

## E. CIRLUS.

Girl bunting. In the southern region.

## E. CIA.

Lorrain or foolish bunting. Common near Malaga.

## CURVIROSTRA. CROSS BILLS.

In Castile, but I believe only on passage.

## FRINGILLA, GROSBEAKS.

## F. COCOTHAUSTES.

Grosbeak. Not uncommon in winter in lower Andalusia, where they probably descend from the Serrania de Ronda.

## F. CHLORIS.

Common.

## F. PETRONIA.

Which is so common in the south of Italy; I have never met with it in Spain.

## F. DOMESTICA.

Common sparrow. There are said to be three species in Europe. The common species of the north of Europe,

called the domestica; the Cisalpina or Italian sparrow, which I have seen in upper Dauphiny; and the other to which the name of Hispaniolensis was given, from its having been killed near Algesiras, by M. Natterer. These species were made known to the public by M. Temminck, and my attention was drawn, amongst others, to the curious fact of the existence of three varieties of the same bird, apparently modified by zones of climate. I studied the two first species in a former visit to Italy. In Piedmont both exist, and at Turin the domestica is abundant. Both are found at Florence, but the Cisalpina is the most common. South of that city I never saw it, and at Rome there is no other species than the Cisalpina. With these data I examined the greater part of Spain. I particularly looked at the species in the south, at Cordova, Ecija, which is the hottest place in Spain, Seville, Cadiz, Malaga, Velez Malaga, Granada, Valencia, and other places, and never saw an individual in any of them, excepting of f. domestica. I shot the darkest individual out of a flock, within a league of Algesiras, whence the species was said to have been brought, which was equally of the common sort. It is probable that the individual, which caused this mistake, had been blown over from Africa. At Gibraltar also, the birds I saw, were all of the common species. There are some individuals with the chesnut over the ears, carried over the region of the occiput, so as to narrow the vinous colour very considerably, but these are merely varieties, and are of comparatively rare occurrence, and I am forced to the conviction, that no other species than the domestica, or common house sparrow, of the north of Europe, exists in the varied climate of Spain. If the Cisalpina exist, it is in Catalonia, which I did not examine

in detail, but I have not the slightest reason to believe it is.

## F. SERINUS.

Serin finch. Common in Andalusia:

## F. CELEBS.

Chaffinch. Not uncommon, but not in the prodigious numbers which visit Italy in the winter, and I saw nothing like migratory arrivals.

## F. CANNABINA.

Redpole. Not uncommon in most parts of the centre:

## F. CITRINELLA.

Citril finch. In the centre and south.

## F. LINARIA.

Lesser redpole. Common in the centre:

## F. CARDUELIS.

Goldfinch. In prodigious numbers in the uplands near Granada, in the Sierra Morena, and lower Andalusia.

## CUCULUS SONORUS.

Cuckoo. Common, but I believe not stationary.

## PICUS, WOODPECKER.

Woodpecker. In all the wooded tracts, in the Sierra

de Segura, Cuenca, and Morena, but I am unable to give any account of the species.

P. MARTIUS.

The great black woodpecker is found near Bagneres de Luchon.

YUNX TORQUILLA.

Wryneck. Common in lower Andalusia.

CERTHIA, CREEPER.

C. FAMILIARIS.

Lower Andalusia.

TICHODROMA PHENICOPTERA.

Wall creeper. Common in the Pyrennees, but I never saw an individual in the interior of Spain.

UPUPA UPOPS.

Hoopoe. In vast numbers in lower Andalusia, and not uncommon in Castile and Aragon.

MERIOPS APIASTER.

Bee eater. Arrive at the end of March in vast flocks, and spread over the greater part of Spain, where they are the terror of the proprietors of bees. These beautiful birds are most numerous along the Guadalquivir, and its tributaries, the sandy banks of which afford them breeding places. The old birds are almost constantly



on the wing, with a very sonorous whistle, and a jerking or wheeling flight, no doubt intercepting their prey on the passage to their nests.

ALCEDO HISPIDA.

King fisher. Abundant in Andalusia. They may be seen in the stream which skirts the paseo de Maria Cristina, at Seville.

HIRUNDO, SWALLOW.

H. RUSTICA.

Chimney swallow. A few of these birds winter in the south of Andalusia. I saw them on the summit of the Lomo de Vaca, far from the haunt of man, living with the *h. rupestris*. In the southern provinces, they sometimes live in the *posadas*, their nests being built on the rafters, where they are shut in every night, thus shewing that their apparent partiality for the habitations of man proceeds neither from the want of warmth, as has been asserted, nor is the effect of natural inclination; habits quite irreconcilable with either of those theories, prevailing.

H. URBICA.

House martin. Abundant in most parts, but I never saw them in winter. At Puerto Santa Maria, near Cadiz, they had commenced operations on the first of March. They breed in the Pyrennees in the rocks, in vast numbers, as in the Alps, often far from the habitations of man,

## H. RIPARIA.

Sand martin. Not common. I have seen them on the Guadalquivir.

## H. RUPESTRIS.

Rock swallow. Winter in great numbers along the southern shore, and at Gibraltar and even Ronda which is much colder. At Malaga, they live amongst the houses, at the Alcazaba, and have the habits of martins. I should imagine the whole of them hibernate, which is not the case with the rustica. There are a few in the Pyrenees, and spread over Spain, but they are most numerous in the great range of the southern coasts.

## CYPSELUS ALPINUS.

Were living at the Breche de Roland, skimming the glaciers in July. I could not ascertain whether they bred in the mural precipices there, or below in the villages. I never saw them in Spain excepting at Merida, where they were in April, in company with innumerable martins and others of the tribe, flying very low, with a note not unlike some of the terns. When high in the air, as I have seen them in descending the Rhine, they have a loud and melodious whistle. I have heard they were not uncommon in Catalonia, but I never met with them, probably from their habit of going to feed at vast heights and distances in the day time, which prevents them being seen. They arrive at Naples at the end of March, and then fly low. I believe they depart early.

## C. MURARIUS.

Common swift. In prodigious numbers all over Spain.

## COLUMBA, PIGEON.

## C. PALUMBUS.

Ringdove. In the Sierra Morena and Sierra de Cuenca.

## C. OENAS.

Stockdove. In great numbers in passage in the Spanish Pyrennees.

## C. TURTUR.

In vast numbers. They emigrate in spring and autumn by the western foot of the Pyrennees, and are taken in great numbers at Bayonne.

## TETRAO.

## T. UROGALLUS.

The cock of the wood, is found in the Pyrennees, but rarely, from the comparative extinction of the forests.

## T. TETRIX.

Black cock. Does not appear to exist in any part of the Peninsula, or in the Pyrennees.

## T. BONASIA.

Gelinotte. Near Bagneres de Luchon; but I never heard of it in the interior. If any where, it must be sought for in the first region.

## J. LAGOPUS.

Ptarmigan. Common in the Pyrennees, but I believe is not found in any other part of Spain.

## PTEROCLES.

These birds, to which the name of Ganga has been applied as a generic instead of a specific name, are in abundance in Spain. The larger species abounds in both the Castiles, and Estremadura, and less in Andalusia. I believe it is also common in Aragon. It is named *ortega* in Spain. It is a very strong bird, especially on the wing, the muscles of which are excessively strong and the skin of extraordinary thickness and toughness.

The other or white breasted species, which is also found at the foot of the Pyrennees, in Languedoc, is called *ganga* in Spain. They are extremely numerous in Andalusia, and in most parts of the open country of the interior. They are taken chiefly at night by a destructive poaching method, as neither species will allow dogs to approach them, and are difficult to get at. The only shots I ever got were by marking them, then riding up, and firing off horseback, a mode easily practised with the light and docile horses of Andalusia. According to the best accounts I could collect, they lay only two eggs,

and I suspect frequently only rear one young one, as I often saw parties of three. Both species congregate in the winter, especially the ortega. The gangas are much better eating than the other species, which requires the skin to be taken off, before it is prepared for the table, as it is otherwise tough and dry.

## PERDIX FRANCOLINUS.

Francolin. I have never seen this bird, which is said to be brought occasionally to Gibraltar, but I suspect it to be the ortega which they term francolin.

## P. RUFÆ.

The perdix rufa is the universal, and I believe the only species in Spain. They are in incredible numbers in parts of Andalusia, especially in the Sierra Morena. They are destroyed throughout the year, without any sensible diminution in their numbers. Bowles, in the middle of last century, describes the people making omelettes of their eggs in upper Andalusia.

Within a few miles of Seville, at the end of the season, where they are destroyed in every possible way, they were swarming. I have never seen the bartavelle, *p. saxatilis*, nor the *p. petrosa*. The latter is said by Temminck to inhabit Spain, but I have examined prodigious numbers without seeing it, and it appears very doubtful if it exist on the continent of Europe. There is in the Museum either at Turin or at Geneva an individual, said to have been killed near Genoa, but I was assured there, that none such existed in those mountains, and it was probably the accidental arrival on

the coast of an individual blown off from Sardinia or Corsica.

P. COTURNIX.

Quail. In vast numbers I believe all over Spain,

HEMIPODIUS TACHYDROMUS.

Hemipodius or Andalusian quail. Near Cadiz and Gibraltar, but I have never seen the variety called Gibraltaricus.

BUSTARD.

The great bustard is in vast numbers, in most of the middle and southern plains, especially in new Castile, Estremadura and Andalusia. In the winter there are great numbers in the delta of the Guadalquivir.

The smaller bustard is abundant almost every where. I never saw the houbara, which appears to be only an accidental visitor.

OEDICNEMUS CREPITANS.

Thick kneed plover or bustard. In great numbers near Malaga, and other parts of Andalusia.

CHARADRIUS PLUVIALIS.

Plover. In vast numbers in the winter in Andalusia. There is more difficulty in giving information respecting the aquatic birds. It is impossible to obtain either specimens, or acquire intelligence concerning them. It is of less importance, because, with the exception of a very few species, they consist of the varieties

which pass through nearly every part of Europe in the spring and autumn. The best districts are the mouths of the Guadalquivir and of the Ebro, the marshes of Murcia, and the lake or lagune of Albufera, in Valencia. This last is a large expanse of water, the haunt of innumerable wild fowl during the winter. It is a royal demesne, but is farmed out, and there are two days, called "entrada general", when every one has the privilege of shooting. One of these days is in November, the other I think in February, previous to the departure of the birds. On these days, especially the first, I have understood a prodigious slaughter takes place, and it would certainly repay any naturalist who could be present at the time. I have heard there is an equal quantity of aquatic birds in Murcia in the winter.

Amongst the rarer species, the ardea garzetta, small egret, abounds in the western coast of Andalusia, and is seen on the mudbanks in Cadiz harbour.

The taleve or porphyron most probably may be found in the rivers of Andalusia, when examined, the flamingo, phœnicopterus, is found both in Andalusia, and in the Albufera. The stork inhabits the south of Spain, especially Estremadura, in vast numbers. It migrates, but returns very early.

#### MAMMALIA.

#### QUADRUPEDS.

The bear is not uncommon in the Pyrennees, but it is very doubtful if it be found now in any other part of Spain, having vanished with the forests. I enquired in every part, but never ascertained that it really exists.

A story was current of one having been seen, near St.-Ildefonso, some years back, but it turned out to be a capuchin with his cowl over, at his matins, kneeling, which figure and colour are by no means unlike the animal in question. The forest which occupied the site of Madrid abounded with them three or four centuries since. The last were killed in the Serrania de Ronda, in the sixteenth century. They might be expected to be found in Asturias, but the people assured me they were no longer met with.

**MUSTELA.**

Martin: I saw a specimen lately taken in the Pyrennees, in a village between Bagneres de Bigorre and Luchon.

P.C. Monumental de la Alhambra y Generalife  
**CONSEJERIA DE CULTURA**

**WOLF.**

In vast numbers in all the forests of Spain. They abound in all the regions where there is shelter, but are most numerous in the Sierra Morena, where they are so abundant that only the utmost vigilance of dogs and men can preserve the flocks. A proprietor whose dogs had by some accident been inattentive, lost in one night eighty sheep, near Cazalla. An incredible number have been killed in the battues in those districts when well managed. They are equally numerous in the Sierra de Segura.



## FOX.

The fox is found in great numbers in every part of Spain, probably of more species than one.

I failed in ascertaining whether the ferret, which is always said to be wild in the south of Spain, really be found there or not. I never obtained any satisfactory information on the subject, and believe it does not exist in a that state.

The pointer seems to be the only species used for the gun. They are in every part, and excellent. Those of Ronda and of Navarre are celebrated, the last breed being I believe more difficult to break.

There is a species of spaniel which I believe is native and appears well bred, but I never saw them in use. Besides the greyhound, which is an excellent sort, there is a species of lurcher, called *podenco*, which is very much used in Castile for hunting the rabbits and hares. In the Sierra Morena they have strong and excellent sheep dogs which are capable of attacking a wolf singly.

## FELIS.

## LYNX.

The lynx is not uncommon in the central chain, and abounds in the Sierra Morena. I am ignorant of the species of that in the centre, but the other appears to be identical with the felis *pardina* of Oker and Temminck, excepting that the tail is very short. The skins are brought to Seville, and sold to make the short jackets so much worn in Spain, but I could never procure one quite

perfect. One nearly so was sent to the British Museum. They live chiefly on the rabbits and partridges, which swarm in the country. There are said to be two kinds, but I never saw more than the spotted sort, the skins of which are very beautiful, especially the old ones. The other species if it exists, must be the wild cat. The lynx here mentioned, is termed in the country *gato clavo*.

## F. CATUS.

Wild cat. The enormous animal mentioned as having been seen at Priego, near Cuenca, is the only individual which came under my observation. It differed from any one of the species I have seen before or since, having subsequently seen the cabinets of London, Paris, Rome, Munich and Geneva. The ears were short and rounded, having an appearance like those of an animal which had been cut, which the others have not. The size was at least double any one I ever saw. There was a broad black band on the middle of the back, and a smaller on each side; also on the head. The lower part was the peculiar reddish grey of the fox. The head was very large, the teeth disproportionably small, the strength of course being in the arm. The tail was tipped with black. I am quite satisfied it was a different species from the others, which are very numerous in the collections above mentioned.

The marmot is not found in the Pyrennees, where it might easily be introduced, nor I believe in any part of Spain.

The wild boar is not uncommon in Castile, and in the Sierra-Morena, and Estremadura.

## CERVUS.

The red deer is said to be yet in Asturias, but I never saw a specimen. It is not improbable, from the similarity of the country to its habitat of Exmoor. The common deer of Spain, of which species I am ignorant, abounds in the centre, and especially in the Sierra Morena, where they are destroyed in great numbers in the battues.

The roebuck is found in all the extent of the country wherever there is forest. It abounded in the Sierra de Segura.

A wild goat is found in the Sierra de Segura, but I could not satisfactorily ascertain of what species.

The bouquetin or ibex is still on the south side of the high Pyrennees, but in small numbers, and I have had testimony sufficient to prove their existence in the Sierra Nevada, but I could not procure a specimen at Granada, where I was assured they are brought by the chasseurs occasionally.

The chamois is found in vast numbers in the Pyrennees, I believe of the same species with that of the Alps, but it is not, that I am aware, in the interior, unless the goat of the Sierra de Segura be identical with a variety which lives in the forests in some parts of the Alps. The hare is in vast numbers in every part of Spain, where they are destroyed through the whole year. In Castile they are extremely strong, and afford excellent coursing.

The rabbit is in countless numbers in the Sierra Morena, and all over the country where there is shelter for them. They are, as is well known, the parent stock

of all Europe. The fur is a darker iron grey, but I noticed no other difference from our own, their habits being precisely similar to those of the species in the north of Europe.

### REPTILES.

The lizards are in prodigious numbers in the south, especially in lower Andalusia, where the large green sort, and one, of equal size, of a deep purple and brown, nearly as beautiful as the other species, also bounds. In the Tierra Caliente, I noticed a very small species with a short tail, which very often appeared. Whatever be the cause, they always moved in a parallel direction to the road, keeping by the side of it and running with incredible celerity.

The snake tribe, if I may judge from my own observation, as my pursuits led me very much to the places they usually haunt, are not numerous. They are said by Cavanilles, to abound in the eastern part of Valencia.

A species is said to be found in the vale of the lower Guadalquivir, called by the local name of *antar*. I am quite ignorant of the species, but from the tales of many natives, who assert that it is of small size, and extremely venomous, whilst others say that it is very large. I believe it to be wholly fabulous. The name is quoted from memory, but I believe it to be correct. Whatever it be, it is a Moorish word, and a critic, a most competent judge, told me the word had been inserted in the dictionary of the Academy by some Andaluz, and ought not to be there, as it was not Castilian.

I was witness to the activity of one of the species of

common snakes, in taking their prey, which could not have been excelled in the tropics. I was ascending the Lomo de Vaca, in Murcia, in a warm, sunny day, when I noticed a snake issue from some long grass in pursuit of a small quadruped. I instantly stopped the mules, got off, and hurried to the spot, where I arrived just as the reptile had come up with the chase, and was wriggling around it in an open coil, raised from the ground, which completely concealed the little animal. In a few seconds however, the folds were decreased, and drawn quite tight around the intended prey, which was either a dormouse, or one of the larger species of field mice. The poor animal was held in an upright position, the folds enveloping him to the throat, and then doubled back downwards. His bright eyes starting from their sockets announced suffocation to be close at hand. In this position I resolved to wait until it was over, and then take them both. Unluckily I had called to the guide to shew him the sight. He immediately raised a huge fragment of schist with both hands which would have crushed them to atoms. I spoke to him to desire he would procure a stick, when the snake heard me. He put out his head from beneath the coil to reconnoitre, and in less than a second unloosed his hold, when both made off, at a rectangular direction to each other, and effected their escape into a heap of fragments, for which the mouse was making at the time of his capture.

## CHAPTER XXV.

### Geology.

The following delineation of the geological features of Spain, as they have offered themselves in the various parts I have traversed, must be understood to have merely the object of communicating information on a country which in that more than any other is almost a blank, in the map of science. From the rapid manner in which many, of the observations have been made, more cannot be done, but it is to be hoped that it may be of use in guiding those who have more leisure, to give hereafter fuller details, especially in the important business of finding the fossils of the secondary ranges, which can only be done by time, and the assistance of native and resident contributors. It is to be hoped that in a few years the science may be, by the zeal and ability of those who direct it in the countries of Europe which are the most advanced in this important branch, by working from fixed data to a common end, put it on such a footing, that the arranging and classifying the formations, may be more easy and simple than it is at present.

To render the opportunities I had of seeing a country, which it is to be regretted so few people have visited, of those best fitted for the task, of some utility, there

were two methods; the one, of selecting spots or districts, and by close and diligent investigation of them, arrive at an exact knowledge, leaving the general delineation in the state it now is; the other, by a bolder line, to take a more general view, and describe what may be termed the geographical geology of the country. Many circumstances, unnecessary to enter into, induced me to prefer the latter, and the result, which is hoped may give some new information, is now offered, commencing by the central region.

The centre of Spain is traversed by a primary range of considerable elevation, which divides the Castiles, and I believe extends into Portugal. Its eastern termination I am unable to state exactly, but I apprehend it passes under the secondary formations, principally of sandstone, and other secondary strata, which form the lofty uplands of the Soria district in old Castile, and probably the continuation of the series observed between Madrid and Zaragoza. This range is of considerable elevation, forming a noble chain opposite to Talavera de la Reyna and the Somosierra and Guadarrama Sierras, opposite to Madrid. It might have been considered in the olden time as the spine of Spain, so important a feature does it constitute in the physical delineation of the country, and it is surprising it should have escaped that or some similar denomination.

The formations of the two Castiles are completely divided, in the western part, by this vast barrier. We shall first proceed with New Castile. At the foot of the range opposite to Madrid, which is principally granite, is a mass which I have not particularly examined, but it appears to be formed of the detritus of the older rocks, associated with marles and gypsum, in which Madrid is pla-



ced. It also contains a curious magnesite, which occurs near the city, and a deposit of bones of the larger mammiferæ. The section is now carried across the country to Cuenca, by Tarancon. At Arganda, which is about three leagues from Madrid, appears a horizontal deposit of white limestone, associated with gypseous marle, and covering the heights of Perales, Villarejo, and Tarancon.

These gypseous marles belong probably to a separate formation. The soil from the limestone is excellent, that of the marle much inferior. Above Tarancon, on the route to the Sierra de Cuenca, the first feature which offers itself is a mass of rock gypsum, in regularly inclined beds, which rises to a few hundred feet, a considerable height in that part of the country. This is soon succeeded by appearances of sandstone, on which it seems to rest, and it finally disappears before reaching the elevated ridge which divides the waters of the Xucar from those of the Tagus. This ridge is red sandstone in horizontal beds, which reach to near Cuenca, when it is succeeded by limestone, which there is a tolerable certainty, overlays it. At Cuenca, nothing is seen but limestone, which forms what is called the Sierra or upper range. The sandstone may however be seen, passing underneath it, in the Val de Cabras at a distance of three leagues from the city, and there is no doubt that the whole chain in this part rests upon it, the sandstone lying mainly in horizontal beds. This limestone forms precipitous cliffs, of moderate elevation, in a line from Cuenca to Priego, in the gorge of which the stream has formed a considerable deposit of tufo, similar to those which will be mentioned hereafter in the southern provinces. From Priego the section crosses diagonally to Guadalaxara, passing by Sacedon. This country is