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REGIONAL GEOGRAPHY OF IBERIA

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It has been remarked that Africa commences at the Pyrenees, perhaps the most effective mountain barrier in Europe, and a far more effective barrier than the Straits of Gibraltar. Certain it is that much of Spain resembles northern Africa more than it resembles France. The climate is north African, as is the architecture. For centuries the political relations between Spain and north Africa have been close. Spain was the stronghold of the Moorish civilization for several hundred years. In respect to vegetation and landscape also, Spain resembles north Africa. Both have wide spread plateaus with few streams, and possess a desert aspect.

Five-sixths of Spain is a plateau averaging nearly 2500 feet in height. Upon this plateau there are many wide interior basins called bolsons. These basins lie between almost barren mountain ranges of which Spain has scores. Indeed few localities are not within sight of one or more ranges. The mountains are very rugged, but long gentle slopes called bajadas extend for miles from their base. These gentle slopes lead to stream valleys or to lake beds called playas. Upon the bajadas stretch fields or pastures which during most of the year look too dry to yield even a small crop of wheat or grass. Here and there, orchards of dwarfed, gnarled olive trees only slightly reduce the impression of almost hopeless aridity. Every few miles is a drab village of adobe brick, usually on a low elevation. Towering above the low, commonly flat-roofed houses of all but the smallest villages is the cathedral, which is usually quite picturesque from a distance. Between the villages there are almost no houses nor roads nor even fences.

THE GREAT REGIONS OF IBERIA

The great interior of Spain with its scant rainfall of from eight to twelve inches per year, almost all of which falls in the cool winter season, is everywhere quite similar except for the contrast between mountain, plain, and the little strips of irrigated land along the flood plains of the few rivers. However, several other types of landscape

occur in Iberia. They are: (1) The eastern coastal strip along the Mediterranean with irrigated deltas and flood-plains, such as those of Catalonia and Valencia. The flood-plains of the Ebro, one of Spain's two large rivers, extends this province inland a hundred miles and affords one of the best routes to ascend onto the steep-sided plateau. (2) Southern Spain or Andalusia, with its wide river valleys such as that of the Guadalquivir, and with narrow coastal plains. This section is especially accessible from Africa and was the last European stronghold of the Moors. Granada, Seville, Malaga and Cadiz are famous cities in this section. No other part of Europe has warmer winters. As the summers are hot in this part of Spain the crops include oranges, lemons, sugar cane, bananas, cotton and other sub-tropical crops. Even the date palm ripens its fruit locally in the

FIG. 1. Looking across San Pedro de Premia showing fields, olive trees, a distant village and dry bajada beyond.

province, the only part of Europe where it will do so. (3) Humid Iberia, the northern slopes and the western end of the Cantabrian Mountains, in northern Spain and Portugal. This small section receives an abundance of rainfall, indeed locally as much as sixty inches a year. Irrigation is unnecessary, and the slopes are green throughout the year, in sharp contrast to the somber colors which usually prevail elsewhere. Corn is the chief crop. It thrives because considerable rain is received in summer. No other portion of Europe has so large a proportion of its area in corn as northwestern Portugal and adjacent Galicia. The population is comparatively dense in this favored region. (4) A fourth geographic type is made up of the numerous mountain ranges. They are rugged and almost barren, but are important for their mineral wealth, for the precious though small supplies of water which

they furnish for irrigation and water-power, and as barriers to travel from place to place. The only ranges which are extensively forested are those along the north coast, and part of the Pyrenees. A few, such as the Sierra Nevada and the Pyrenees are partly snow-capped. Most of the ranges extend roughly east and west, and tend powerfully to break up the country into separate units. (5) Portugal, altho not radically different from adjacent parts of Spain, might also be considered as a separate region for it has more rainfall than most of Spain (thirty inches on the average), and has somewhat less marked seasonal contrasts of temperature (July 70°F., Jan. about 48°F., in

FIG. 2. A group of "cowboys" at a Spanish "round up." Notice the scanty vegetation and the scrawny cattle, also the blankets carried over the shoulders of the men.

contrast with July 76°F., and Jan. 40°F. at Madrid). Portugal also slopes mostly in one direction, towards the west, while Spain slopes partly west, partly south, partly east and partly north. The mountainous northern part of Portugal, however, resembles northwestern Spain more than it does the southern or lowland part of Portugal, which in turn resembles southern Spain. (6) The great interior portion of Spain or the "mesata" already mentioned, may be included here to make the list complete.

THE IMPORTANCE OF AGRICULTURE IN IBERIA

The twenty-five million people of Iberia (almost 100 per square mile) are mostly engaged in grazing and agriculture. Upon the plateau or mesata little water is available for irrigation and hence most of the crops are grown by dry-farming methods. Many of the

fields lay fallow every other year to permit a sufficient supply of moisture to accumulate to yield a small crop of wheat, barley, and chick peas, the following year. In respect to wheat, all of which is of the winter variety, Spain ranks fifth among the European nations in acreage (ten millions), and in total yield (125 million bushels), and fourth in yield per acre (12.8 bu.). Nevertheless much wheat is imported, chiefly from Russia to Barcelona (one-fifth as much as is grown). Barley is relatively important also, one-tenth of the cropped land being sown to it. Only Russia and the former Austria-Hungary have a larger proportion. However the yield per acre is small, fifteen bushels, in contrast with thirty-five bushels in Germany.

Many sheep are raised, about fifteen million. Indeed Spain has more sheep in proportion to the population than any other European country except Turkey, tho in proportion to area it ranks below Britain and Italy, as well as below the Balkan States, which have four times as many. Spain has long been famous for its Merino wool. The cold nights characteristic of the dry plateau and of the drier portion of the lowland as well, have encouraged the production of a heavy fleece on the sheep and the use of woollen clothing and blankets by the people. Blankets are often worn over the shoulders by the farmers going between the villages and the distant fields in the early morning and late evenings, as well as by the shepherds.

Next to sheep the donkey and mule are the most important domestic animals. Spain has nearly two million, or one to each ten people, or about nine per square mile. Turkey is the only nation which has more asses. Some fine strains are reared and exported to the United States and elsewhere for breeding purposes. The distribution of asses and mules is fairly uniform over the peninsula. The drier regions, where little else can be grown, still can raise donkeys.

There are few horses in Iberia. Cattle are relatively scarce also, except in the humid portion of Spain and in Portugal. Two-thirds of the area of Iberia has only about one million or about seven per square mile. The United Kingdom averages 100 per square mile and the Netherlands, Belgium, and Denmark each about 165 per square mile, or nearly twenty-five times as many as are found in most of Iberia. Swine likewise are mostly confined to Portugal and westernmost Spain, the more humid portion where corn is grown. About three-fourths of the peninsula has only about seven swine per square mile, while Germany has 160 and several neighboring countries each about 125.

Rye also is chiefly produced in northwestern Spain. Enough is grown there to give Spain fourth place among the nations of the world.

This same northwestern portion likewise produces most of Spain's few potatoes. The dry summers of most of Spain are highly unfavorable to potatoes, and doubtless are responsible for the fact that Spain produces fewer potatoes in proportion to area than any other part of Europe except the Balkan peninsula and the subpolar section of the continent. Apples are yet another crop largely confined to the northern and western slopes of the Cantabrian Mountains. The production

in this favored strip is rather heavy. Peaches, on the other hand, are most abundantly grown in the Mediterranean section though some are produced upon the mesata by irrigation. Sugar beets likewise are grown by irrigation and almost none are reported from the more humid section of Iberia. Spain formerly depended

FIG. 3. An imposing corner in Madrid, a city of considerable grandeur.

upon Cuba and other American possessions for sugar, but at the close of the Spanish-American War, began raising sugar beets. Enough sugar is obtained from beets to make importation unnecessary. Another crop which is grown by irrigation, and is lacking in the humid section is oats. In the United States large quantities of oats are grown in the corn belt. Hence it is interesting to note that in Iberia almost none are grown in the corn belt.

ESPECIALLY NOTABLE CROPS

The three crops for which Spain is especially noted are grapes, lives, and oranges. None of these are grown in the humid northern portion. The heaviest production of grapes is near Barcelona, of citrus fruits near Valencia, and of olives near Seville, with a lesser important area north of Barcelona. Iberia has approximately as many acres of vineyards as has France or Italy. In percent of cropped land planted to vines, Portugal and Spain have about eight per cent which is greater than any other nation but Italy, which has fourteen per cent. As the yield of grapes per acre is relatively low, 2,000 pounds per acre, compared with 5,000 pounds in France, Iberia produces somewhat less than half as much as France. Grapes are grown very extensively

in all but the coolest northern coastal section. Many grow without irrigation upon terraced hillsides.

FIG. 4. Hauling wood from the hill down to a village. Few wagons or carts are to be seen in Iberia, but the patient donkey carries all sorts of loads on his back.

In regard to olives, also, Spain with three and one-half million acres ranks next to Italy in acreage. However, in this case it has a higher yield, and ranks first in production. It produces about two billion pounds of olives a year and makes about fifty-three million gallons of olive oil. Olives are grown quite extensively in the southern half of Spain but only the two small areas near Seville and Barcelona, already mentioned, have notably heavy production. Many of the trees are several decades old and some are several centuries old and are very decrepid affairs. However, in recent years there has been much grafting of select varieties upon the ancient trunks. The small vigorous young shoots growing from short trunks three or more feet in diameter give many orchards a strange appearance. In respect to

citrus fruits, as with olives, Spain contains the area of most intense European production. Near Valencia something like 40,000 acres are planted to oranges, with a much smaller area in lemons.

Another crop requiring special mention is cork. Portugal produces about one-half of the world's supply, and Spain nearly one-fourth. The southwestern and the northeastern parts of Spain are the Spanish sections which yield most. The cork is grown without irrigation in most places as is the olive.

MINERAL WEALTH

Spain is fairly rich in mineral wealth, indeed it is sometimes said that few European nations are richer, altho this is an exaggeration.

Iron and coal are both well distributed but are little used at present. In recent years large quantities of high grade Bessemer ore (six to ten million tons a year, 1910-1917) have been exported to Britain from the north-western mountains, mostly from Bilbao. Only France, with an export of ten million tons in 1913, exported more iron ore than Spain. The Spanish production in 1913 was six per cent of the world's total. Recently a little iron has been smelted at Bilbao, an average of 400,000 tons for 1910-1916. Coal continues to be imported in large quantities from Britain altho several coal fields are now being slightly developed in Spain. In respect to reserves of coal Spain is placed in the fourth class by Grout,* while Italy, Scandinavia,

and most of Africa and South America are placed in the fifth or last class. The United States, Canada, and China make up Grout's first class, Britain and Germany his second class, while most of the European countries fall into the third class. Spain produces an average of four and one-half million tons per year in the period 1911-13. In respect to the minor minerals, in 1913 Spain lead the nations of the world in the production of mercury (thirty-eight per cent of the 1913 total output), ranked third in the output of lead (eleven per cent), fourth in copper and fifth in manganese (one per cent). Smaller quantities of silver and zinc are likewise produced.

MANUFACTURING

Manufacturing is little developed in Iberia, altho a high protective tariff is the rule. However, cotton is extensively manufactured at

* In the Mineral Resources of the World, edited by Spurr, 1921.

Barcelona and woollens to a lesser extent. The manufacture of iron and steel at Bilbao has already been mentioned. Bilbao likewise has ship-building yards. Much salt is procured by the evaporation of sea water near Cadiz. Corks and olive oil are manufactured at Seville, and some electrical machinery at Barcelona, the chief industrial city.

CITIES AND PROBLEMS OF IBERIA

The cities of Iberia having more than 100,000 people in 1918, according to official Spanish statistics are:

Madrid.....	650,000	Seville.....	165,000
Barcelona.....	620,000	Malaga.....	140,000
Lisbon.....	450,000	Murcia.....	133,000
Valencia.....	245,000	Cartigena.....	103,000
Oporto.....	195,000	Bilbao.....	100,000

Of these ten cities all are seaports except Madrid and Murcia. The latter is only a short distance from the sea, on a river which is navigable that far for small boats.

FIG. 6. Fighting bulls grazing in the more humid northwest part of Spain.

Of the twenty cities of Iberia having a population of 40,000 or more, only Madrid, Granada and Valladolid are at an altitude greater than about 500 feet. Madrid is at 2100 feet and the others at 2200 and 2300 respectively.

The problems of Iberia are how to make the most of its resources, how to gain sufficient income so that sorely needed internal improvements may be completed and especially how to make its people more progressive, more productive, more like the people of the countries bordering the North Sea.

SOME ASSETS AND HANDICAPS

Iberia's assets are: its favorable location for world trade, the ready access of most of the cities to the ocean; its great mineral wealth; its vast expanse of fertile soil (more than forty million acres are classed as tillable); its attractive scenery and its large population of sturdy people.

Iberia's handicaps include: the great uncertainty of rainfall in most of the area; the extreme dryness of the air during the hot days; the large amount of dust towards the close of the long rainless summer; the cold nights; the difficulty of railroad construction from the coast up onto the steep-sided plateau, or across the numerous mountain ranges of the plateau. Spain has only about 9,000 miles of railroads and ranks

FIG. 7. Terraced slopes above Campdevanol. These large buildings contain living apartments, not industrial plants. Terracing is quite general in Spain.

twenty-seventh among the nations in ratio between railroads and population and eighteenth in proportion to area. Belgium has ten times as many miles in proportion to area as has Spain. Another handicap is the conservatism of the people. A large majority do not read or write, do not know what is going on elsewhere and do not greatly care, and therefore do not take full advantage of inventions and discoveries made elsewhere. Most of the hauling, even of such bulky commodities as unthreshed grain, is done on the backs of donkeys. Roads are very scarce; the per capita mail of Spain is only one-fifth of that of France, and one-eighth that of the United Kingdom. Still another handicap is the vast estates, and consequent absentee landlordism. Furthermore

much of the best land is in the possession of the church and pays no taxes as a consequence. The common people are burdened with taxes.

SOME GREAT NEEDS

Some of Iberia's needs include: (1) Deep wells. Geologic conditions are favorable for them in many regions, and in many places flows might be obtained. Very few have been drilled to date. An abundance of deep wells would make possible the supplying of another great need, that of scattered farm houses instead of compact villages such as now prevail. An immense amount of time is wasted in going between the village home and the distant field, and the fields are not cared for as well as they would be if the people lived on the farm. Likewise in such villages as those in Spain, life is less wholesome than life on farms. Furthermore if a dependable supply of water were obtainable from wells it would not be so necessary as now to drive all the sheep to the mountains in summer. (2) Irrigation. More would be made possible if there were wells, but much more land could be irrigated from impounded waters. At present there is almost no storage of waters in reservoirs. There are many sites where small reservoirs could advantageously be built. (3) Dry farming. This has been practiced for centuries in Spain but the light tractor, so helpful in the extensive type of farming which is most successful in a climate as uncertain as that of Spain, has not been extensively introduced as yet. Tractors are becoming numerous in the more arid parts of western Italy. (4) Crop insurance. This would be very helpful in Spain, and if properly managed, it would give the poor peasants the assurance of at least the moderate return so necessary if people are to be encouraged to do good work. (5) Breaking up of the vast estates. Now many estates extend for miles and some for scores of miles. They should be broken up.

AN ANALYSIS OF STATE FINAL EXAMINATION QUESTIONS IN GEOGRAPHY

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The authors made an analysis of the state examination questions in geography as one possible means of evaluating the content of geography as taught in the elementary schools. The supposition being that the questions asked in a large number of states would reveal what state departments of education consider the most important phases of geography. A letter was sent to the departments of education in the various states asking for copies of their geography questions used dur-