atlantic. Were the whole peninsula of Spain and Portugal one kingdom, the Tagus would be perhaps the most important of its rivers; but in the divided state it is of far more value to Portugal than to Spain. Its swift and turbid current, flowing between steep banks, and in a bed broken into rapids and encumbered by rocks, is scarcely navigable above Abrantes. The basin of the Tagus contains an area of nearly 30,000 square miles, and its length is estimated at about 550. The rainfall is less than that of the Douro, being only sixteen inches annually. The river, moreover, runs by no means in the centre of its basin, but far to the southwards of a central dividing line, and consequently the tributaries which it receives from the north or left bank are of much greater importance than those which come from the south or right. After flowing a few miles in a north-westerly direction, the river gradually bends, first westerly, and then in a slightly south-westerly direction, in a deep channel, through a bare rolling country, where everything takes the prevailing colour of red dusty uplands, until it arrives at Aranjuez, situated at the confluence of the Jarama and the Tagus, a royal residence whose abundance of water and of shade make it a true oasis in a desert. The Jarama, which rises in the Guadarama, brings in also the waters of the Henares, and those of the Manzanares, on which Madrid is situated. These streams have been the subjects of many projects and attempts at canalization, either for irrigation or for supplying the metropolis with water. Most of these have failed, but a canal from Porcal to Aranjuez, of seventeen miles and a half, is in working order. The canal of Cabarrus brings the waters of the Lozoya to Madrid. But the great enterprise of the canal of irrigation from the Henares, constructed by the same English company which made the canal of the Esla, and which was to have been twenty-eight miles in length, and to have irrigated 30,000 acres, is suspended by lawsuits as to the ownership of the waters. The Alberche, which rises to the north of the Sierra de Gredos, enters the Tagus near Talavera de la Reyna. The Tietjar, and the Alagon, which joins the main stream just above Alcantara, beside the frontier stream, the Heyas, are the only Spanish waters of importance from the north before the Tagus enters Portugal; and from the south the Salor and the del Monte, both of which have their rise and course in the same province of Caceres alone need mention. In the upper part of its course, however, the smaller tributaries of both the Tagus and the Guadiana often overlap, and but a very few miles separate the Tagus itself from the waters which flow into the Guadiana.

The exact source of the Guadiana has been a subject of much debate and of many fables. Its true origin seems to be in a series of lakes at the junction of the provinces of Ciudad Real and Albacete, near Montiel, in La Mancha. A picturesque stream, the Ruidosa, with many cascades and broken water, connects these lakes; but after running a few miles in a north-westerly direction, it disappears underground near Tomesillo, and is believed to rise to the surface after about twenty miles, in the Ojos (eyes) of the Guadiana, near Daniel. Very soon it receives from the right the united waters of the Zancara and the Giguela, streams whose contributions are much more scanty, especially in summer, than the length of their course on the map would lead one to suppose; thence the river flows in a westerly direction, passing near Ciudad Real, below which the Javalon enters from the left, coming from the Campo de Montiel; near Don Benito the Zuja, from the Sierra Morena, joins it, and some

miles lower down the Matachet. Flowing past Medellin, five miles below Badajoz the river crosses the frontier of Portugal, changes its course from westerly to south-west, and afterwards south and south-east, till it again joins the frontier near San Lucar, and dividing the two countries till its mouth, falls into the Gulf of Cadiz at Ayamonte. In the lower part of its course the river, which before has been wide and shallow, and often almost dry in summer, narrows its course, and rushes with impetuosity through the rapids called the Salto del Lobo (the wolf's leap), near Serpa, in Portugal. The whole length of the Guadiana is estimated at 550 miles, and the area of its bed at 24,000 square miles. The rainfall is about fourteen inches.

To the south of the rivers of the plateau the only considerable stream is the Guadalquivir, with its tributaries. The character of this river is entirely different to that of the former streams. Like the Ebro, it forms a true valley, instead of merely cutting its way through rocks, cañons, and defiles. Its bed is on an average about 1200 feet below that of the Guadiana in the greater part of its course. It is also the only river in Spain of any utility for navigation; the tide is felt beyond Seville, and vessels of 200 to 300 tons ascend to that city. There are also several lines of steamboats trading thence directly with London, Marseilles, Bilbao, Cadiz, and Gibraltar. The Guadalquivir takes its rise from two sources—one, in the streams Guadalimar and Guadarmeno, rises in the Sierra Alcaraz, and not very far from the sources of the Guadiana; the other, which bears the name of the Guadalquivir, in the south-west of the Sierra Sagra; this latter branch is soon joined by the Guadiana Menor, coming down from the Sierra Nevada. The basin of the Guadalquivir presents this peculiarity, that its boundary is not formed by the line of the highest summits; on the contrary, many of its tributaries take their rise on the farther side of the Sierra Morena on the north, and of the Sierras de Granada and Nevada on the south, and have cut their way through these higher grounds to join the Guadalquivir in the plains of Andalusia. The upper part of its course is very rapid, and the junction of the two rivers Guadalimar and Guadalquivir, in the plains of Baeza, is about 5000 feet below the Punta de Almenara; but from thence to the sea the fall is very slight. After the junction the river passes by Andujar, Montoro, and Cordova, receiving on both banks the waters of many streams of but little importance; but between Cordova and Seville it is joined by its largest tributary, the Xenil, which rises in the Sierra Nevada, and flowing through the celebrated Vega of Granada, bursts through the Antequera mountains to enter the great plain of Andalusia, and loses itself in the Guadalquivir. From Seville downward the character of the stream is greatly changed; it wanders in large meanderings through low and marshy grounds for two or three leagues on each bank, mostly uninhabited, and used only for pasturing cattle. These low lands, which are called *Marismas*, in dry weather are covered with clouds of black dust, and in wet are an almost impassable slough of mud; mid these the river divides, and its winding beds form two islands—Isle Mayor and Menor, the former of which is wholly given to cattle, while the latter is inhabited and well cultivated; The river finally enters the Gulf of Cadiz, at San Lucar de Barameda, forcing its way with difficulty through low hills of sand, like those of the Landes in France. The marshes near the mouth are utilized as *Salinas*, for making excellent salt; and on the hills which overlook the *Marismas* some of the most renowned wines and fruits of Spain are produced. The whole course of the Guadalquivir is about 340 miles and the area of its basin 21,000: the rainfall is estimated at nineteen inches.

The other streams which fall into the Gulf of Cadiz—the Rio Tinto, which runs into the Huelva basin, and the Guadalete at Cadiz—are of no utility for navigation. The little port of Palos, whence Columbus sailed to discover a new world, is almost entirely blocked up by sands brought down by the former torrent.

The remaining rivers of Spain—those which, descending from the great plateau, flow eastward to the Mediterranean—though all useless for navigation, are among the most productive of all its streams. Flowing through a country whose temperature exceeds that of the opposite coast of Africa; where the rainfall is either scanty, or disastrous in quantity from rare but terrible storms; and through districts in which no rain falls for years together—the waters of these rivers, skilfully applied to

irrigation, have rendered what would otherwise be a barren land one of fertility unparalleled in Europe. Unlike the peasants of Castile, the cultivators of Murcia and Valencia have learnt to value the use of water in agriculture; although even there, works which were first constructed by the Moors have been allowed to fall into ruin, and are yearly becoming of less utility. Of this we shall speak more at length below. The three great rivers we have yet to notice are the Murcian Segura, and the Jucar and Guadalaviar, in Valencia.

The river Segura takes its rise in the Sierra de Segura, between the Sierras of Alcaraz and Sagra. The upper part of its course is that of a mountain torrent, leaping from terrace to terrace of the mountains as it descends, until after the junction of the Mundo, which rises from a cirque in the Sierra Alcaras, like the cirque of Gavarnie in the Pyrenees, and flows through a deep ravine from the north-east. Its waters are dammed up, cut into numberless channels, and almost wholly utilized for irrigation, so that only about ten per cent of them reaches the sea; the rest are dissipated in the huertas of Murcia, Orihuela, and part of Elche. Its tributary the Sangonera loses almost all its waters in the plains of Lorca. With the little Vinalapo, almost 15,000 acres are rendered productive by the waters of these streams in one of the driest districts of Spain. The wheat of Orihuela is some of the finest in Spain; and so certain is the crop as to give rise to the proverb, "Rain or no rain, there is always wheat in Orihuela." The Segura has a course of about 217 miles, and an area of about 850 square miles; the average rainfall is estimated at about twelve inches, but the difference is very great in different years, as the district is liable to rare but most heavy and destructive floods.

The Jucar takes its rise not far from the sources of the Tagus, on the south side of the Muela de San Juan, which we have before mentioned as the culminating watershed of the peninsula. It flows first in a south-westerly direction as far as Cuenca, whence it gradually turns south and south-east, and at Jorquera, to the north-east of Albacete, strikes eastwards for the Mediterranean, which it finally enters at Cullera. Like the Segura and Guadalaviar, its waters are drained off for irrigation; but its basin is narrower, and it can boast of no fertility equal to the huertas of Murcia or Valencia. Its course is about 317 miles, the area of its bed 580, and the rainfall some twelve and a half inches; the irrigated land is over 30,000 acres.

The Guadalaviar, or Turia, rises on the north side of the Muela de San Juan, and descending rapidly, flows eastward past Albarracin and Teruel; at which latter town it turns abruptly southwards till it enters the province of Valencia, where it again takes a more easterly course, flowing with ever-diminished stream through the rich garden of Valencia, at which city it falls into the Mediterranean, with water which, except in time of flood, scarcely rises above the ankle. The length of its course is about 187 miles, the area of its basin 320 square miles; it irrigates over 25,000 acres near Valencia.

Besides these larger rivers, there are on the Mediterranean slope innumerable smaller streams, whose waters, though of little geographical importance, are of the greatest utility to agriculture. In summer scarcely a drop of their waters reaches the sea; all is either employed for irrigation, or dissipated by evaporation; often they are dammed up to form reservoirs or *pantanos*, sometimes employed for rice culture. But small as these streams are, it is to them that this burning coast owes its beauty and fertility, its almost tropical vegetation and its rich products. The fair gardens of Castellon, of Gandia, of Murviedro would be barren and valueless without these waters. Still farther to the north the waters of the Llobregat, and the canal of Urgel in Catalonia, are used for the same purpose.

The lakes of Spain are neither large nor numerous, but some are curious from a geographical point of view. On the high plateaux whence the Guadiana, the Guadalimar, the Segura, and the Jucar take their rise, either a dam or a trench would suffice to turn the waters either to the Atlantic or the Mediterranean; and here alone in Western Europe are found temporary lakes with no outlet, and consequently salt from excess of evaporation. For the same reason salt springs and brackish streams abound in these highlands. All around the coast, both on the Atlantic and Mediterranean, salinas, or salt-works for making salt, either from the sea or from the brackish water of lagoons and tidal marshes, abound; those of Cadiz, and of the coast between Cartagena and Alicante are celebrated for

the excellence of their salt. Besides these are the five Albuferas, or lagoons, of Valencia, Alicante, Elche, Auna, and Oropesa. Of these that of Valencia is far the largest, and feeds enormous quantities of fish and of aquatic fowl of all kinds. The interior lakes, as that of Sanabria in Zamora, Gallocanta in Aragon, and those from which many of the rivers take their source, are noted only for their picturesque beauty. We can hardly show the value of water in Spain better than by directing the reader's attention to the number of places which take their name from water of some kind: thus there are forty-four villages or towns whose names are compounded of *Aguas*, waters; 238 into which the word *Fuente*, fountain, enters; 144 *Rios*, rivers; 54 *Arroyos*, brooks; 44 *Pozos*, wells; 30 *Salinas*, salt waters; 9 *Rio Secos*, dry rivers; and about 600 *Molinos* or water-mills. The multiplicity of these last dates perhaps from the time when every seigneur had his own mill, and obliged his vassals to grind their corn there; but assuredly in a moister climate water would not have played so great a part in the nomenclature, or toponymy, of the country.

We add the following table, deduced from Reclus' "Nouvelle Géographie Universelle," 6° Serie, p. 886, compared with an article in "La Revista Contemporanea," December 30th, 1880:—

	Rivers.	Area of basin. Sq. miles.	Length of course. Miles.	Mean rainfall. Inches.	Outfall compared with rainfall. Per cent.
Northern Rivers.	{ Minho&Sil	10,000	190	47½	50
	{ Ebro	25,000	466	18	20
Rivers of the Central Plateau.	{ Douro	35,000	506	20	40
	{ Tagus	30,000	556	16	33
	{ Guardiana & Zancara	24,000	553	14	20
Anchilasia	{ Guadalquivir	21,000	340	19	30
Mediterranean Rivers. E. & S.E.	{ Segura	8500	217	12	10
	{ Jucar	5800	317	12½	15
	{ Guadalaviar	3200	187	—	12

The mineral springs of Spain are very numerous, as might be expected in a mountainous country, at the junction of different strata in the metamorphic fissures, and in the neighbourhood of extinct volcanoes. Many of them were known and used by the Romans, and possibly by other races before their time. The Moors made use of many, more especially in the south. The majority of these springs are much neglected, and the bathing establishments in their roughness are a striking contrast to those of Germany and of France; there is, however, no reason to suppose that the waters themselves are less efficacious. The best known springs lie along the line of the Pyrenees, in Catalonia, Navarre, and especially in the Basque provinces and Santander. Another noted group are in the neighbourhood of Granada, and on the northern slopes of the Sierra Nevada. Those in the Guadarrama range are more frequented, from their vicinity to Madrid. Many of the Salados and Salinas in the higher parts of the eastern range, as well as the springs in the neighbourhood of Valencia, might be utilized with advantage. In this, as in many other things, Spain has not yet recovered the threads of a lost civilization, and in many points of material comfort and well-being is behind the Spain of Roman and of Moorish times.

CHAPTER II. CLIMATE AND PRODUCTIONS

SPAIN may be roughly divided into five climates: (1) that of the north and of the Pyrenees, where rain is abundant; (2) the west or Atlantic climate, including Portugal; (3) the north-east or Mediterranean; (4) the east and south, or African climate; and (5) lastly, the climate of the great Central Plateau, or the Continental. All these are well marked, and differ greatly in their temperature, in elevation, in exposure, in rainfall, and in prevailing winds. To speak of an average temperature, or of an average rainfall in Spain, is only to mislead. The temperature of the south and south-east is higher than that of the opposite coast of Africa, while the winters in Castile recall those of Scandinavia in their bitterness. In some of the Asturian valleys there is, perhaps, the heaviest rainfall in Europe; while the lower valley of the Ebro is almost a desert, from want of rain; and in parts of Valencia and Murcia, and even in Andalusia, not a drop will fall for years; yet at times these provinces, and their driest portions, are visited—as in 1802, 1879, and 1881—by overwhelming and destructive floods. To strike an average, then, even for the same spot, through several years, is often merely deceptive.

We have remarked above on the similarity of the conformation of the western coasts of Galicia to those of Norway, Scotland, and Ireland. They partake also of the same Atlantic character in their climate and productions. Galicia and the Asturias are essentially grazing countries; and from the Galician ports, up to 1878, about 20,000 head of fatted cattle were annually sent to England. Except in the more sheltered valleys, where the productions of a warmer clime will flourish, the native flora is not unlike that of the milder parts of Ireland and of Devonshire. The average temperature of Santiago is about 55° Fahr., with a maximum of 95°, and a minimum of 28°; Oviedo is given as 54° average, maximum 80°, and minimum 24°; while the rainfall of the former is from 58 to 68 inches, and that of the latter varies from 38 to 50 in ordinary years, but in 1858 it attained 80 inches. Proceeding eastward we meet the northern or Pyrenean climate, where the rainfall is not so great, and, except in the immediate vicinity of the highest mountains, lessens gradually as we either go eastward or descend into the plains. The moisture is condensed and wrung out of the clouds brought by the watery western winds, and precipitated on the mountains of the west and north. From the Picos de Europa, in the province of Santander, which may be considered as the meeting-point of the two climates, the waters descend on the one side by the Ebro to the Mediterranean, by the Pisuerga to the Douro and the Atlantic, and by the shorter northern streams to the Bay of Biscay. In the valley of the Cabuerverga (Santander) the rainfall is 57½ inches. Passing eastward we find Bilbao and San Sebastian, with an average temperature of 56° and 55°, a maximum of 93°, and minimum 23°, while the rainfall has diminished from 55 to 48 inches. At Vergara, more inland, it is 52. At Huesca, in Aragon, notwithstanding its proximity to the mountains, the rainfall is only 25 inches; at Balaguer, in Catalonia, only 15½. At Saragossa the climate becomes more extreme; the average is 60°, the maximum 96°, and the minimum 20°, while the rainfall descends to 14 inches. The equalizing influence of the neighbourhood of the sea is felt in the Mediterranean climate at Barcelona; for while the average is 63°, the maximum is only 88°, and the minimum 32°, and the rainfall ascends to 24 inches. The difference is still more marked if we compare the extreme oscillation between the maximum and minimum temperatures. At Saragossa this is from 120° to 130°; at Barcelona from 90° to 100° Fahr.

The productions of this northern zone vary greatly according to elevation and exposition. Those of the Basque Provinces still belong to the north temperate zone climate—cattle, corn, and cider, as well as wine. The olive, and the mulberry for silk, are almost unknown; but maize is largely grown. As we approach Catalonia these products give way to those of the Mediterranean region of Provence and of the Riviera—the olive, the grape, the mulberry. A powerful red wine is made on the lower

southern spurs of the Pyrenees and of the Cantabrian Mountains, in the Riojas, in Navarre, and in Aragon. Much of it would be excellent if more attention were paid to the preparation, and especially to the conditions of transport. Great quantities are at present exported to France by sea from Bilbao and San Sebastian, and also by rail, for the purpose of mixing with the thinner and poorer clarets of Bordeaux, to fit them for the taste and market of England. In Catalonia the wine improves, and is less used for mixing. The chief kinds are a red wine, like Rousillon, and sweet, luscious wines, Rancio, somewhat like Muscat or Malaga. Of late the manufacture of effervescing wines like champagne has been carried on with considerable success. The wine made in Catalonia amounts to one-fifth of the whole produce of Spain. Already the orange and the palm appear.

Proceeding southwards from Catalonia, we gradually advance into the south-eastern and southern climate of Spain, a climate which is rather African than European in its character, and both whose products and dryness have more relation to the African continent than to that of the rest of Europe. It is here that the date-palm ripens—which it does not on the opposite coast of Algeria—and the camel breeds, and can be used as a beast of burden equally as in Egypt and the East. Sheltered by the mountain ranges to the east and north from the cold winds which sweep the plateau of Castile, exposed by the slope of the country to the full influence of the southern sun and its powerful evaporation, the characteristics of the climate are warmth and dryness, while the vicinity of the Mediterranean partly tempers the extreme range of heat and cold which might be found in lands more remote from the sea. Thus the average temperature of Valencia is 65°, its maximum 102°, its minimum 41°, and extreme range 100°. Alicante, still further south, has an average of 66°, a maximum of 100°, and a minimum of 35°. The average rainfall at Valencia is stated at 17, and that of Alicante at 18 inches; but, as remarked above, in this south-eastern district of Spain averages of rainfall are quite deceptive. In some years the quantity marked is only a very few inches, 3 or 6, over the whole district, and there are considerable portions where rain does not fall for years. The country is rendered fertile and productive, not by its rains, but by irrigation from the rivers, fed by the winter snows on the mountains which border the great plateau. At times, however, as in 1802 and 1879, storms of rain descend on the high lands of Murcia and the eastern sierras, and floods rush down, sweeping away dams which have stood for centuries, washing away towns and villages, and spreading destruction far and wide. To compute the rainfall of such floods into an average is only to play with figures. Murcia has an average temperature of 64°, maximum 112°, minimum 24°, and an extreme range of 120°. The rainfall averages about 12½ inches on the coast, but varies greatly; at Albacete it is said to average 13 inches. The directly southern coast, from the Cabo de Gata to Gibraltar, has a milder and more equable climate than that of the south-eastern coast; but in the inland valley of the Guadalquivir the range is more extreme, both for heat and cold. The dryness in the eastern district still continues from Cartagena to Almeria; the rainfall is said to be only 12 inches. At Malaga, while the average temperature is 66°, about the same as that at Valencia and Alicante, the maximum is said to be only 78°, and the minimum 53°. At Motril, between Malaga and Almeria, the maximum is 77°, and the minimum 52°. In Seville on the other hand, the average is 68°, with a maximum of 118°, and a minimum of 30°. Cordova, somewhat colder, has a maximum of 93°, and a minimum of 27°. The rainfall is also more moderate at Malaga, 15½ inches, and 23 at Seville. Granada, in its upland but sheltered valley, at an elevation of 2681 feet, defended from the east and south by the snowy range of the Sierra Nevada, and by the mountains of Granada to the north, has still an average of 65°, with a maximum of 97°, and a minimum of 42°. The rainfall varies considerably in different years, and various geographers give its average as 23½ 33½, and the latest (Reclus) 48½. Cadiz has an Atlantic climate, which in temperature and greater rainfall, 37 inches, closely approximates to that of Madeira. Moving westward it decreases, at Gibraltar, 34½, San Fernando, 27; while at Huelva and Tarifa, where the moisture of the north-west gales is intercepted by the Portuguese mountains, it descends to 24½. We have now only to treat of the climate of the great central elevation, the plateau, which ranges at an average height of some 2000 feet above the sea. Thus, Madrid is 2148, Segovia 2299,

Burgos 2873, Soria 3504, and the Escorial, 3683 feet above the sea-level. But even these altitudes do not wholly account for the rigour of the climate in the latitude of Naples, Rome, and Constantinople. We have seen how excellent is the climate of Granada at a nearly equal elevation, only three degrees further south. The extremes of heat and cold felt at Valladolid and Madrid are due more to the uncovered mountain ranges to the north, the treeless, waterless plains, over which the wind sweeps unchecked, than to mere elevation. The want of rain is greatly owing to the ranges of mountains parallel to the frontier and to the Atlantic in Portugal, which condense and wring all the moisture from the rain-clouds of the Atlantic, and distribute it almost wholly on the western slope. Thus at Lisbon the fall is 29, at Coimbra 35, at Oporto 63, in the mountains of Beira and Tras os Montes from 68 to 100 inches; while on the eastern slope, at Salamanca it is 9, Valladolid 12, at Badajoz 12½, Ciudad Real 14. From the bare granite range of the Guadarrama steals down the treacherous icy wind so fatal in Madrid—not sufficiently strong to extinguish a candle, but quite enough to destroy human life. It is the dislike of the Castilian peasant to trees, which would overshadow so much of his small property, the destruction of the mountain forests, and the want of good agriculture, which has embittered the climate of these plateaux. Were the hill-sides clothed with wood, the country dotted with farms, the wide and bare plains covered throughout the year with varied agricultural produce, the climate would soon be modified and become sensibly warmer, and no longer, as it at present is, an obstacle to civilization and to improvement. In spite of all neglect these plains grow some of the finest wheat in Europe, and the lower mountain ranges supply pasture in the summer for the immense flocks which return to winter in the plains of Estremadura. The average temperature of Madrid is 59°, its maximum 104° to 107°, and its minimum only 7°. That of Salamanca is said to be 57°, with a maximum of 97°, and a minimum of 12°. The average rainfall of Madrid is only from 9 to 14 inches, that of Salamanca 9, while Soria, nearer to the mountains, in some years reaches 25 inches.

From the above sketch of the climate the reader will expect to find the productions vary greatly in the different districts. The north and north-west are the lands of cattle and of pasture. In Galicia and in the Asturias the products are almost like those of the warmer parts of the south-west of England and of Ireland, save that in the more sheltered valleys the orange, citron, and pomegranate flourish; a palm is even now and then to be seen; and the wine, especially on the confines of Portugal, is excellent, and needs only more care in preparation to be a rival to the famous Port of the neighbouring country. In the eighteenth century, that of Ribadavia was considered to be the finest wine in all Spain. Maize, too, is freely grown; but on account of their extreme poverty, rye and spelt often replace both it and wheat as food for the peasantry. The upland plateaux afford excellent pasture, especially for cattle and horses; the hardy and sure-footed hacks of Galicia and the Asturias are celebrated. The mountains here are often clothed with wood; oaks of various kinds, and the edible chestnut, and the hazel-nut—of which over 1000 tons, value 23,000*l.*, are annually exported from Gijón—grow on the lower spurs, giving food to herds of swine; beech, and pine, and fir appear as we approach the tops. In the lower woods the arbutus especially flourishes, and the young wild boars in autumn are said to become half stupefied with its narcotic berries. As we proceed eastward from Galicia to the Asturias the climate becomes sensibly colder—the valleys face the north instead of the west; the orange is less known, the mulberry will not flourish sufficiently well to pay for silk cultivation, the olive will not grow, and the cork does not pay for cultivation; the wines lose somewhat of their strength and lusciousness; and cider, made from the excellent apples of the country, rivals the juice of the grape in popularity. The mountains are covered with heath, and fern, and furze, but the aromatic plants are fewer than in Galicia. This description applies to the northern slope of the Cantabrian chain and to the rolling hills and plateaux of the Basque provinces; but the southern slopes of the chain, towards the Ebro, are again a land of vine and olive, and of maize, which is everywhere the staple. In the Basque provinces the plough is replaced by the ancient "laya," an instrument as old, at least, as Roman times. It is a heavy two-pronged steel or iron fork, with prongs one and a half to two feet long. A strong man will work two of them at once, one in each hand, driving them into the ground to their full

depth, then with a backward strain turning up the deep soil. Usually, four or five men work together, and raise their arms, plunge the fork downwards, and heave, in perfect time. The cultivation thus effected is excellent, but the expenditure of labour is immense. The productions do not vary greatly along the slopes of the Pyrenees from those above described until we reach Catalonia; but in the lower valley of the Ebro, where rain is rare, in the Bardeñas reales of Navarre, and in the monegros, or despoblados of Aragon, we meet with a phenomenon only too frequent in Spain—tracts of almost utter barrenness. The Bardeñas reales are low spurs of the Pyrenees, with table-lands, bluffs, and deep gorges, and these could scarcely be brought under cultivation; but the "despoblados" (dispeopled lands) of Aragon might be irrigated, either by the Ebro or by its tributaries, if the water of the canal of Charles V. were but economically applied. The sterility of some parts seems to have been the slow result of an oppressive land tenure; for as Don Vicente de la Fuente has remarked, the lands which belonged to the ancient señors (the feudal lords) lie barren, while the lands of the comunidades, the free districts, are still fertile. In treating, of the cultivation and the products of eastern and southern Spain two facts become evident at once—how many of the products are exotic, and how much of the cultivation is still Arabian. We shall see in another chapter how deep a mark the Moor or Arab has left on the population and toponymy of Spain; and the agriculture of the greater part of central and southern Spain is still Arabian. The methods of the Spanish peasant are almost all Arabian; often he uses the Arabian hoe in preference to the Roman plough. The *noria*, or water-wheel; the *sha'doof*, or swipe, the pole and bucket for lifting water; the huge dams and reservoirs, the canals and ditches (*acequias*), the regulations for the fair distribution of the water,—all these, and even the very superstitions as to times of sowing, the rotation of crops, the treatment of his animals—for all these the Spanish peasant of the South is indebted to the Moors. The treatise of Abu Zaccaria, with its traditions of Nabathean agriculture, is still one of the manuals of agriculture in Spain. It is the Moors, too, who first made the winter gardens in the sands near San Lucarde Barameda, at the mouth of the Guadalquivir, and which supply Cadiz and Seville with the earliest and latest vegetables. The Roman, with his lofty aqueducts, brought water to the towns; but it was the Moor who gave that blessing to the thirsty soil of the country districts of Spain. And not only the methods of agriculture, but many of its fruits and products were introduced by the Arab from the East, and some of these are now the very staple of Spanish produce. It is they who brought into Spain the cotton plant, rice, and the sugar-cane; mulberries, both for fruit and for silk culture; sesame, the caper, the locust bean, the castor-oil plant, alfalfa (lucerne), the pomegranate, almond, the walnut and filbert, the chestnut and the ever-green oak, the wild olive, the jujube, the pistacchio nut, the palm, several kinds of roses, the wall-flower, with many another garden herb or flower. It was they who improved the Andalusian steed into one of the most excellent in Europe for riding, and the strain may still be traced even in the ponies of the north. But the cultivated vegetation of the south which meets the stranger's eye is perhaps still more indebted to the Americas.¹ It needs an effort now to picture what Spanish agriculture and what Spanish life was before the time of Columbus, when maize, and the potato, and sweet potato, were unknown; when not a cigar was smoked or cigarette made, or leaf of tobacco grown in Spain; when only garlic was known, and those indispensable condiments of every dish, the tomato, and the pimientos had not yet entered a Spanish kitchen, and chocolate had not yet been sipped by Spanish ladies; when the hedges were bare of aloes, and the prickly pear gave the beggar no fruit. And besides these common gifts, there are the more luxurious ones of pine apples, grenadines (the fruit of the passion-flower), abocado pears, chirimoyas, guavas, earth-nuts, bananas, and many others, while the gardens are enriched with magnolias and passion-flowers, and a wealth of creepers of all kinds. The Australian eucalypti, also, are highly valued in Spain, both as a febrifuge and for their prophylactic

¹ For the converse of this, the plants and fruits introduced by the Spaniards into America, see Markham's "Peru," in this series, p. 120.

qualities in prevention of malaria in marshy ground; and a decoction from their leaves has quite passed into the popular pharmacopeia.

The most common plant on the sun-dried hills of Valencia and Murcia, the esparto-grass (*Stipe tenacissima*), after having been long used in various native manufactures, has since 1856 become an article of exportation, and an important addition to the wealth of Spain; but the cultivation of the barilla plant for soda has much decreased. It is from Valencia that the oranges come which are such favourites in Paris. The tree is so valuable, both for fruit and flowers, that an acre will sometimes give 600*l.* worth of produce. The dried raisins and almonds so familiar in England, so eagerly looked for at Christmas time, and the green preserved grapes, come from the districts of which we are now speaking, the coast-lands from Valencia to Almeira and Malaga. The wines are equally celebrated, from the strong red wines of Benicarlo, near the frontiers of Catalonia, to the sweet wines of Alicante and of Malaga, which are preferred by Continental taste to the drier and more fiery sherries, wines of the Guadalquiver valley, which please the English palate. Near the coast on the lower grounds, wherever there is sufficient water, rice is grown; but, on account of the unhealthy character of the cultivation, its culture is forbidden in the neighbourhood of towns. Sugar-cane is extending on the southern coast. In Andalusia alone more than 7000 acres are devoted to this culture, and the total yield of the sugar-cane in Spain is estimated at nearly 20,000 tons. Palms are grown as an ornament and garden-tree from Barcelona to Malaga, but in Murcia, and especially at Elche, they are planted for production. Though the number seems declining, there are still some 40,000 palms together in the neighbourhood of Elche; in the last century they are said to have numbered from 50,000 to 70,000. It is not for the fruit alone, the date, but for the leaves (the so-called palm-branches) that the trees are grown. In the winter these are tied into a close bundle to exclude the rays of the sun, in order that they may become white, and they are then exported to Rome and Italy, for use in the Easter ceremonies of Palm Sunday. Oils and essences, extracted from many plants and flowers, are also products of this region. The liquorice-root, and many another flower, or fruit, or root of medicinal value grows wild on the hills. The slopes of the eastern mountains are covered with aromatic herbs, thyme, myrtle, box, rosemary, southern-wood, mint, lavender, marjoram, nearly all the sweet-scented herbs which were once carefully cultivated in the gardens of our ancestors, are natives of these hills; and the flocks of goats returning from their pastures bring the sweet odours into the tainted towns and villages, and the first draught of milk from them is highly flavoured thereby. On these treeless hills, and the warmer parts of the higher plateaux, these aromatic herbs are often the only fuel which the peasant can employ. The wealth of this portion of the Spanish soil, the variety and beauty of its products, can be best seen in a visit to a fruit or flower market in any of the towns of the south and east. The richness of colour, the size and beauty of form, are amazing to the stranger; but the quantity and the cheapness, the way in which these fruits and exotic vegetables enter into the diet of the poor, is that which most astonishes those from less generous climes. We have not space to enumerate in detail a tithe of these productions; this must be sought in more special treatises.

Almost equal in agricultural and garden wealth to that of the coast-line, and superior to it as regards the culture of the vine, is the valley of the Guadalquiver. The oranges of Seville (the civil oranges of our forefathers, the main ingredient of marmalade), sack, and sherry, are known in every English home of the middle and upper classes. It is in the valley of the Guadalquiver, from San Lucar de Barameda to above Cordova, that the finest sherries are produced. From San Lucar comes the pleasant Manzanilla, the lightest and most wholesome of all the sherries, but with a peculiar bitter taste and bouquet, like that of the wild camomile-flower. In the neighbourhood of Jerez de la Frontera the best sherries are produced, both brown and golden; the Amontillado, the nutty-flavoured wine so much sought after, comes from Montilla, to the south of Cordova. Several other kinds are manufactured, and have a great local reputation. Comparatively very little of these strong and fiery wines is consumed in Spain. Spaniards take them only as a liqueur, not as the usual accompaniment of a meal or desert. Sherry, though grown in Spain, is the foreigner's, and especially the Englishman's

wine. The red Valdepeñas, from the northern slope of the Sierra Morena, replaces it at the Spaniard's table. For the modes of preparation of the various sherries, we must refer our readers to special treatises; of its statistics as an article of commerce we shall speak in another chapter. The first palm-tree introduced into Spain is said to have been planted near Cordova. The olives of this district are considered the finest in Spain. Comparatively little of the oil is exported, but the home consumption is enormous. The cork forests, too, are abundant; their bark forms an important article of commerce.

We have now only to speak of the great central plateau, the Continental climate of Spain, and its productions. This is peculiarly the corn-growing district of Spain, the land of wheat and maize, especially in the Castiles. Estremadura and León are rather pastoral districts. It is in these provinces that the laws of the *Mesta*, for the protection of the celebrated merino sheep, ruled supreme, and which, though modified at the close of the last century, and some of their worst abuses done away with, were finally repealed only in 1835. By these laws the sheep and cattle which fed in the winter in the plains of Estremadura, and in the summer on the mountains of León, were privileged to enter almost any property on their line of march, to feed or to pass the night there. A space of ninety yards wide was reserved on each side of the highways for their accommodation; no land, especially no corn-field, was allowed to be enclosed; and right of forcible entrance was given to all orchards and vineyards where pasturage might be found. Wherever the flocks had once fed, the land could not be sold or alienated to any other purpose. The shepherds who tended these flocks became almost as savage and ignorant as the beasts they looked after; their privileges produced in them a contempt and hatred of all kinds of fixed property, and they were ever trying to extend their oppressive right at the expense of the more settled and agricultural portion of the community. Under the influence of these laws Estremadura, which, in the time of the Romans and Moors had been one of the richest provinces of Spain, became under their Christian conquerors not only one of the poorest and most thinly peopled districts, but also a curse and source of destruction to the rest. Not only were all the evils of the old Roman "latifundia" reproduced in this mediæval system, but the locust, which never breeds in cultivated lands, or where the plough passes, was enabled to make its home in the wilds and pastures of Estremadura, whence it periodically sallied out to devastate the fairest and richest portions of the land. In the years 1754 to 1757 it desolated the whole of the provinces between Estremadura and the Mediterranean. In 1686 and the following year it reached the principality of Barcelona, and, in spite of exorcisms, ravaged the country till there was nothing more to destroy. The provinces nearer to Estremadura are much more frequent sufferers, and in recent years (in 1876 the crops in Ciudad Real were utterly destroyed) a division of the army has been more than once employed to destroy or to check them on their march. The only plant they spare is the tomata, which they will not touch. Besides flocks, Estremadura maintains huge herds of swine, which feed on the sweet acorns and chestnuts of its woods, and whose flesh is renowned through Spain. Owing to its situation on the borders of Andalusia, in which province the Moors retained their powers long after they had lost the rest of Spain, Estremadura was exposed to their frequent incursions; every flock and herd was liable to be carried off, every fruit-tree to be cut down, the farms burnt and crops destroyed; and in their retaliation the Christian knights were almost as fatal as the Arab horsemen. The country was never thoroughly peopled after the reconquest, and the sense of insecurity remained long after the cause of it had been removed. The laws of the *Mesta* and the emigration to the Americas (both Cortes and Pizarro were Extrameños) finished the work of depopulation, and left the province, as it has since remained, naturally one of the richest, actually one of the poorest in Spain. The products, besides those above mentioned, are cork, oak-bark and acorns for tanning, honey, nuts, and chestnuts.

The bare plains of the Castiles are now the great corn-producing country of Spain. But they have little or nothing of the beauty and variety of cultivated land in other countries. There is no succession of crops, no mixed husbandry, no scattered farm-houses, neither tree nor fence to break the bare monotony. The hill-sides and mountains are given up to pasture, the plains to wheat and maize. The husbandmen live in villages, and ride out on donkeys in early morn to their distant fields, and return

home at night. A sense of insecurity seems still to brood over the land, as if the peasant dared not trust himself outside the walls of village or town. Only at harvest-time, in the warm summer and autumn nights, he camps out among his crops, to thresh them on the spot, and bring the produce home, a habit which often produces fever and ague. Year after year the process is repeated; no improvement is ever made; if rain falls the harvest is plentiful—so plentiful sometimes that the lazy peasant will not reap his most distant fields, or procure new skins or barrels for the over-abundant wine, though with the extension of railways this evil is fast disappearing. There is hardly a greater contrast than between the habits of the Castilian peasants and those of the peasant-proprietors in the Basque provinces and in those of north and north-west. In the Basque provinces the farms are scattered all over the country, and travellers from other districts of Spain speak of the whole district as if it were one city. The farmhouse stands in the midst of its grounds, with orchard, garden, trees and fences, meadow and cornland round it. To Englishmen this description is almost a matter of course, and one must read the narrative of travellers from Castile fully to appreciate the force of the contrast. There is, moreover, no natural impediment whatever to a similar course of life in many districts of the Castiles. Barren and dreary as they look, the plains called the "Sierras de Campos," and some others, are watered by a kind of natural capillary attraction; dry as the surface appears, water is always to be found at a few inches below the surface, and the roots of the wheat and other cereal crops penetrate to it. It is only the mixture of pride and laziness and ignorance of the Castilian peasant, his senseless disdain of all improvement, his want of ambition for anything better, that prevents progress in this part of Spain. He refused to make use of the machinery invented for him in the last century, nor will he avail himself of the means of irrigation and the still better machines provided for him now. Yet there is no agricultural country in which machinery could be introduced to greater advantage.

Perhaps no better idea can be given of the productions of Spain, and of the diversity of its climates and fruits, than by comparing those of Murcia with those of the north-west and the centre. In January the bean is in flower in Murcia, in April in Madrid; the vine and the wheat flower in April in Murcia, but not till May or June in the province of Madrid. The climate of Galicia, with its almost continual rain, and Murcia with its droughts, are perhaps the most opposite climates of Spain. The one is a land of pasture and of flax cultivation; its fruits are the apple, the pear, the peach, strawberries, currants, and nuts of all kinds; the predominant plant on the hill-sides is the furze, in Murcia it is the Esparto grass. The fruits there cultivated in the gardens are exotic, and have almost wholly replaced the indigenous flora; the "huertas," the gardens or cultivated plains, are there almost like oases in a desert.

The fauna of Spain—except in one particular, the monkeys (*Macacus Innuus*) which inhabit the rock of Gibraltar, and which are the only animals of their kind wild in Europe—does not greatly differ from that of the rest of Southern Europe. In the highest part of the Pyrenees, in the Sierra de Credos, and in the Sierra Nevada, the izard or chamois still exists in considerable numbers. Whether the bouquetin is really extinct, or still survives in the Spanish Pyrenees, is a disputed point. In the forests which clothe the lower spurs, roe and fallow deer, wild goats and wild boars, and in some districts red deer, are still to be found. The beasts of prey are the bear, the wolf, the lynx, the fox, wild cat, marten, ferret, weasel, &c.; and these are assisted by the no less rapacious birds of prey—the vultures, eagles, hawks, falcons, kites, harriers, pies, and jays. The game birds and animals are the pheasant, now very rare, partridges of both kinds, bustards, both large and small, sand-grouse, quails, which come in immense quantities to the vineyards and maize-fields in the summer and autumn, woodcock, snipe; wild duck, geese, all kinds of water-birds and waders, visit the marshes of the rivers and the lagoons of the coast in winter; and on the southern shores meet the flamingoes, pelicans, spoonbills, and other birds from the African coast. From the same quarter come numerous and brighter-plumaged birds of passage; orioles, bee-eaters, hoopoes, and other natives of a warmer zone, are brought over by the hot south wind so irritating to the nerves and temper of a southern Spaniard. It is then that the shores of the Mediterranean are lined with sportsmen, when the moon is near full, to take heavy toll of these

winged travellers. The entomology of Spain is probably very rich. We have spoken of the locusts of Estremadura; and in the wilds where they breed—mere solitudes in summer, when the flocks are absent in their northern pastures—many a rare species of butterfly, cicada, and insect is doubtless to be found. The insects of Spain, however, are not all noxious or without value. Silk-worms are largely bred in the coast provinces of the east and south, not only for their silk, but also for the gut so precious to all trout and salmon fishermen. The cochineal insect, which feeds on the leaves of the prickly pear, is cultivated for its brilliant dye.

Of useful and domesticated animals, the sheep of Spain have always been celebrated; the very name, "merinos," has been given to the softest kind of wool or woolly tissue. It is said that the breed attained its excellence through a present of English South Down rams by Edward I. to the father of his Castilian bride, and that the wool has improved under climatic influences. However this may be, the superiority has hardly been maintained, and careless shepherding has sadly deteriorated the breed; still the half-bred Spanish merinos are the favourite flocks throughout the north of Spain and Southern France, and they are slowly superseding the coarser native and local breeds. The Spanish cattle from Galicia are well known in the English market, but they are not the choicest of their kind. The bulls that are bred for the bull-fights are reared chiefly along the marshy banks of the Guadalquivir, which, like the delta of the Rhone, supports herds of half-wild cattle and buffaloes. Cow's milk is little known or used in many districts of Spain, and butter still less. Sheep or goat's milk supplies the place of the former, and the olive-oil, excellent were it not too often kept till rancid, that of the latter. Cheese and various kinds of curdled milk or whey are also made from the milk of sheep. Since the advent of the Arabs the Andalusian steed has been much celebrated. It is now scarcely equal to its former fame, but, like many a horse of warmer climes, its performances are better than its looks; hardy, sure-footed, swift, and docile, if not over-weighted it will do more than one of many a finer-looking but less enduring breed. The horse, however, is not the true beast of burden in Spain; he is the charger, or the luxury of the rich. The real work of the country is done by the humble mule or ass, or, in some districts, by the ox. The fine Spanish mules are now seldom bred in the country, but are procured from Poitou, or from the south of France, where great attention is paid to their production, and where the average price of a mule of six months old is higher than that of a horse of the same age. For long journeys, and for carrying produce over the mountain paths, or along the bad roads of the interior, the mule and pack-saddle is still generally used. In fact, in some districts no other mode of conveyance is possible; but the loss to commerce from want of better communications is immense. It is this mode of carriage which necessitates and continues the use of the tarred wine-skin, by which so much excellent wine is rendered unsalable and almost undrinkable. It is hard to recognize the delicious wine when tasted at the vineyard, in the pitch-flavoured, half-fermented liquor which has travelled for days in a skin exposed to the sun's heat by day, and the closeness and fetid odours of the inns by night. Besides these, the camel, buffalo, and llama, and vicuña have been introduced successfully as an experiment for breeding, but not in sufficient numbers to affect the means of transport in the peninsula.

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