

France for the construction of Spanish railways is very large, as will be seen from the foregoing remarks. The total capital of the three principal companies is £55,684,647, and we may safely put down the capital of the remaining lines constructed and in construction at £40,000,000 more. From this must be deducted the subventions paid by the Government (nearly £25,000,000), leaving in round numbers a sum of £70,000,000, almost all of which has been supplied by France.

Within the last few years the Spaniards have begun to construct railways with their own capital, but the Spanish public have not yet acquired sufficient confidence in their Government or themselves to allow them to invest their money freely in industrial enterprises.

Apart from the large centres of population, the old custom still continues of burying their gold under the hearthstone.

An approximately accurate estimate of the large amount of gold thus withdrawn from circulation would astonish those who do not know the country and judge its wealth by the outward aspect of its poverty-stricken villages.

Should any government ever be established of sufficient stability as to gain the confidence of the people and induce them to invest their money in industrial enterprises, no foreign capital will then be required either for her railways or other public works.

One thing strikes us in the reports of the companies given above, and that is the low rate of their working expenses. The average working expenses of the two great companies is only 40·60 per cent. of their gross receipts, whilst, even if we include the Andaluces Company, whose rate is much higher, as they have not got out of the period of construction, the average of the three companies is only 42·70 per cent.

The explanation of this is to be found in the system of management. The convenience of the public is sacrificed to the attainment of a low rate of working expenses.

The trains are run at slow speed; with the exception of the International train on the Northern Railway, the rate of speed does not exceed 25 miles per hour.

The closest economy is practised as regards the

dead load to be conveyed. The absolute minimum of passenger accommodation is provided in the trains, one carriage being made to do the duty of three in England; passengers are packed in like herrings in a tub, and only when there is absolutely no room to insert one more passenger will the officials put on another carriage. All the mail trains for the provinces leave Madrid at night, and to reach any of the principal towns such as Seville, Murcia, Valencia, Alicante, &c., from 12 to 18 hours must be spent in the train. The discomfort of such a night in a hot climate is more easy to imagine than describe, and only a Spaniard, who is the most long-suffering creature on the globe, would submit to it. To an Englishman accustomed to the rapid and comfortable travelling of his own railways the situation is intolerable, but, as a result, the proportion of dead to paying load is more nearly equal than in any other country. The same system prevails in the goods traffic—the convenience of the client is made subservient to the supposed interests of the company, and goods are kept back or sent forward entirely as it may suit the ideas of the traffic manager. As compared

with English lines the situations are entirely reversed: instead of regarding their passengers and clients as people to be humoured and fostered, the Spanish railway officials seem to consider that they confer a favour on the passengers by taking their money, and that any complaints as to the mode of fulfilment of their part of the contract are most unreasonable, and that the maker should be snubbed, as he invariably is.

It is probable that in England condescension to their clients is carried too far, having regard to the interests of the shareholders; but in Spain the companies certainly err from the other extreme.

A more liberal treatment of their clients, whilst it might somewhat increase their working expenses, would without doubt increase the gross receipts at a rate out of all proportion to the increase of working expenses.

The Spanish railways are certainly not producing anything like what they would produce under a more commercial system of management. True it is that the country is only now awaking to a sense of the immense value to it of the new system of locomotion, but even so it is probable

that the dividends might be increased quite two per cent. per annum, under a more judicious system of management; this is more particularly true of the southern lines, and more especially so of the Andaluz Company, whose system seems devised on purpose to crush the growth of traffic.

As the Spanish railways have been constructed almost entirely with French capital, it was only natural to expect that the system and the *employés* should be French. The system is in fact an exaggerated copy of the French one: red tape and routine reign supreme; the stations swarm with officials revelling in a luxuriance of gold bands and stripes, and full of that intolerable pomposity which is so distinctive of the French "Jack in office."

Absurd and foolish restrictions meet the intending client at every turn, and the only wonder is how the traffic developed at all in the face of such a system.

On some of the lines Spanish officials are gradually replacing the French ones, and the sooner this is done the better for the country and for the lines themselves.

The Spaniard is fully as intelligent, if not more so than the Frenchman: he is free from that absurd pomposity and intolerance that distinguishes the French official, and is much more courteous and obliging; his head is not so readily turned by the gold lace on his cap, and his innate gentlemanly feeling, a faculty so wanting in the other, renders him a much more pleasant person to deal with. There is a good future in store for Spanish railways if they are sensibly and properly managed, and care is taken to nurse and foster the traffic instead of suppressing or alienating it. As it is, some of the lines are quite blocked, their rolling stock being insufficient to carry the merchandise that is sent them; and if this is the case under their present management, there is no doubt that under an improved system a large development of traffic would arise.

CHAPTER IV.

ROADS, TELEGRAPHS, MINES, PORTS, &c.

THE construction of all the principal high roads in Spain is done at the cost of and under the superintendence of the Government. The corps of engineers, which is a department of the Ministry of Public Works, is framed on the model of that of France, the course of study prescribed to those desirous of entering the corps is very severe, and the examinations are very strict. On passing, the candidate receives his appointment as assistant engineer from the minister, and his progress from this date is regulated by seniority.

Each province is under the charge of an engineer-in-chief and a certain number of assistants, whilst special appointments are made for the [superintendence of the railways, harbours, and other public works of importance.

The principal occupation of the engineer-in-chief of the province, and of his assistants, is the construction and repairs of the high roads, and any

other works of minor importance that are being constructed with Government funds; but he has also under his charge the inspection of all works which, although executed by private persons at their own expense, are being constructed under concessions or authorisations from the Government.

All concessions are based on a project which must have been submitted to the Ministry of Public Works, and have received its approval, and the execution of the works is subject to the inspection of the engineer-in-chief of the province where the work lies, and, theoretically, no deviation is allowed to be made from the approved plans, unless with the consent of the Minister at Madrid.

The system is extremely paternal, and exceedingly troublesome and annoying; attempts have been made, more than once—notably after the Revolution of 1868—to grant more freedom to individual initiative, but the vested interests of the engineering body are too strong, and by degrees all the restrictions swept away in 1868 have been restored.

The railways are under the charge of special bodies of engineers appointed for this purpose, the

country being mapped out into a certain number of so-called divisions, each of which is under the charge of an engineer-in-chief, having under his orders a large staff of assistants.

The roads in each province are, as we have said, under the immediate charge of the engineer-in-chief of the province. Many parts of Spain are as yet in a very backward condition as regards highways, but much has been done during the last twenty years to remedy this, as the following table will show:—

	1862	1882.
	Kilometres.	
Roads constructed — 1st class	9,436	7,286
„ in construction „ „	1,507	174
„ constructed — 2nd „	1,941	7,761
„ in construction „ „	1,483	1,193
„ constructed — 3rd „	901	8,463
„ in construction „ „	722	3,504
Provincial roads constructed	—	4,367
„ in construction	—	938
Townland roads constructed	—	17,318
„ in construction	—	1,345

The three first class are those which are con-

structed and cared for by the State. The system of construction is the same in each class, the only difference being in the width of the road. They are all well built and carefully preserved, and no better roads are to be found in any part of Europe. The difference shown in the table as to the first-class roads constructed, from which it would appear that a greater length was constructed in 1862 than in 1882, arises from the fact that many of the roads entered as first-class roads in 1862 are entered in 1882 as in the next lowest class. The first-class roads are those which run from Madrid to the principal capitals of provinces. Resuming, we have—

	1862.	1882.
	Kilometres.	
State roads constructed	- 12,278	- 23,510
„ „ in construction	- 3,712	- 4,871
Total kilometres	- <u>15,990</u>	- <u>28,381</u>

Total of all classes completed in 1882:—

State high roads	- 23,510
Provincial roads	- 4,367
Townland roads	- 17,318
Total	- <u>45,195 kilometres.</u>

Total of all classes in construction in 1882 :—

State roads - - - 4,871

Provincial roads - - - 938

Townland - - - 1,345

7,154 kilometres.

Say 28,020 miles constructed and 4,435 miles in construction at that date.

If we turn now to mines we shall find the same steady progress being made. The following tables show the past and present state of mining enterprise :—

	1862.	1882.
Total number of mines in work	1,341	2,841
Area of the same in hectares (= $2\frac{1}{2}$ acres)	22,899	259,547
Number of workmen employed	31,800	76,130
Number of engines at work -	52	481
Horse power of ditto -	1,342	11,387

The amount of minerals raised from these mines has been—

	1862.	1882.
	Tons.	Tons.
Iron Ore - - -	213,192	4,726,293
Lead Ore - - -	277,845	341,818
Silver-Lead Ore - - -	—	22,425

	1862.	1882.
	Tons.	Tons.
Silver Ore - - - -	2,523	18,349
Gold Ore - - - -	—	360
Copper Ore - - - -	227,719	1,720,853
Argentiferous Copper - - - -	—	50
Tin - - - -	101	—
Zinc Ore - - - -	41,104	57,353
Quicksilver - - - -	16,115	27,037
Antimony - - - -	84 $\frac{3}{4}$	30
Cobalt - - - -	2 $\frac{3}{4}$	40
Manganese - - - -	6,459	5,668
Common Salt - - - -	—	112,582
Sulphate of Soda - - - -	5,021	13,525
Sulphate of Baryta - - - -	—	800
Phosphate of Lime - - - -	—	21,070
Alum - - - -	8,142	8,180
Sulphur - - - -	12,639	40,037
Coal - - - -	360,245	1,165,517
Lignite - - - -	28,696	30,738
Asphalte - - - -	1,116	493

Say 8,313,218 tons of minerals of all classes raised in 1882 against 1,201,054 tons raised in 1862.

The increase in the output of iron and copper is due in a large degree to foreign enterprise. Thus almost all the increase in iron ore is due to Belgium, French, German, and English companies, who have established themselves in Bilbao, built the railway for the conduction of the ore, and provided the ships to carry it away. A great impetus was given to these famous deposits by the introduction of Bessemer steel, the Bilbao ore being specially suited to the production of this material in consequence of its freedom from sulphur and phosphoric acid.

In the same manner the large increase in the production of copper ore is principally due to the English and French Companies established in Huelva, such as the Rio Tinto, Tharsis, and Buitron Companies. The wonderful deposits of ore possessed by the first-named Company constitute it, perhaps, one of the most productive mines of the world, as the price paid for the mine to the Government, whose property it was, is probably the highest ever paid for any mine—viz., £3,800,000. The production of this mine is only limited by the demand in the market for the ore. The develop-

ment of the coal mining owes its principal rise to the various railway companies, who work the mines for their own benefit. English coal still competes with native coal in the principal seaports.

With the exception of iron and copper, foreign enterprise cannot be said to have assisted much in the development of Spanish mining enterprise, although the lead mines in the Linares district owe, no doubt, a good deal to English enterprise.

The rich silver mines of the Sierra Almagrera have been, and are, almost completely in native hands, and very large fortunes have been gained in them.

There is still an immense field open in Spain for mining enterprises, many and rich deposits are still unworked, and must continue to be so until easy modes of transport are provided for the products.

New lines are constantly being constructed to some of these districts, such as the line from Zafra to Huelva, which will open up a very rich mineral district at present unworkable, that from Aguilas to Lorca and the Valley of the Almanzora, which will provide an exit for the sulphur of Lorca, and the iron, marble, steatite, cobalt, and other

minerals of the Sierras de Aguilas, Almagrera, and Filabres, not to mention many other lines now in course of construction or projected.

Now as regards the smelting or reducing works. The following table gives their relative state in the two periods before referred to :—

	1862.	1882.
Smelting works in operation - -	353	168
Number of operatives employed -	10,875	14,136
Engines employed (steam and water)	534	344
Horse power of ditto - - -	2,673	9,403

What is chiefly notable in this table is the increase in the number of workmen and in the amount of horse power employed coincident with a diminution in the number of works and engines.

This seems to point to a great improvement in the class of works.

The products obtained from these works were as follows :—

	1862.	1882.
	Tons.	Tons.
Cast iron - - -	48,106	120,064
Wrought iron - -	41,068	65,222
Steel - - -	162	554

	1862.	1882.
	Tons.	Tons.
Lead - - -	62,767	88,339
Silver - - -	13 $\frac{3}{4}$	46 $\frac{9}{10}$
Copper - - -	2,889	22,849
Tin - - -	5	—
Zinc - - -	1,883	7,310
Quicksilver - - -	769	1,705
Soda - - -	2,805	900
Alum - - -	225	327
Sulphur - - -	2,444	7,207
Asphalte - - -	224	300
Antimony - - -	—	8
Hydraulic cement - - -	—	26,941

Since the year 1882 some considerable iron-works have been established at Bilbao by Spanish firms for the manufacture of steel rails, and some of the railways now in construction are obtaining their rails from this source. Considering the high duty payable on rails entering Spain—amounting to £3. 4s. per ton for English make—there should be a good field for such works. There are splendid deposits of iron ore in various parts of Spain, and there seems no reason why the country

should not make itself independent of foreign manufactured iron.

It seems absurd that England should carry away from Spain annually some four million tons of ore, and be able to return the manufactured product at a price that can, after payment of a duty of 50 per cent., leave them a profit on its production.

If peace prevails in Spain, the next few years will probably show a large development of manufactured products. Signs are not wanting of such an increase.

A Catalan company has now just completed at a considerable cost some important sulphur reducing works at the rich sulphur mines near Lorca, and expects confidently to produce in a short time thirty thousand tons of sulphur per year, and in various parts of the country similar classes of works are being commenced with native capital.

Let us now see what has been done in the way of ports and harbours.

Spain is admirably situated for a manufacturing country; she has a fine seaboard to the north, with several magnificent natural harbours on this portion of the Atlantic. To the south she has

Huelva, Seville, and Cadiz, also on the Atlantic ; whilst on the Mediterranean she has the ports of Malaga, Calahonda, Almeria, Aguilas, Cartagena, Alicante, Valencia, and Barcelona, not to mention other smaller places.

Some of these ports are fine natural harbours, requiring very little assistance from the hand of man ; others are more dependent on artificial means. Very little attention was paid to the improvement of harbours until within the last twenty years, but during that time a good deal of money has been judiciously spent on these works.

The little land-locked harbour of Pasages, near San Sebastian, on the Bay of Biscay, is rapidly being converted into an active shipping port. Quay-walls are being built, warehouses erected, and proper appliances are being provided. Farther along the coast westwards, the port of Bilbao, which is by nature a most unpromising one, has (thanks to the great demand that has sprung up for iron ore) been much improved. A harbour board has been created, extensive works have been undertaken, and as a first result the water on the bar has been deepened by six feet, and the mean

tonnage of the ships using the port has been increased from 772 tons in 1881 to 1,048 tons in 1883. The shipments of ore from this port have increased from 425,000 tons in 1872 to 3,737,176 tons in 1882. Of this amount 2,450,831 tons were shipped to England and Scotland, in return for which we sent them 102,543 tons of coal and coke.

Still following westwards, the well-known port of Santander remains in much the same state in which it was twenty years ago, but at Gijon a good deal of money has been spent in the endeavour to convert this unpromising place into the port for the Asturias. The fine natural ports of Rivadeo, Vivero, Carril, or Arosa, Pontevedra, and Vigo are still, more or less, in the position nature left them, as is also Coruña. It is probable that the completion of the railway lines just lately opened to Gijon, Coruña, and Vigo will lead to a large development of traffic from these places, and a consequent improvement of the conditions of their ports.

Going along to the south coast, the first Spanish port we come to after passing Lisbon is that of

Huelva. The increase of this place during the last twenty years has been very great, principally owing to the establishment of the Tharsis, Buitron, and Rio Tinto Mining Companies. These three Companies have built railways from the port up to their mines, and the Tharsis and Rio Tinto have built also splendid iron piers, at which vessels of 2,000 tons can load at all times. In 1876 the railway from Seville to Huelva was constructed by an English firm, and the same firm are now constructing the line from Huelva to Zafra, traversing one of the richest mining districts of Spain, and effecting a junction with the line from Estremadura to Madrid.

The town itself has increased from 7,000 to 17,000 inhabitants; a magnificent hotel—too magnificent perhaps for the place—has been built; waterworks are now being constructed, and the place promises to become in a few years one of the most thriving towns of the South of Spain.

The neighbouring port of Seville has also been much improved; a fine line of quays has been constructed; the river has been deepened and straightened, so that steamers of 1,200 tons now

come up and unload at the city, and the amount of tonnage using the port is increasing at a rapid rate.

Cadiz is waning — its glories have departed ; Seville and Huelva are gradually destroying it.

The port of Malaga, though not of great extent, is an important one on account of the districts it serves. A scheme was prepared many years ago for cleansing and improving it, and the works were let by public auction to a contractor ; but for reasons not necessary to explain here the work has dragged on and has never been finished, law-suits have supervened, and, for the present, matters appear to be at a deadlock.

The small but excellent natural port of Calahonda, near Motril, destined some day or other to be the port of outlet for Granada and its rich and populous valley, is still in the state that nature left it. A project has been prepared for improving it and for the construction of piers, &c., which has received the approbation of Government, but as yet no works have been commenced.

A concession has also been granted by the Government for the construction of a railway from the city of Granada to this port.

Following the coast eastwards we come to Almeria, capital of the province of the same name. This rather exposed bay has been converted into a port by the construction of a breakwater and quays. The shipping from this port is limited to the products derived from the immediate neighbourhood.

Almeria is one of the very few capital cities in Spain that is not yet connected on to the railway system, and loud and frequent have been the complaints of her sons at this neglect of the powers that be.

In this rich and populous province, famous for its silver mines, and favoured in its lower or coast region with a climate that permits the growth of the most varied crops, the whistle of the locomotive has not yet been heard. If, however, they are late in the day in receiving the benefits of railways, they are likely soon to be well provided. The new line now in course of construction from Murcia to Granada, which will be the link between the railway systems of Andalusia and the east coast, crosses for a considerable distance through the northern parts of the province and through the ancient cities of Baza and Guadix, so famous in

the Moorish and Christian wars. Another line from Almeria to Linares crossing this latter one at Guadix will place Almeria in direct communication with Madrid ; whilst another line from Almeria along the coast to Lorca and Calasparra, on the Madrid, Zaragoza, and Alicante line, will place her in direct communication with Catalonia and all the eastern coast of Spain. All these three lines have been granted a subvention by way of free gift of an amount of money equal to 25 per cent. of their estimated cost. On their completion there is no doubt that the port of Almeria will develop rapidly.

Leaving Almeria, the excellent little port of Aguilas comes next in order. Within the last few years a breakwater has been constructed across the mouth of the bay, and some excellent quay-walls constructed. These works have been executed by a private company, and are now nearly completed. The construction of the railway from Aguilas to Lorca, now in hand, will connect this port with the new railway from Murcia to Granada, and thus with the entire network of Spanish lines ; and there is little doubt that the enterprising con-

structors of the port will then reap a rich harvest from their investment.

The well-known port and arsenal of Carthagena has received, as was natural, a good deal of attention from Government, a magnificent breakwater and fine quay-walls have been constructed, and are now in use. The fact of this place being a Government arsenal rather militates against its success as a mercantile port, and will probably continue to do so.

It would take up too much time to describe the works that have been executed at the various ports along the east coast, such as Alicante, Valencia, Viñaroz, Tarragona, Barcelona, &c. Very considerable sums of money have been spent on these works, and with very commendable success. The latter place has been really transformed within the last fifteen years. Magnificent quay-walls have been built, provided with all the latest appliances, in the shape of hydraulic cranes, sheds, &c., &c., the old city walls have been levelled, and their place supplied by wide esplanades, and the whole presents an aspect of busy and prosperous industry most cheering to see. The total amount of money

spent upon these works up to June 30th of this year has been in round numbers £850,000, of which £160,000 has been raised by bonds issued and subscribed for in Barcelona, the remainder has been raised from the dues levied on vessels entering the port.

The annual income of the Port Commission from this head is now in round numbers £50,000.

It will be seen from the foregoing that a good deal of attention has been bestowed on all the ports of the southern and eastern coasts of Spain, whilst all the magnificent series of harbours, from Gijon round the coasts of Asturias and Galicia, have been neglected. It is, however, not difficult to understand why this has been so. The whole of the north-western portion of Spain has, until within the last two years, been entirely cut off from the rest of Spain for lack of railway communication. If we except the short little piece of line from Santiago to Carril, none of these ports had any railway communication with the interior of the country; many of them had not even roads. The development of trade under these circumstances was impossible.

The opening of the North-Western Company's lines two years ago has now placed Gijon, Coruña, and Vigo in direct communication by rail with all the interior of the country. Other lines, subsidiary to these, are now in course of study or construction, and we may safely predict that before another ten years have elapsed the throbs of active mercantile life will be felt in these so long neglected corners of Spain, and the clink of the hammer will tell of the construction of the needful adjuncts of a prosperous trade.

Few countries, indeed, are provided with such splendid natural harbours as are to be found at Vigo, Pontevedra, Carril, or, as the harbour is called in Spain, the Rio de Arosa, Ferrol, and Coruña, Vivero, Rivadeo, &c. All that is required is the construction of piers or quay-walls, and the provision of the necessary cranes, rails, stores, &c.

Before finishing this chapter we must say one word as to the state of the telegraphs.

The construction of these began shortly before 1862; in that year there were five miles in operation. There is now scarcely any town or

village of any importance in Spain that does not possess its telegraph office, and in all the more important towns the office is kept open all night. The charge for telegraphing anywhere within the country is one peseta, equal to one franc, for twenty words, address included, every additional word is charged ten centimes of a peseta. Spaniards are very fond of using the telegraph. The telegraphs were erected at the cost of and are under the control of the Government. All railway lines, which are considered of general public service, and as such receive a subvention from Government, have to provide two wires for Government use.



B.C. Monumentos de Almería Generalife
CONSEJERIA DE CULTURA

CHAPTER V.

CLIMATE, AGRICULTURE, AND IRRIGATION.

THE state of agriculture of any country is so much dependent on its climate, that before saying anything on that subject it will be advisable to give some slight information as to the latter.

All the interior portion of Spain may be said to be a vast table-land, elevated to a mean height, more or less, of some 2,000 feet above the sea.

From this table-land rise the various chains of mountains that intersect the country in every direction, and which, though apparently of no great height as seen from the plain from which they arise, are a very considerable height above sea-level.

This configuration of the country causes the climate of the greater portion of Spain to be excessively dry.

The moisture brought up by the westerly winds from the Atlantic is detained by the high range of

mountains which form the outer edge of the great plateau of Spain, and, being there condensed, falls in abundant showers.

The air being thus deprived of its moisture before it reaches the great central portion, it follows that it is of excessive dryness. Thus, while the provinces of Alava, Guipuzcoa, Vizcaya, Galicia, and Asturias, lying on the Bay of Biscay and the Atlantic, have an annual rainfall varying from 80 inches to 40, the great central plains of Castile have only an annual fall varying from 12 to 20 inches. Nor is the rainfall in the provinces bordering on the Mediterranean coast much higher. In Alicante it is only about 13 or 14 inches per year, in Valencia about 16, in Seville about 17, whilst in the province of Murcia three or four years have been known to pass without the fall of a single drop of rain.

The heat during the summer months over all this portion of Spain is very great, and, as a consequence, the number of crops that can be grown without artificial irrigation is very limited. Wheat, barley, oats, and rye, are the staple crops, the olive, and a peculiar bean called the "garbanzo,"

being the only others capable of standing the excessive dryness of the air.

Pasture there is none. It is probable that in the early times of the Romans and Moors the climate was a good deal moister than it now is, but the constant and steady denudation of the forests—an evil that goes on unchecked to the present day—has led to a constant aggravation of the evil. Thus Madrid, which was originally a hunting-box of the kings, and surrounded by forests of pines celebrated for their bears and boars, is now situated in an immense barren plain, the arms of the city, a bear climbing up a green tree, alone bearing record to its former peculiarities.

The same insensate folly has been at work for ages all over the country, and the present inhabitants are now feeling the effects of the sad want of prevision of their forefathers.

On these large tracts of land, much of them composed of fine alluvial soil, the farmer considers himself fortunate if he succeeds in raising a scanty crop of wheat every two years, but more frequently one crop in every three years is nearer the mark. From the lack of pasture, and consequent absence

of cattle, no manure is obtainable; but even if it were, the want of water prevents its application. Under the fierce sun that pours down its rays on these plains, unchecked by any cloud, manure does more harm than good, and in place thereof the farmer has to leave his land fallow for at least one year after taking off a crop. As a rule he divides his farm into two "hojas" (leaves), as he calls them, and cultivates them alternately; the only manure that the ground receives being that derived from the straw, of which a length unusual in England is left upon the ground. In the great plains of Castile the last rain that falls is usually in May or June, and it is on this rain that the farmer depends for his crop. If this fails him, his grain does not ear, and he gets no crop at all, or so scanty a one as to be scarcely worth the reaping.

From June till the middle of September or beginning of October no rain falls.

As might be expected under such circumstances, the system of agriculture is the most primitive. The plough used is that familiar to us in old drawings; it is merely a pointed stick shod with iron, the office of the share being performed by another

stick projecting at right angles to the plough. The land is thus scratched to a depth of a few inches, and into the furrows so prepared the seed is cast, in touching faith that the Virgin or some of the numerous saints will provide the necessary moisture for its development.

If from these barren, arid plains we now pass into some of the old irrigated districts such as those of Valencia, Murcia, or Granada, the change is too wonderful for description. The marvellous fertility of these districts has been the theme of all travellers through them. Here the land never rests; crop succeeds crop with amazing rapidity; every inch is cultivated. Groves of oranges, lemons, and pomegranates, the branches bending under the weight of their golden crop, diversify and beautify the landscape; the edges of the life-giving watercourses are planted with mulberry trees, the food for the silkworms, which are the care of the women of the household; little white-washed thatched cottages dot the landscape in every direction; and the whole bears an aspect of well-being and contentment at strange variance with the sombre-looking country we have so

recently left. In these irrigated districts a plot of five acres supports a whole family in moderate comfort, for not even in this favoured land would Mr. Chamberlain's famous "three acres and a cow" be sufficient for this purpose.

Almost every kind of crop is grown, from the staple wheat down to the cactus, which serves for the production of the cochineal insect; two, and even three, crops a year are taken in constant and never-ceasing succession. Lucerne gives from ten to twelve cuttings in one year, a period of fifteen days being sufficient to allow of the growth of a new crop. The land is richly manured, a large amount of guano being sold in the Mediterranean ports for this purpose.

It seems strange that with such wonderful examples of the effect of water before their eyes, no Spanish minister has ever thoroughly taken up the subject of irrigation.

Whilst we have to record the immense progress made by Spain in the development of her railway system during the last twenty years, the history of irrigation is a blank. Whilst the nation has paid away to private companies a sum close upon

twenty-five millions sterling as a free gift for the fostering of Railways, not one penny has been granted for irrigation, and yet the want of water is the crying evil under which agriculture in Spain labours, and without it no great development can be given to it. It is true that some fifteen years ago a law was passed having for its object the fostering of irrigation canals, but its provisions were practically useless, and so useless that no one has ever attempted to avail themselves of them.

Irrigation schemes, whilst increasing enormously the revenue of the country, are notoriously fatal to the pecuniary interests of the constructors, and the causes for this are not far to seek.

Dry land in Spain can produce only, as we have said, one crop in every two or three years; the same land when irrigated and manured will produce at least two crops per year. To convert, therefore, an unirrigated valley into irrigable land it is necessary to quintuple the population; it is necessary to have manure, and capital to buy it. This means an entire revolution in the customs and habits of the people, and in a nation so conservative as the Spaniards the process of develop-

ment must be very slow; and if the constructors of the canal are to be paid by the sale of the water, it is evident that they can never expect any return for their capital in any reasonable period. But although the constructors of the canal may not gain, the nation—gains indirectly in the increased production gained from the land, and directly from the taxes levied on it. This has been abundantly shown in India. The fostering of irrigation therefore is a thing in which the Government has a direct interest, and it would appear to be a case in which they might and ought to intervene, either by guaranteeing an interest on the capital invested or by granting such a subvention as would tempt people to invest their money in them by showing them that they might fairly expect some remuneration for the then limited capital they would have to employ.

Without some such stimulus it is hopeless to expect private enterprise to embark in such undertakings.

To show the urgent need of irrigation, we present a table in which is shown, graphically, the comparative annual rainfall in Italy, Algeria, and

TABLE
OF MEAN AND MAXIMUM TEMPERATURE,
AND MEAN RAINFALL IN ITALY AND SPAIN.
MARCH TO SEPTEMBER.

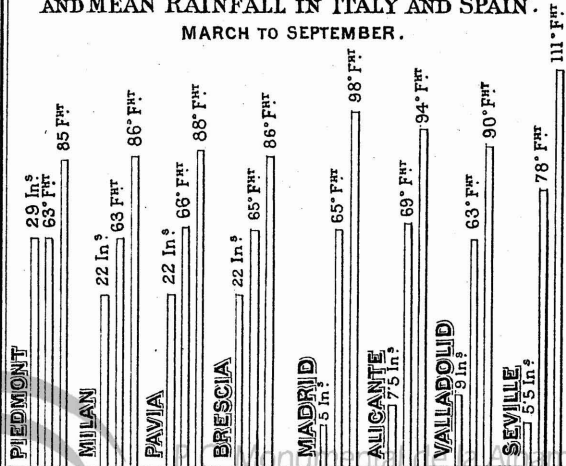
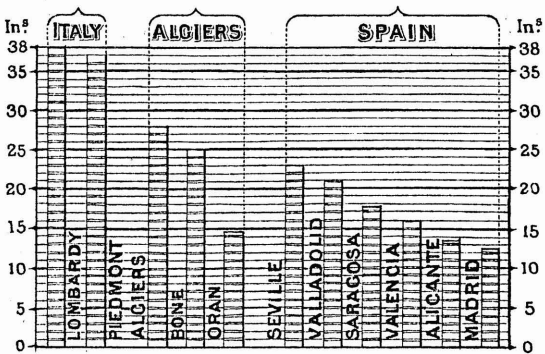


TABLE
OF
MEAN ANNUAL RAINFALL
IN ITALY, ALGERIA, AND SPAIN.



Spain, and the rainfall and temperature in Spain during the irrigating months, from March to September, in comparison with that in the well-known irrigated districts of Piedmont and Lombardy. If more were needed, the increased value given to the ground by the application of water will supply it. In the irrigated districts of Valencia and Murcia, irrigable land sells for prices varying from £150 to £400 per acre, according to its situation or quality; dry ground in the same neighbourhood sells for prices varying from £7 to £20, this latter being quite an outside figure. Naturally, irrigable land in the climate of the shores of the Mediterranean is worth more than in the colder plains of Castile, but the proportionate value of dry and irrigable ground is never less than 1 to 10, or 12, that is to say, that irrigable land is always worth from 10 to 12 times the value of dry ground.

When we recollect that the principal item of revenue of the Government is derived from the land tax, and that this is calculated on the value of the land, we see what a direct interest the Government has in fostering irrigation, quite apart

from that which it ought to have in increasing the population of the country and developing its resources.

Most, indeed almost all of the irrigation schemes at present in operation are of very ancient date, the most important of them dating from the time of the Moors, and in some of them, notably in Valencia and Murcia, descendants of the old Moors, clad in the same picturesque dress which their ancestors wore, still cultivate the land which their forefathers tilled eight hundred years ago.

In most cases the water is now attached to the soil; in some, as for instance in Lorca, it is separated. In this place the water is in the hands of a large number of proprietors, who may or may not be holders of land, and it is sold by public auction every morning during the irrigating season under the supervision of an inspector, named by the Government, who is not allowed to be a native of the place or connected by marriage with it; each peasant buys the amount he requires for the day, and pays for it in advance, and the proceeds are divided amongst the various proprietors of the water.

The average value of a cubic foot of water per second per annum, in this place, is £2,300: The same amount in Piedmont or Lombardy is worth from £15 to £17.

The following table gives the names of some of the principal irrigation systems and their areas:—

	Acres.
Castellon from the river Mijares - -	22,373
Valencia „ „ „ Turia - -	25,935
Do. „ „ „ Jucar - -	30,875
Gandia „ Alcoy and Bernisa - -	7,145
Murcia „ Segura - -	25,915
Orehuela „ „ - -	50,318
Elche and Cieza from Segura - - -	10,370
Granada from Darro and Genil - - -	46,930
Lorca „ Guadalentin - - -	27,170
Elche „ Vinalopo - - -	29,640
Almansa „ a dam - - -	3,458
Alicante „ „ - - -	9,139
Nijar „ „ - - (about)	9,000
Catalonia, river bank of Llobregat - -	6,651
Imperial Canal of Aragon (Ebro) - -	50,066
Royal Canal of Tausté - - -	19,284
English acres	374,269

In addition to these there are numberless other irrigation areas of greater or less extent, such as those of Baza, from the river of the same name, Guadix from the river Fardes, Leon from the Esla, Malaga, besides those from small streams and the small areas irrigated from wells.

The total area of irrigated ground in Spain, according to the Government returns, is 4,439 square miles; and as the total area of Spain, according to the same returns, is 190,497 square miles, of which 46 per cent. is returned as being under cultivation, it follows that of the cultivated ground $4\frac{1}{3}$ per cent. alone is irrigated.

To show the proportionate population that can be carried by irrigated ground, we may say that, whilst the rate of population in Spain is only 81 to the square mile, the irrigated portion of Murcia carries 1,681 inhabitants per square mile, and Orihuela 767. Were the portion of Spain now under cultivation populated at the rate of the irrigated portion of Orihuela, the total would be 78,576,082, instead of being, as it is, only $16\frac{1}{2}$ millions.

It is of course impossible that the whole culti-

vated land of Spain should ever be irrigated; but there are splendid valleys down which great rivers roll their waters uselessly to the sea, every cubic foot per second of which is worth at the least £100 or £150 per annum, if trained over the thirsty land which borders their banks. Such is the splendid valley of the Guadalquivir, from Palma to Seville, and onwards to Utrera. Such is the rich valley of the Guadiana above Badajoz, not to mention a host of others of minor importance.

For many of these concessions have been long granted, but without aid from Government it is impossible for any one to find the money necessary to construct them. If one-sixth of the sum that has been granted as subventions to railways had been spent in assisting these most necessary enterprises, most of these more important canals would now be pouring their fertilising streams over these arid plains.

When we think of the millions of money which have thus been allowed to pour uselessly to the sea, and consider the amount of well-being and comfort that might have been bestowed on thousands by the proper utilisation of these gifts of

Providence, we can only be amazed at the apathy of the people and the culpable neglect of their rulers that have allowed such things to be.

We have not been able to obtain any reliable statistics as regards the present state of agriculture in Spain. The returns given in the earlier years do not seem to have been continued at later dates.

In 1859, according to the then published returns, the number of cattle of all kinds, including amongst them horses and mules, was 26,014,338; in 1865, according to the same returns, it was 36,622,313; showing an increase of 10,607,975 animals, or say 40.78 per cent. in the six years. What are the returns for 1882 we have been unable to find out, though doubtless they are obtainable in some form. Apart from the old, well-known irrigated districts of Valencia, Murcia, and Granada, where the land is cultivated to the greatest extent possible, agriculture in Spain is at a very low ebb, and may be said to have remained in a stagnate condition for the last three hundred years. The great plains of Castile and Estremadura produce wheat of an admirable quality, but of a very limited quantity

in relation to the acreage under cultivation; in fact, Spain scarcely produces wheat sufficient for her own consumption, and the slightest failure of crops necessitates a recourse to outside production.

Thus we have seen that in 1882 Spain had to import foreign wheat to the value of £2,762,069, and at the present moment wheat is being imported into Barcelona from Bombay.

The value of the wheat imported is small if compared with that imported by England, but we should bear in mind the much smaller population of Spain as compared with that of England, and the difference of climate. Spain might, and could, easily grow all the grain she requires for her own consumption, and the loss of two or three millions sterling paid away in one year to other countries for her staple article of food is a very serious loss to her.

Within the last ten or fifteen years the cultivation of the sugar cane has developed very considerably on the southern coast, notably about Malaga and in the shore district eastwards—at Velez, Malaga, Motril, and other places. The initiation of this class of cultivation was principally due to

the late General Concha, better known by his title of Marques del Duero. This patriotic gentleman spent a large portion of his private fortune in the introduction of cane cultivation, with the result usual in such cases—his fine estates near Malaga passed into other hands when he should have been reaping the rewards of his patriotic endeavours. The cane farms about Malaga were for many years productive enterprises, but during the last few years they have been under a cloud. The cheap bounty-favoured beet sugar of Germany, although paying a considerable import duty, has been able to compete favourably with the home-grown sugar, and the Spanish cane growers are now clamouring for an increased import duty to protect the home manufactures.

The principal agricultural products exported from Spain are oranges, raisins, grapes, and fresh vegetables. This latter production has only sprung up of late years, but is already becoming a source of considerable revenue to the growers. From the irrigated districts of Denia and Gandia, lying south of Valencia, large quantities of early vegetables, such as potatoes, asparagus, peas, lettuce,

&c., are sent by express trains to Paris to supply the market there, very remunerative prices being obtained for these productions of that favoured zone. The orange crop, a most important one for the South of Spain, is already beginning to suffer from the increased development given to the growth of oranges in Florida. The United States market will, not improbably, be soon entirely lost to Spain, and she will be fortunate if she does not soon find the Florida oranges competing with her in the European markets.

Resuming, we may say that, whilst Spain has shown a most notable advance in almost all the other elements of public wealth, her agricultural position remains, more or less, what it has always been. The march of her agriculture has not kept pace with the other elements of her national life.

We have seen that her Government has made no attempt to develop or increase the irrigation of the land, a point of primary importance for Spain, and one with which private enterprise is unable to cope.

But other causes are at work to cause the stagnation visible in Spanish agriculture.

Apart from Andalucia, where large farms still exist cultivated in the old patriarchal style, the land in Spain is held in small farms by men without the means or the knowledge necessary to successful cultivation. The introduction of the French system of inheritance, whereby the State apportions the divisions of the property amongst the children, without reference to the wishes of the father, has led to the breaking up of the large estates, and not only of the large ones but of the smaller ones also. In the course of one or two generations the result has been that a farm that was sufficient to support the grandfather in comparative ease has been divided up in small fragments, none of which are sufficient to maintain the grandchild who has inherited it. In some parts of the country a field of eight or ten acres may be seen divided up into ten or twelve ribbons each a few furrows wide. Proper or successful farming is, in such cases, quite impossible; the unhappy owner has to go away to look for work on the railways or any other public work that may chance to be going on; but his land clings to him like a curse. As a workman he is unsatisfactory,

for probably when he is most wanted he disappears for a week or two to plough his ground or reap his crop. He is, as the old English proverb says, "Neither fish, flesh, fowl, nor good red herring," and neither he nor his land are really of any use to their country; the possession of his few acres prevents the man from dedicating himself heart and soul to any suitable occupation, and chains him to the neighbourhood of his property, whilst the land, under this perfunctory system of cultivation, gradually sinks from bad to worse, until it becomes difficult for an unpractised eye to discriminate the crop from the weeds. The wretched and miserable appearance of much of the cultivated land in the unirrigated districts of Spain, which the traveller notes in his journey through the country, will be found on examination to be due principally to the causes enumerated above.

It is difficult to point out any practical cure for the present languid condition of Spanish agriculture. The construction of irrigation canals in the principal valleys watered by the greater rivers would certainly increase considerably the produc-

tion of the land, but such schemes would require very careful nursing for their development, and would be slow in their results. An improvement in the system of cultivation of dry lands is a question of individual enterprise, for here the Government cannot interfere with any advantage, and under the existing system of inheritance it is difficult to see how such individual enterprise can be expected. On the whole, we should be inclined to say that the future of Spain lies not in her agriculture, but in the development of the arts and manufactures for which her soil and people are admirably suited, and in which she would not be so much hampered by legislative enactments as she is in her agriculture.

CHAPTER VI.

RÉSUMÉ.

FROM the foregoing brief and hurried survey of what Spain now is and how she has advanced during the last twenty years, it will be seen that a very real and palpable progress has been made, a progress all the more remarkable if we consider the "bridal dawn of thunder peals" which has heralded the "marriage of thought and fact" in her case. Her financial progress has not been less remarkable than her industrial and commercial advance—her revenue which in 1854 was £18,181,398 had increased in 1864 to £26,173,073 and in 1882 to £31,239,809. In this year (1881-2) she first indulged in the (to her) unheard-of luxury of a surplus, and, though it was small, yet let us hope it was a forerunner of better things hereafter. The coupons of her debt are now paid regularly every quarter, and there seems to be no reason why she should not now enjoy an era of peace and prosperity undisturbed by those political changes which are so fatal to her well-being.

If we were to take the market value of her debt as an index of what is expected of her, we should not certainly feel great confidence in her future.

At their present price they give an interest of nearly 7 per cent., much too high a figure for a settled and steadily progressive country; but in reality Spanish stock seems to be much lower than the circumstances would warrant, and that it is so must probably be set down to her past history.

The Spaniards have a proverb that says, "A scalded cat flies even from cold water;" and the creditors of Spain have been too much scalded in olden times to forget in a few years all that they have passed through.

We must add to this that there are numbers of people interested in keeping up a state of excitement and uncertainty as regards her future. In the capital of the neighbouring country there exists a regular ring of speculators who fabricate information for the express purpose of raising and lowering the funds accordingly as it may suit their interests, nay, who—it is currently said—do not hesitate at finding money to enable the self-styled patriots to start some of those hopeless enterprises

which we have seen of late years, regardless of the fact that the unhappy dupes of their intrigues often pay the penalty with their lives.

In England, as has been before said, any story about the country is readily believed if only it is sufficiently exciting, the words "Spain" and "revolution" being in the minds of most Englishmen synonymous terms; and it would really appear sometimes as if the correspondents of the daily papers thought it was their duty not to defraud the expectations of their countrymen and to furnish some kind of exciting news at all hazards. Thus a fictitious excitement is always kept up, and the steady investing class are prevented from purchasing.

A better index of the state of the country may be found by observing the value of stocks which are not held abroad, and are not, consequently, subject to the oscillations which it is the interest of speculators to produce in the ordinary funds of the country. Such an index may be found, for instance, in the shares of the Bank of Spain. This institution is so directly connected with the Government that any radical change must affect it most closely.

The shares of the Bank are all strongly held by the most influential people in Madrid—men who have access to all the best sources of information, and men who could foresee, if any men could, any troubles that were preparing in the future.

These stocks will not be found to oscillate in the same manner as the ordinary funds; they remain remarkably firm beneath all the reports of so-called risings and revolutions, and have been and are steadily on the rise. This would seem to indicate clearly that the holders of this stock are not apprehensive for the future of Spain, but that on the contrary they have a firm belief in her steadiness and progress.

Another sure index as to the more settled state of the country may be found in the value of money in Madrid. Not very many years ago it was possible to obtain interest at the rate of 10 or 12 per cent. on money lent on mortgage of house property, which is there looked upon as the safest kind of mortgage. It is now not possible to get more than 6 per cent. for money so lent, and even this is coming to be considered a high rate.

This is a pretty sure sign that money is accu-

mulating and is seeking employment, in place of being transmitted to England for investment, as was the case during the troublous times that succeeded to 1868.

As a matter of fact the Spaniards are now beginning to invest in industrial enterprises in their own country. They are building railways with their own capital, erecting foundries and ironworks, constructing harbours, waterworks, and factories. The number of native holders of their own funds is steadily on the increase, and for some time there has been a steady flow of the bonds of the exterior debt to Spain to supply the investors in that country.

Every dollar that is so invested is a guarantee against revolutions and "pronunciamientos," as the only effect such things can have is to depreciate the fortune of the holders of stock. The number of those who have something to lose is on the increase, and they are less and less disposed to allow the idle, impecunious members of society to trouble the waters for the mere sake of fishing up something for their own benefit.

This will explain the reason why the last at-

tempts at republican risings have been so coldly received by the country, and have fizzled out before they had even well begun. We cannot indeed say that the era of revolutions and "pronunciamientos" is over. This would indeed be two hopeful a prophecy. Oscillations we must expect before the country settles into a state of stable equilibrium; the old Adam cannot be at once eliminated from the body politic, and adventurers will still arise who will endeavour to carry on the old game. But the tendency of the country is towards rest and peace, a tendency which every mile of railway that is opened, every industrial enterprise that is started, tends to accentuate and strengthen.

The Spain of 1885 does not want revolution; it is beginning to find out that no good end is served by such proceedings; that, in fact, they affect too dangerously the money interests of the country; and the industrial classes are beginning to discover that in such cases it is they themselves who in the long run have to pay the piper, and that it is at their expense the political notabilities of the age climb up to their positions.

The appreciation of this fact is extending rapidly amongst all classes in Spain, and we may probably

look forward with confidence to a continuous and rapid increase in the commercial development of the country, and to a corresponding diminution in the frequency of its political changes.

It is extremely unfortunate that at this juncture reports, more or less well founded, should be raised as regards the health of the young King,* who during the short time he has been on the throne

* The ink was scarcely dry on this paragraph when the telegraph brought in the dreadful news of the young King's death. Those who know Spain well can best appreciate at its true value the loss which Spain has sustained by this unhappy circumstance. The future will show whether or no the opinions we have expressed have any basis of truth. So far, the deportment of the people has been all that could be wished. Señor Canovas, with rare patriotism, has adopted a line of policy which might indeed have been expected from his antecedents, but which not every public man in his situation could or would have adopted. By placing the reins of power in the hands of his liberal antagonists, and promising them the support of his own party, he has destroyed all incentive to intrigue, and rallied the members of both parties round the Throne in defence of the Crown and constitution. It remains to be seen whether Señor Sagasta has the power to direct the ship of the State with a firm hand, and to subordinate to the general good the discordant elements of which his party consist. If he can govern the great Liberal party with as firm a hand as Señor Canovas does the Conservative one, no danger is to be apprehended either from Republicans or Carlists. These can only be strong in proportion as he is weak.

has shown such ability to govern as a constitutional monarch. Ill-fated is the kingdom whose sceptre is wielded by a child; and should this be the ill-fate of Spain, there is no doubt that the needy adventurers, whose trade is now almost extinct, would again endeavour to take advantage of the circumstances and to turn them to their own individual aggrandisement, but, even so, the experience of the last twenty years should render us hopeful of the country.

It is not probable that Spain would ever again be called upon to undergo such a period as that from 1868 to 1875, and we have seen that even under such adverse circumstances the country has steadily prospered and advanced.

Spain has one very decided advantage over most European nations in that she has not, and never has had, a paper currency; her internal credit is therefore more stable, and those whose capital is at stake have not to undergo the fatal collapse that political disturbances bring on those countries where the basis of finance is fictitious.

It seems strange that Spain during all her financial troubles has never had recourse to paper

money, but so it is ; the very notes of the Bank of Spain, up to quite recent years, were not current outside the walls of Madrid, and indeed had but a limited currency inside them. In the provinces the very branches of the Bank would only change the notes of the Central Bank under discount.

Quite lately a class of note has been issued by the Bank which is accepted by the branches of the principal provincial towns, and these are now taken to a limited amount in the more important business centres of the larger towns, but their currency is very limited. Over the greatest portion of Spain gold and silver is the only medium of exchange, and the unwary traveller who is ignorant of this may find himself in a precarious predicament if he carries only Bank of Spain notes.

This, which is doubtless an obstacle to the extension of business on a large scale, has this advantage, that it prevents a dangerous panic in troublous times. Whatever revolutions may take place, and whatever Governments may rise or fall, the individual Spaniard suffers little or nothing in his capital, and it is on this account that the country has suffered so little, relatively speaking, from the

political cataclysms she has passed through. On the other hand it must not be forgotten that this very security from individual loss makes it easier for political adventurers to agitate the country, and it is probable that if there had been a paper currency, the depreciation of which would have been felt by each individual member of the community, they would not have displayed such indifference to the disturbers of Government. Spain is never likely to have a paper currency, it would be an absolute impossibility for any government or minister to carry such a measure, and even if carried by a subservient Cortes, it would be practically inoperative, as no power, human or divine, would ever be able to compel the people to accept it. But the same effect will be, and is being produced by the investment of moneys in industrial and commercial enterprises, and it is to this and to the development of the trade of the country we must look for the gradual extinction of "pronunciamientos" and revolutions.

One word before concluding as to the character of the working classes. The untravelled Briton is perhaps of all men the most prejudiced, and the

extraordinary hallucinations that are entertained in England as regards Spain and her people would be laughable were they not lamentable. Spain, in the mind of the ordinary Englishman, is enveloped in a fantastic halo of romance. The people, when not smoking cigarettes, are supposed to recline under orange-trees or, dressed in the style of Figaro, to be "twirling the jocund castanets."

The Spanish working man is really a most sober, hard-working being, not much given to dancing and not at all to drinking. They are exceptionally clever and sharp, and learn any new trade with great facility. They are, as a rule, exceedingly honest, perfect gentlemen in their manners, and the lowest labourer has an *aplomb* and ease of manner which many a person in a much higher rank in this country might envy. When in masses they are the quietest and most tractable workmen it is possible to have to deal with. The peasant and working man, the real bone and sinew of the country, are as fine a race as one might wish to meet with, not free from defects—what race is?—but possessed of excellent sterling qualities which only require knowing to be appreciated. I cannot

say as much for the Government *employés* and politicians. Connection with politics seems to have a corrupt and debasing effect, which, although perhaps exaggerated in Spain, is unfortunately not by any means confined to that country only.



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