BOTANY & TOPOGRAPHY OF GIBRALTAR.

C W Watkins
From Mr Mott
January - 1856
Gibraltar

Very scarce

FLORA CALPENSIS.

LONDON:
E. NEWMAN, PRINTER, DEVONSHIRE STREET, BISHOPSGATE.

NORTH FRONT VIEW, NEUTRAL GROUND

FLORA CALPENSIS.

CONTRIBUTIONS

TO THE

BOTANY AND TOPOGRAPHY

OF

GIBRALTAR

AND ITS NEIGHBOURHOOD:

WITH PLAN, AND VIEWS OF THE ROCK.

BY

E. F. KELAART, M.D., F.L.S., F.G.S.,

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FELLOW AND LOCAL SECRETARY OF THE BOTANICAL SOCIETY OF EDINBURGH; AND CORRESPONDING MEMBER OF THE ZOOLOGICAL SOCIETY OF LONDON.

"Nihil est aliud magnum quam multa minuta."

LONDON:

JOHN VAN VOORST, 1, PATERNOSTER-ROW.

SOLD AT GIBRALTAR BY MR. KING, GARRISON LIBRARY.

M.DCCC.XLVI.

" Par la richesse de la récolte que je fis en peu d'instants, je pus juger de l'intérêt qu'offrirait une exploration complète de Gibraltar de ce côté-ci surtout, et en le visitant à des époques différentes. Je suis étonné qu'un travail semblable n'ait pas été déjà entrepris par quelqu'un des officiers de la garnison."—*Boissier.*

" Amongst the advantages enjoyed by the medical officers of the army, the opportunity which the service affords of visiting distant countries may justly be ranked as one of the most considerable, combining the pleasure and profit of travel with professional duties and culture; so that individuals, if intent on self-improvement, may derive at the same time a double benefit."—*Dr. Davy.*

TO

SIR JAMES M'GRIGOR, BART., M.D., F.R.S.,

ETC.,

DIRECTOR GENERAL,

ARMY MEDICAL DEPARTMENT,

THIS HUMBLE PRODUCTION OF LEISURE HOURS

IS, BY PERMISSION,

RESPECTFULLY DEDICATED,

BY HIS OBLIGED AND FAITHFUL SERVANT,

EDWARD FRED. KELAART.

INTRODUCTION.

As Gibraltar has so often been described by various writers, the reader will perhaps be disappointed in not finding in my topographical observations any sufficient reason for another account of the far-famed rock; however, as the object of the present work is to give an outline of important and interesting facts, and to combine the purposes of general utility, as well as to satisfy the curiosity of the naturalist, it is to be hoped that so far the author has succeeded in his wishes. The elaborate works of Dr. Hennen, Montgomery Martin, and Drinkwater, and several others of less note, may be consulted with great satisfaction by those who are curious to know more of this important and powerful fortress. I regret that Mr. Smith's geological account of the rock was not published until most of this work had been printed,

and consequently I have not been able to introduce more of the important matter to be found in that excellent memoir.*

Finding, on my arrival in Gibraltar, in the latter part of 1843, an interesting and almost unexplored field for botanical research, in accordance with the suggestions of many valued friends, I undertook the formation of a Catalogue of Plants growing on the rock and in its neighbourhood. The want of books protracted my labours, and it was not till I happily made the acquaintance of M. Prolongo, of Malaga, the friend and frequent companion of Ed. Boissier, in his tour in Spain, that I was able to pursue my researches with comparative facility. This gentleman, with great liberality and kindness, lent me several works from his botanical library, for which I cannot feel too much indebted. My duties as a medical officer of the garrison of Gibraltar for the short period of two years, prevented my making distant excursions into the interior of Spain or Barbary. The few I made were confined to the immediate vicinities of Gibraltar, Malaga, Granada, and

* Quarterly Journal of the Geological Society for February, 1846.

Tangier: the latter place I visited at a period of the year when vegetation was on the decline, but many plants common to Spain and Africa were still in flower.

To those kind friends who were my companions in my botanical excursions and researches, more particularly to Dr. Dumbreck, 72nd Highlanders, Mr. Scott, of the Royal Engineers, Captain Robinson, of the 72nd Highlanders, and Captain Aylmer, of the Royal Artillery, I have to express the infinite pleasure I derived from their society on these occasions; and I doubt not they will join me in considering Botany as a harmless and profitable means of relieving the dull monotony of a garrison life. To brethren of my own profession in Gibraltar, who may hereafter follow in the same path, I would recommend the devotion of their leisure hours to researches in a field as yet unexhausted, notwithstanding the discouragement they may meet with in the course of their investigations; and I hope to receive from them and others whose hands this little book may reach, that indulgence which is to be expected from generous minds.

The south of Spain was almost a *terra incognita*

to the botanist, till Webb and Edmund Boissier made their tours, and published the fruits of their labours. The botanical riches of Gibraltar have not received, however, the exclusive attention of any botanical writer, for, with the exception of a small list of plants made by Von Martius and Spix, on their way to the Brazils, I have not met with any correct account. James, in his 'History of the Herculean Straits,' enumerates in English names upwards of three hundred plants met with on the rock, including nearly all the plants found in vegetable and flower-gardens; but this list barely satisfies the curiosity of the general reader.

All local Floras possess that interest which is inseparable from the beauty and order observed in the works of the Creator, and the Flora of Gibraltar may be ranked among the first of those showing the natural links observed in the geographical distribution of plants, especially as the botany of the south of Spain is not generally known. The comparative botanist will find among the plants of Spain many which are also common to the Mediterranean coasts of Africa and Asia Minor. In this respect Gibraltar, being only a portion of the Peninsula, affords an opportu-

nity of showing the extent of this similarity, and I have endeavoured to exhibit it in the habitats given to the plants enumerated in the Synopsis, for which I am chiefly indebted to Boissier's work on the plants of the south of Spain,—a work of such acknowledged reputation, that it would be superfluous in me to recommend it to the botanists in Gibraltar.

In the 'Synopsis of Plants' are enumerated 456 species of flowering plants and ferns indigenous to Gibraltar, and 44 species which are cultivated or introduced. As far as the extent of my enquiry has enabled me to judge, the 456 species indigenous to the rock, may be classed under the following heads:—

40 species generally distributed through Europe.
58 ——— natives of the south of Europe.
63 ——— common to Europe and Africa.
174 ——— common to the south of Europe and Africa.
13 ——— confined to Spain and Barbary.
96 ——— common to Europe, Asia Minor, and North of Africa.
12 ——— confined to Europe and Asia Minor.

Among these are 140 species common to Great Britain; 170 species are found to grow in Madeira

(Dr. Lemann); and nearly as many in the Canary Isles; 160 species in Sicily; more than two-thirds in Malta; and, according to Seubert's Catalogue, 73 species are also indigenous to the Azores.

The orders which contain the most numerous species are the following:—Cruciferæ, Caryophylleæ, Leguminosæ, Umbelliferæ, Compositæ, Borragineæ, Scrophularieæ, Labiatæ, Gramineæ.

Although there are so many plants in Gibraltar, only one is peculiar to the rock, viz. *Iberis Gibraltarica;* and this too may perhaps some day be found on the opposite coast of Africa. The several plants which owe their specific name to Gibraltar are also found in other parts of Spain, though not so frequently, viz. *Cerastium Gibraltaricum, Ononis Gibraltarica, Bupleurum Gibraltaricum, Silene Gibraltarica.* There are a few varieties of species hitherto met with only in Gibraltar, such as the variety of *Saxifraga globulifera.* It would almost be a work of supererogation to describe the peculiarities of each natural order of plants found in Gibraltar; this will be best attained by a reference to the Synopsis. I have not thought it necessary to give the

synonyms to every plant, but only to a few, where I thought it would be expected by the local botanist, who cannot have reference to new and expensive works; and who will, I trust, also find his inquiries facilitated by the *observations*, which were chiefly addressed to those friends who honoured me with their presence when my humble attempts were made to diffuse a botanical taste, in my discourses at the residence of the Archdeacon of Gibraltar, the Rev. Dr. Burrow, on those occasions when that zealous cultivator of natural science entertained the ladies and gentlemen of the rock with literary and scientific subjects.

In Part IV. I have endeavoured to give a short account of the topography and vegetation of the neighbourhood of Gibraltar, which may also be useful to the botanist who may extend his inquiries further into Spain.

The Appendix contains a translation of Boissier's description of the vegetation of Gibraltar, which cannot be too widely circulated; and I doubt not that it will be read with great interest, as also his description of new plants.

I am indebted to a kind friend for the sketches of the rock; and as they are only intended to give the geologist an idea of the nature of its configuration, there is no attempt to display artistical skill; for this the reader must inspect the forthcoming 'SELECT VIEWS OF THE ROCK AND FORTRESS OF GIBRALTAR,' by Captain Carter, late of the Royals, who has exceeded every other amateur in the fidelity and beauty of the sketches of this rock, which, though small in extent, affords ample opportunities for a skilful artist "to furnish a vivid representation of the chief features of this giant fortress, where the triumph of science is only surpassed by the grandeur of nature, and where the majesty of British power stands pre-eminently foreshadowed."

E. F. KELAART.

CONTENTS.

PART I.

TOPOGRAPHY OF GIBRALTAR.

Chapter I.

Chapter II.

PART II.

BOTANY OF GIBRALTAR.

PART III.

SYNOPSIS OF PLANTS GROWING IN GIBRALTAR, INDIGENOUS AND CULTIVATED.

PART IV.

APPENDIX.

ILLUSTRATIONS.

PART I.

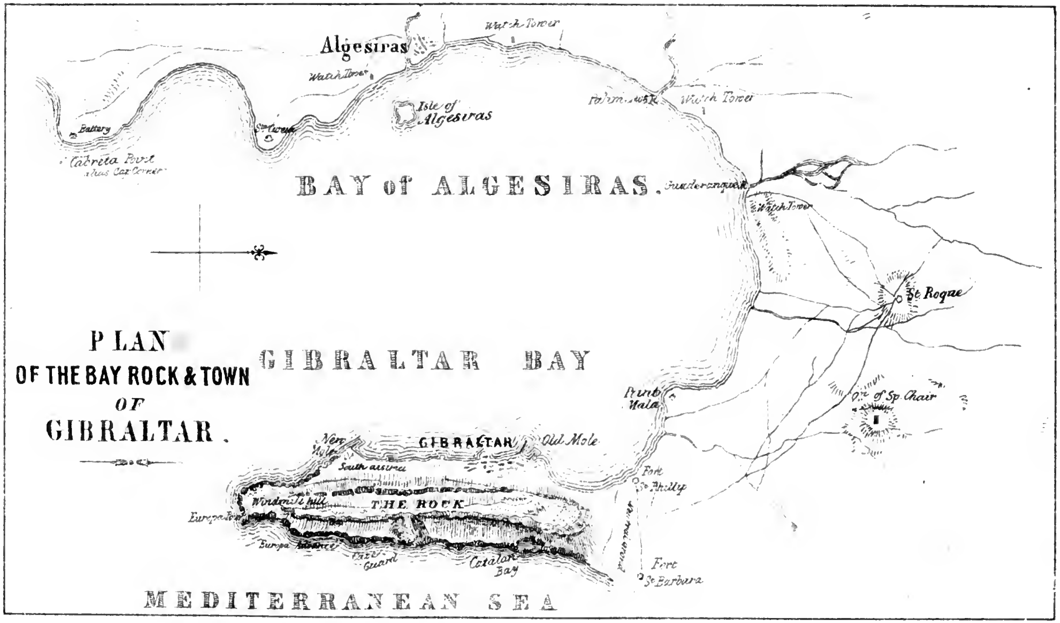
TOPOGRAPHY OF GIBRALTAR.

"The moon is up; — by Heaven! a lovely eve.

* * * * *

Through Calpe's straits survey the steepy shore;
Europe and Afric on each other gaze: —
Lands of the dark-eyed maid and dusky Moor
Alike beheld beneath pale Hecate's blaze.
How softly on the Spanish shore she plays,
Disclosing rock, and slope, and forest brown,
Distinct, though darkening with her waning phase;
But Mauritania's giant-shadows frown,
From mountain-cliff to coast descending sombre down."

BYRON.


PLAN
OF THE BAY ROCK & TOWN
OF
GIBRALTAR.
Algesiras
Watch Tower
Isle of Algesiras
Battery
Cabreta Point
BAY of ALGESIRAS.
Guaderanque
Watch Tower
St. Roque
GIBRALTAR BAY
Punta Mala
GIBRALTAR
Old Mole
New Mole
South
Fort St. Philip
THE ROCK
Windmill hill
Europa Point
Europa Advance
Catalan Bay
Fort St. Barbara
MEDITERRANEAN SEA

TOPOGRAPHY OF GIBRALTAR.

CHAPTER I.

GIBRALTAR, considered either as one of Nature's fanciful works, or as the key to the entrance to the Mediterranean, has an interest associated with it which is perhaps possessed by no other spot of equally limited dimensions. For many centuries in the possession of the Moors, it was maintained as a stronghold, affording every facility for protecting their interest in this part of Spain. After the fall of the Moslem empire in Spain, Gibraltar belonged to the Spaniards until the year 1704, when it was captured by Sir George Rooke, under the command of the Prince of Hesse d'Armstadt, and since then it has not been out of the hands of Great Britain. Many were the attempts made to recover it from its present possessors, and history records the severe sieges it has sustained, the ever memorable one which lasted three years seven months and twelve days, terminating on the 2nd of February, 1783, will be related as one unequalled in the annals of ancient or modern warfare. Gibraltar has always been of importance to Great Britain, but this is much increased since the establishment of steam communication between the mother country and India.

A stranger arriving at Gibraltar cannot fail to be struck with the irregular configuration of the rock. From no one point can he view its entire extent, and every turn gives it a new, though not always equally pleasing character. Its picturesque position, its bold and noble fortifications, and the varied and charming scenery of the neighbouring coasts of Spain and Africa, combine to attract his attention.

Viewed from its beautiful Bay, Gibraltar forms an object worthy of the artists' study, and a still more beautiful and singular view is obtained from a flat on the hill, on which stands the Spanish town of St. Roque. From this position (a distance of nearly four miles intervening) the rock of Gibraltar appears as an island, the isthmus connecting it with the main land merging into the azure blue of the sea. Although at the present day this is nothing more than an optical delusion, yet the rock of Gibraltar must, at a former and perhaps very remote period, have been washed on all sides by the sea, for the isthmus just mentioned, together with the land for nearly two miles beyond, bear unequivocal marks of having once formed the sea bed. The surface, almost entirely composed of sea sand resembles a little sandy desert, in many parts of which are seen large assemblages of gregarious shells similar to those now in existence in the bay. A recently discovered Roman ruin,* about 200 yards from the present shore

* This ruin was discovered in the early part of 1845, by some labourers. The coins found there belong to the period of the lower empire.

of the bay, and nearly two miles from Gibraltar, near the village called "*Campo*," was found covered in one part with layers of these shells several feet below the present surface, and nearly six feet above the present level of the sea. This fact appears to furnish conclusive evidence that the sea had encroached upon the land since the destruction of a Roman town or village,* and had again receded; still I hesitate to express any opinion whether this encroachment extended at the same time across the isthmus, leaving those extensive deposits of shells which are now exposed when the sands are shifted by a strong wind. If the isthmus formed the bed of the sea at so recent a period, history does not record the circumstance.

Gibraltar, the Calpe† of the ancients, is a rocky promontory or peninsula, connected with the mainland of Spain by a narrow sandy isthmus. It is situated in 36° 9′ N. latitude, and 5° 21′ W. longitude, forming, with the exception of Tariffa and Cabrita, the most southern part of Europe. The extreme length of the rock is four thousand seven hundred yards, or two miles and three-quarters, and its

* The site of CARTEIA is only about three miles beyond this newly discovered ruin.

† Calpe was the European; and Abyla, the African pillar of Hercules—the "*ne plus ultra* land and sea marks of jealous Phœnician monopoly." The rock bears the name of its Berber conqueror, Gebal Tarik, who landed in Gibraltar, according to Gayangos, on the 30th of April, 711.

greatest breadth sixteen hundred yards. According to the most recent measurements, there are in it and the adjacent portion of the isthmus belonging to Great Britain, seventy or eighty acres of land capable of being cultivated: the entire area is estimated at two hundred acres, but scarcely forty acres are at present under cultivation, and of these more than fifteen are laid out in gardens and parterres. The whole surface of the rock is irregular and rugged, uneven in its most level parts. To the botanist in search of plants, the ascent or rather scramble to the most elevated parts of the rock is very fatiguing, and often dangerous on account of the ridges running in all directions. A sharp ridge runs from north to south, and forms the termination of one part of the summit on which a person may sit *en cheval* with perfect safety, on one side looking over Catalan Bay and its little village with the Mediterranean beyond, and on the other side, the town of Gibraltar with its noble fortifications and its hanging gardens. The smaller vessels in the bay, scarcely visible from this distant height look like so many specks upon a mirror. The rock terminates in a sugar-loaf point at its south-eastern extremity, which is fourteen hundred and thirty-nine feet in height. In this neighbourhood is situated the famous "Mediterranean stair" cut out of the solid rock. The signal station is placed on almost the central point of the summit, twelve hundred and seventy-six feet above the level of the sea. The rock terminates towards the north in a conical-shaped mass, rising nearly perpendicularly, and best seen

from the neutral ground. Near this terminating point is placed the "Rock Mortar," at an elevation of thirteen hundred and fifty feet, and a little below it is situated the "Rock Gun."

The term "Neutral Ground" is often used to designate the whole extent of the narrow isthmus which joins Gibraltar to the main land; but properly speaking, the actual neutral ground settled by convention, is that portion which extends from our last line of sentries, on the two north front guards, to the line of Spanish sentries opposite,—a space of about half a mile in length. The extent of the isthmus is about a mile and a quarter, of which only about half a mile is attached to the fortress of Gibraltar. A portion of this tract is cultivated with vegetables, and the rest kept in order for parades, racing, and cricketing. The burial-ground, slaughter-house, dog-kennel, and a few small houses for sappers and miners are also situated here, but very few private dwellings are allowed. At one period a small village stood here, but as it harboured many *mauvais sujets* under the walls of the garrison, it was deemed necessary to demolish the whole of the houses, &c. During epidemics, detachments of the military were quartered in this locality under tents, as it is considered more salubrious than within the garrison.

Botanists ought to feel obliged to the authorities for the extreme care taken of this locality, in which plants of very interesting kinds find a protected and well-manured bed, much, however, to the annoyance

of equestrians, as riding on this fine turf, except during the race weeks, is considered tantamount to trespassing within a convent's wall, and it is almost a pity, that even the cows which furnish the best milk for the garrison, should be allowed to graze on this prolific soil, which evidently has been only recently formed (I believe by order of the late General Don) from the *debris* of the garrison and elsewhere. Hence many plants are found in this space which are not usually seen in similar situations in this part of Andalusia, and some of them are not even found for miles beyond it, such as the *Muscari comosum, Ranunculus bullatus, Hyoscyamus albus, Tribulus terrestris,* &c.

This isthmus is, in most parts of its extent, about ten feet above the level of the sea. Its breadth near the rock is nine hundred and fifty yards; it gradually increases, and midway its breadth is about twelve hundred yards; and near the Spanish lines it measures across about seventeen hundred and fifty yards; it still goes on increasing till it is lost in the level ground at the foot of the mountain called "the Queen of Spain's chair." Its circumference is nearly eight miles. This neck of land, as far as could be ascertained, is entirely composed of sea-sand, in which are found large quantities of sea-shells as has already been observed, and from the nature of the rocks in the neighbourhood, it must naturally be concluded that this bed of sand rests on a limestone formation, but hitherto this has not been demonstrated, as the sand has not been removed to

any considerable depth. There can be no doubt that the greater portion of the isthmus now in possession of Great Britain has been reclaimed from the sea, and old plans of the territory of Gibraltar represent the existence of a morass near the north side of the rock, in the site now occupied by the moat, or, as it is called, "the inundation." The bastions and glacis near the land-port appear also to have been built upon land reclaimed from the sea; and there can be no doubt that the sea approached the market-place nearer than it does at the present time. The same process of reclaiming from the sea being necessary for the formation of the extensive new fortifications on the line wall and Europa point, Gibraltar will be in a few years several feet wider in these situations.

The rock of Gibraltar is bounded on the north by the main land of Spain. On the south and east it is washed by the Mediterranean. Standing at Europa point on a calm clear day, this deep sea, over which "are hung the charms of antiquity, poetry, romance, and genius," is viewed silent as a lake, with scarcely a ripple on its surface. In the far distance across the water is seen Ceuta, and Afric's burning shore, towered over by Abyla's cloud-capped summits, with ranges of blue mountains in all directions. On other occasions this most beautiful of seas has a more majestic appearance, the wind blowing with tempestuous fury swells the water, and dashes its foaming waves on the rugged sides of the rock, splashing their white feathery spray high into the air: so grand and magnificent is then the *tout ensemble* as to repay any

lover of nature the pains he may take in going down to this spot to see and admire the sports of the elements on this rock-girded coast. The bay of Gibraltar which bounds the promontory on the west, is nearly eight and a half miles long; its breadth is upwards of five miles, and its circumference between twenty and thirty miles. At spring tides the water rises about four feet. I must refer the reader to other works for an account of the currents in the Mediterranean. Spix and Von Martius, in their "Travels in Brazil," treat this subject with their usual ability.

The rock of Gibraltar consists of secondary limestone, calcareous spar, breccia, clay-shale, and sandstone. Hornstone is also occasionally seen in small quantities. The limestone is distinctly stratified, the stratification being more marked on the surface. Its inclination varies considerably, at one point the strata being almost perpendicular, and at another nearly horizontal. The dip is generally from east to west. The colour of this limestone varies from a light yellowish ashy gray to a smoky gray. Its structure is compact, and it is traversed by veins of calcareous spar of a whitish colour; sometimes it is seen in a foliated, but more frequently in a crystallized state.

Caves of various size exist in this formation. The largest, called St. Michael's Cave, is situated about the middle of the rock, and nearly eleven hundred feet above the level of the sea; perhaps there are few caves in similar formations equal to this in picturesque effect, though there are many of

of larger dimensions. The interior is shown to the public when the rock is visited by some distinguished personage, or a particular friend of the Colonels of Artillery or Engineers; it is then seen to the best advantage: a host of people is assembled near the entrance of the cave at the hour appointed. Martial music sounds. The gates are opened, and the cavern is entered with the utmost degree of caution, the ladies of course assisted by the gentlemen, the descent being very slippery from the accumulated moisture. Wax tapers burning at distant intervals, cast a dim light over all around; as you proceed, a little stream is passed, and you enter a beautiful grotto sixty feet high, adorned with many sparry petrifactions, and supported by colossal stalactitic pillars resembling the most elaborate architecture; the splendid roof looks as if it were chizzled by the hand of the finest sculptor, the whole illumined by coloured lights. Within the last few years this cavern has been explored by several enterprising gentlemen;* and I gathered from some of them that the party penetrated the cavern to more than three hundred feet below the level of the grotto just described, and that in their progress they went from one cavern into another, passing thus a series of caverns of various dimensions till they arrived at one, in the centre of which was a small pool of water. Aided by

* Among these were Mr. Risk, R.N., Rev. Mr. Burrow, Mr. Flint, R.A., Captain Stewart, 7th Fusileers, Dr. Hearn, Medical Staff, and Mr. Litle, R.A.

candle-light, they saw stalactitic formations very far surpassing in beauty those of the grotto above; the specimens they brought up were almost of a pure white, the action of the atmosphere darkening the shades of those found in the upper cave. The tortuous narrow passages through which the explorers had to pass, rendered the adventure rather dangerous; ropes and ladders were in requisition, with the help of which, and stout hearts, they accomplished what few would like to try. Some of these explorers imagine that they reached Martin's Cave in nearly the opposite side of the rock, as they felt fresh air blow upon them from crevices. In one of the lower caves they discovered bones (not fossil) of goats, rabbits, and rats. This leads us to believe that at one time the entrances to these caverns were wider, and the descents to them less hazardous; hence we may see the possibility of larger animals having once inhabited these caves, though bones of carnivorous animals, such as those found in the cavern limestones of the interior of Europe, have not been discovered in them.

The following notes were sent to me by a lady who accompanied the party to a small distance down the caves.

"I first entered a small opening on the right hand side, a little below the outer entrance to the cave, where I had to crawl on my hands and knees for some distance. I then scrambled down a deep place covered with loose stones. After climbing and tum-

bling for some time over stalagmites, and stooping to avoid knocking my head against the stalactites, I arrived at a deep opening, at the top of which was fastened (round a large stalagmite), one end of a rope ladder, of which merely the two or three first steps were visible; the only light I had was a piece of wax candle which could not shed its rays far around me—so that I could not see the top of the cave; we were not able to have torches on account of the smoke. How far down the ladder reached, I could not tell, but the descent seemed to me to be of an immense depth. Sometimes the ladder was lying so close to the rock, that I had some difficulty in putting my feet on the steps, and at others hanging quite loosely over some deep chasm. I at last put my feet again on the firm rock, and after a great deal more scrambling downwards, reached a small opening at the base of what appeared to be an immense wall of solid rock; here my further progress was arrested as it would not have been possible for me to have gone through it in the dress I had on. The name of "Corkscrew" has been given to this place, from its narrow and tortuous form. You are obliged to hold your arms over your head to enable you to squeeze yourself through, but that there is an opening somewhere, there can be little doubt, as the air blows up quite freshly, and sometimes extinguishes the lights."

There are several other caves of smaller dimensions with more or less of the same stalactitic and stalagmitic formations; the principal ones are Martin's

and Monkey's; there is also one at Catalan Bay, but which is seldom visited. The stalagmitic formation is found not only in caverns, but also adhering to the external surface of the rock, large fragments of which are carried away for ornamental purposes. The laminæ in some of these fragments are beautifully waved, and not unlike jasper. These stalagmitic formations bear a good polish, and are known by the name of "Gibraltar Rock," and consequently are erroneously supposed to constitute the prevailing rock of Gibraltar. Of this rock are manufactured small cannons, pillars, &c., for the mantel-piece, as also personal ornaments.

The conglomerate rock of which nearly two-thirds of Gibraltar is composed, covers immense plateaus of the limestone formation. Windmill Hill is a plateau of a remarkable form, on which barracks for soldiers are erected, and the vacant space is used for military parades, &c. Nearly one hundred feet below this flat, is another called "Europa Flat," which is about eighty feet above the level of the sea. There are other flats of smaller dimensions, such as those on which the Naval and Ordnance Hospitals are built. The surfaces of these flats are rugged and very uneven. Pot-like cavities are seen everywhere, and they are most numerous on Europa flat. These curious cavities are of various sizes, and are found even on the highest part of the rock. Some of them, even there, are very capacious, containing generally nodular bodies imbedded in a soft loamy or gravelly soil. I have seen similar cavities on the highest hills on the road

to Grenada, and therefore they must not be supposed peculiar to the rock of Gibraltar..

The next formation to be noticed is the remarkable osseous breccia, which overlies a great part of the cavern limestone; it is chiefly seen on the east side of the rock, between the fortifications of Cave Guard, and the fishing Bay of La Galetta. As this important breccia formation has been so well described by Spix and Von Martius, I cannot do better than quote here their observations on this interesting subject, more particularly as their work is seldom to be met with.

"The well-known and remarkable osseous breccia (a limestone breccia), which, towards the sea forms a mantle-shaped cavern, and seems here to dip at an angle of about 30°. In some places it fills up the rents, clefts, and corroded hollows in the limestone rock itself. The general cement of this breccia, which is chiefly composed of fragments of the same limestone, is a stalactitic mass of considerable hardness, of a reddish brown colour, and full of vesicular cavities, which occur without order, from the size of a poppy-seed, to the extent of several lines. Sometimes it is itself consolidated into reniform pieces, partly rounded, and partly angular, of a smoky gray, and of a light gray limestone, of which the greater part of the Mons Calpe consists; and it contains kidneys or nodules of a soft, very ferruginous, yellowish brown, fine-grained, calcareous marl, and rounded grains of quartz of the size of a millet seed. Here and there are wavy stripes and streaks of calcareous spar, and in

the vesicular cavities, druses of a white stalactitic limestone. The mixture is very hard, and the ingredients, which have often a thicker stalactitic crust close to them, are thereby cemented in the strongest manner, and very difficult to break asunder.* Petrified bones are very seldom found in this stony mass, but they are more frequent in the more recent bed of the conglomerate or breccia, immediately over it, which contains the same rounded little grains of quartz, and the other ingredients, though of smaller grain, that is, the nodules from the size of a hen's egg to that of a bean, as well as a considerable quantity of the light gray limestone, and shows more frequent vesicular cavities."

The fossils found in this breccia are bones of antelopes or stags, Siberian hares, and rats. Mr. M^c^Gregor found also those of the ox, sheep, rabbit, tiger, snakes, and birds, and shells, for the most part of land species: he also states having found ova in a high state of preservation belonging to the lizard tribe.† The principal localities of this osseous breccia are Rosia Bay, Camp Bay, Buena Vista, on the east side of the rock above the Governor's cottage, and at the north end of the rock. The fossils above mentioned are in a very decayed state, irregularly thrown together, and lying without any order, so that

* These reniform bodies, when broken by a hammer, appear to be formed of concentric laminæ, occasioned, no doubt, by the slow percolation of water.

† In the limestone rock of Gibraltar, sea-shells and sea-weeds are occasionally met with.

it is extremely difficult to collect the bones of any distinct species. No human bones have been discovered, although works of art are occasionally found in the more recent formation. A cannon ball is also said to have been surrounded by a breccious cement.

"Over the stalactitic stratum which has been described," continue the authors we have just quoted, "there is a more recent limestone breccia," (testaceous conglomerate of Mr. M^c^Gregor), which lies on the surface of the ground here and there, rent into separate blocks of rocks. It consists of a grayish white or gray limestone, the detritus of calcined shells, very few fragments of bones, and a rather reddish, granular mortar-like cement; the pieces of limestone are here smaller—from half a line to six lines in diameter,—and instead of the above-mentioned grains of quartz which are entirely wanting, there are whitish, pearl-like globules of stalactitic limestone, resembling the Carlsbed pea-stones. The calcined shells are far more numerous here, and form in a manner thin strata in the stone: no entire shells, indeed, are to be found among them; they seem, however, from their thickness and breadth to belong to the common oyster;—others, from their dotted edge and convexity, perhaps to a cockle (Cardium); that is to say, to marine Conchylia." The whole of this formation does not appear to be more than two hundred feet above the limestone rock, and fresh formations appear still to be going on in the neighbourhood of the sea.

An importance is attached to this remarkable breccia formation of Gibraltar, from the circumstance

of similar deposits being found in other parts of the Mediterranean and Adriatic. The late origin of this formation, and the peculiar fact of most of the fossil bones found here belonging to animals of the herbivorous kind which are still extant, lends also an interest to it which has been much increased from the attention paid to it by recent geologists. The rocks in the neighbourhood of Gibraltar are composed of sandstone and limestone. "The Queen of Spain's Chair," the nearest mountain to Gibraltar, is composed of a yellowish red-coloured sandstone, regularly stratified, "the rare strata running from north-east to south-west, and inclining in many different angles to the south-east." No trace of breccia formation has been discovered in this range of mountains.

Beds of clay are found below the elevated plateau called Buena Vista; this clay is in different stages of progress, frequently approaching to a slaty nature. Near the Jew's burial-ground and new mole, beds of dark brown-coloured shale are found.

The next formations worthy of notice are the sandstone deposits: they are of two kinds; one appears to be of modern date, and to consist of the sand and *debris* to be found in the surrounding coast; the other parts like those near Martin's Cave and Governor's Cottage, are evidently of much older date. "And most likely," says Mr. Smith, "they correspond with the period of the first elevation of the rock."

The sand deposits are also very extensive; the most remarkable one is that near the Alameda. This

EAST VIEW, CATALAN BAY.

sand consists of grains of quartz, to which adheres an argillaceous earth, strongly impregnated with iron; hence its peculiar red colour. It appears to be of marine origin, and is distinctly stratified. The sandbank near Catalan Bay is nearly five hundred feet high, and is considered to be blown sand, resting at an angle of fifty degrees; under it is a thinly stratified deposit of sand-stone.

Many conjectures have been made with respect to the geological history of this rock, but I believe that it may be safely considered to belong to the Jura limestone system;* the rocks in the neighbourhood, as has been already observed, consist of sand-stone and limestone, with thin strata of coal. A coal deposit is found within four miles of Gibraltar, but not of sufficient thickness to make it desirable to work the beds. I have seen similar deposits near Malaga, under similar circumstances.

Mr. Smith of Jordan Hill, well known to the scientific world as a naturalist and geologist, resided for several years at Gibraltar, and having made himself acquainted with every fissure and cliff of the rock, recently laid before the Literary Society of Gibraltar, a new view of the formation of the rock of Gibraltar, which I believe forms the substance of a paper lately read before the Geological Society of London. In the former paper, Mr. Smith, after describing minutely every feature impressed upon

* The Gibraltar limestone contains casts of Terebratula fimbria and T. concinna (*Smith*). See Appendix.

the rock after it was originally moulded by the Divine hand, proceeds to account for its peculiar, fantastic and varied appearances, in nearly the following words :—

" We have thus clear evidence of at least four upheavals. First, that which elevated the upper part of the rock to an angle of 18° or 20°, followed by a lengthened period of repose, during which the older portion of the sand-stone of Catalan Bay and Martin's Cave must have been deposited. The second is that which elevated the middle portion of the rock to an angle of 36°. The third, which elevated the southern peak, on which is situated O'Hara's tower, to an angle of 60°. And the fourth, that which raised the Windmill Hill and Europa-flat."

How far this novel view of the geological history of the rock is consonant with established facts, I leave to the judgment of the learned body to whom the paper was submitted, satisfying myself with saying, that it is exceedingly probable that more than one force has given the rock its present configuration, of course not supposing these forces acted solely upon so limited a space as the rock of Gibraltar, but that these different angles of position are the results of operations which are also evident in many parts of the sierras of Spain and Africa.

I believe it was Mr. Smith, who, for the first time, clearly demonstrated the rocky eminences or flats, on which the naval and ordnance hospitals are built, to be " landslips." Mr. S. is also of opinion that the precipice which overhangs the town is of the same

origin. There is another peculiarity in the geological history of the rock, which its external surface indicates, and which ought not to pass unnoticed, even in this imperfect sketch, viz.—the wasting action of the sea. This is observable on almost every part of the rock, and it is strongly indicated by the cliffs and terraces which could only have been formed by the action of water. The sea also appears to have impressed the sides of caves and fissures and pot-like cavities of even the highest parts of the rock with "water-worn marks," and some of the smaller caves appear to have been formed by the wasting action of the sea—an operation which is still observable at the present level of the sea. These facts prove beyond a doubt that the sea stood at these levels at different periods of its geological history. Mr. James M^c^Gregor of the Medical Staff, was the first, I believe, to point out the beds of oyster-shells in the higher parts of the rock; one of these beds, situated at Europa above the Engineers' quarters, is formed of shells resembling those of oysters at present found in the Mediterranean, so that it would appear that the sea stood at these high levels at a comparatively modern date. Two new deposits of shells have lately been laid open at the heights of seventy and eighty feet, near Europa mess-room. This, Mr. Smith considers one convincing proof among others, that the sea stood at these two respective levels at two distinct periods; and, according to him, these shells are all of the post-tertiary epoch.

Having brought to a conclusion this brief sketch of the Geology of Gibraltar, it remains for me to treat

succinctly of other matters connected with its physical history; and first in importance to the inhabitants of a large garrison like Gibraltar, are the sources of the water which they consume. From the nature of the soil, and the immensity of the sand-deposits within the garrison, we can easily imagine the existence of springs; still the number of springs is not great, and the few wells which exist, are very deep, and appear to be supplied from percolation of rain-water, within the narrow limits of the rock itself; which circumstance was taken advantage of by the Moors during their possession of the rock, and they accordingly constructed an aqueduct which has been since destroyed. The present one, planned by a Spanish Jesuit, conveys the water collected by percolation through the red sands in a reservoir or well near Victoria Battery, into the centre of the town, and terminates at the Commercial-square. The water obtained from the wells is hard, being slightly impregnated with lime, but it is considered wholesome. More than one half the water used in Gibraltar is collected in tanks or cisterns from the rains which fall during the year. Nearly all of the modern houses possess this requisite appendage. There are also public tanks of immense capacity; many of them have been recently built for the use of the troops. The largest of these tanks are those which supply water to the Navy; they are said to be capable of holding nearly one million four hundred thousand gallons of water; and all the other tanks in the garrison, both public and private, upwards of two million

gallons. On Europa-flat is a well of moorish construction, which is said to be capable of holding one hundred thousand gallons of water. So long as we hold possession of a part of the isthmus which connects Gibraltar with the mainland, and there falls the average quantity of rain, there is little or no chance of the garrison suffering from a complete drought. The wells on the neutral ground, although only a few feet deep, afford abundance of fresh water, and they have not been known to fail even in the driest seasons. The source of this abundant flow of fresh water in almost a sandy desert, and so near the sea, is a subject of some interesting speculations. The only way I can account for it is, by attributing its source to the mountains of Spain on the principle of Artesian springs, or as some suppose, there may be at no considerable depth below the sands, a layer of impenetrable rock which prevents the rain-water from percolating to unfathomable depths, and thereby makes the neutral ground a reservoir for water.

The quantity of rain which falls during different seasons varies considerably, as the following formula will show :—

Rainy season of	1837 and 1838,	there	fell	50·53 inches
„	„ 1840 and 1841	„		21·10 „
„	„ 1841 and 1842	„		22·20 „
„	„ 1843 and 1844	„		17·60 „
„	„ 1844 and 1845	„		45·13 „

I may safely say, that on an average, Gibraltar is

visited by such heavy falls of rain as in 1838 and 1845, only once in seven or eight years. The average fall of rain each rainy season, commencing from the September of one year, and terminating in the May of the following year, may be estimated at twenty-eight inches. The following table exhibits the average fall of rain in each month for a period of twenty-five years.

Table showing the average quantity of rain in each month, and the average number of days in which rain fell in twenty-five years, from 1812 to 1836.

Months.	Average quantity of Rain. Inches.	Average number of Rainy days.
January	6	10·5
February	2·5	7·5
March	2	7
April	3	9
May	1·5	5
June	0·5	1·5
July	none	none
August	0·5	0·5
September	1	3
October	2·5	7
November	5	9.5
December	4	9
Average total .	28·5	6·95

From the foregoing Table it appears, that the average quantity of rain which falls in Gibraltar during one year is twenty-eight inches and five-tenths, and the average number of days in which rain falls during the same period is sixty-nine and a half, and that

in July, for twenty-five years, there fell no rain at all; however, there have been a few instances, within later years, of slight drizzling rain having fallen in the month of July.

The next subject to which I shall advert is the temperature of Gibraltar.

The temperature of an almost isolated place like Gibraltar, exposed to so many physical agents, both by land and sea, must naturally be expected to vary from year to year. The average mean temperature is stated by writers to be 72° Fahr. The annual mean maximum 74° F., and the mean minimum 64° F., but these results are not obtained from observations of the real maximum and minimum of each twenty-four hours; but the maxima of tables hitherto given are from observations made at 3 P. M., and the minima are from observations at 9 A. M.; therefore it follows that these statements are not quite correct, though they afford a close approximation to truth. Soon after my arrival in Gibraltar in the year 1843, I kept a register of the observations made from Six's thermometer, the results of which I found to vary considerably from those given by former observers, and consequently my Meteorological Reports, which were published in the form of monthly abstracts in the 'Gibraltar Chronicle,' have been adopted by the principal medical officer, in his Medical Statistical Reports to the Director-General of the Army Medical Department. The following are the results of observations made from May 1, 1844, to March 31, 1845.

The highest temperature observed was	87°	F. in July
The lowest ditto ditto	43°	F. in Feb.
The mean max. for the period	67·6°	F.
The mean min. for ditto	60·56°	F.
Mean max. daily range	10·72°	F.
Mean average ditto	6·35°	F.
Mean min. ditto	2·85°	F.

The above results are to be understood as only those of a very limited period; many years of similar observations will be required before we can arrive at the real mean temperature of Gibraltar, but I hope there is now a fair prospect of this being accomplished, instruments having lately arrived from England upon my suggestion, for keeping correct meteorological observations on the rock of Gibraltar. The following Tables are drawn out with the view of showing how the temperature of one year may differ from that of another.

Average Temperature for Five Years, from Major Tulloch's Statistical Report.

Years 1825 to 1836 inclusive.	Thermometer.		
	Maximum. Fahr.	Medium. Fahr.	Minimum. Fahr.
	Degrees.	Degrees.	Degrees.
January	63	58·5	55
February	64	59·5	55
March	67	61·5	57·5
April	71·5	65·5	61
May	75	69	64
June	78·5	74·5	70
July	84·5	79	74
August	84	79	75·5
September	81	77	72·5
October	76·5	72	67
November	69·5	65	60
December	66	60·5	55·5

N.B. The maximum was obtained generally from observations at 3 P. M., and the minimum from observations at 9 A. M.—AUTHOR.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS FOR THE QUARTER ENDING JUNE 30, 1845.

Months.	Thermometrical range of the month.			Average monthly range of the Therm.			Daily range.			Barometer.			Rain.		Winds.	
	Maximum observed. Fahr.	Medium. Fahr.	Minimum observed. Fahr.	Mean Maximum. Fahr.	Medium Temperat. Fahr.	Mean Minimum. Fahr.	Maximum observed. Fahr.	Average daily range. Fahr.	Minimum observed. Fahr.	Maximum observed. Inches.	Average daily range. Inches.	Minimum observed. Inches.	Quantity fallen. Inches.	No. of rainy days.	Easterly.	Westerly.
April ...	71°	60·5°	50°	64·35°	60·75°	57·25°	11°	7·16°	2·5°	30·205	0·260	29·805	4·09	11	4	26
May	70°	63·5°	57°	66·76°	63·18°	59·60°	10°	5·25°	2°	30·207	0·180	29·800	2·06	9	13	18
June	75°	68·5°	62°	70·96°	68·25°	65·63°	7°	5·33°	4°	30·205	0·115	30·5	0·57	4	17	13

GENERAL REMARKS.

The weather in the month of April was variable; boisterous days were alternated with fine and agreeable ones, having the temperature comfortably warm. The days in the early part of May were generally clear and serene; towards the latter end of the month, the thermometer, which usually stood at 69° F., sunk to 64° F.; the weather became stormy and rainy—on the 26th, 27th, and 28th, it rained almost incessantly. The mean temperature of May this year varied little from that of last year; but the temperature of the month of June was considerably less this year than in the last; while the thermometer rose last year in June as high as 82° F., this year the temperature of the atmosphere was only on a few days 75° F. In June, last year, the mean maximum was 75·05° F., and the mean minimum 67·25° F., giving thus a considerable difference between the observations of the two years, viz. of nearly 5° F. and 3° F.

The prevailing winds in April and May were westerly; in June, easterly.

The total quantity of rain which fell from 1st September, 1844, to 30th June, 1845, is 45·13 inches—a quantity which has only been exceeded in the season of 1829 and 1830, when nearly 54 inches fell.

Gibraltar, South. E. F. Kelaart, M.D.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS FOR THE QUARTERS ENDING SEPTEMBER 30, 1844 and 1845.

Months and Years.	Thermometrical range of the month.			Average monthly range of the Thermometer.			Daily range.			Barometer.			Rain.		Winds.	
	Maximum observed. Fahr.	Medium. Fahr.	Minimum observed. Fahr.	Mean Maximum. Fahr.	Medium Temperat. Fahr.	Mean Minimum. Fahr.	Maximum observed. Fahr.	Average daily range. Fahr.	Minimum observed. Fahr.	Maximum observed. Inches.	Average daily range. Inches.	Minimum observed. Inches.	Total quantity fallen. Inches.	No. of rainy days.	Easterly. Days.	Westerly. Days.
July, 1844	87°	79.5°	62·5°	79·64°	75·4°	71·30°	13°	8·5°	4°	30·275	0·220	30·000	none	none	19	12
„ 1845	78°	74·5°	71°	75·34°	73·84°	72·34°	7°	3°	4°	30·225	0·025	30·025	none	none	17	14
Aug. 1844	82°	77·25°	72·5°	80·55°	77·23°	73·91°	9°	6·90°	4·5°	30·000	0·300	29·900	0·5	3	19	12
„ 1845	77°	74°	71°	75·34°	74·2°	72 70°	6°	2·70°	2°	30·200	0·045	29·975	none	none	12	19
Sept. 1844	81°	70·5°	60°	75·5°	71·65°	67·80°	11·5°	7·70°	5·5°	30·205	0·350	29·975	0·75	5	10	20
„ 1845	77°	73°	69°	74·46°	73·50°	71·64°	8°	3·12°	3°	30·250	0·075	29·900	0·32	8	16	14

REMARKS FOR JULY, AUGUST, AND SEPTEMBER, 1844.

July, 1844.—From the 1st to the 16th of the month the temperature in the shade never exceeded 79° F., but on the 17th, with almost a perfect calm (what little wind there was blowing from the south-west), the thermometer rose to 87° F., being the highest temperature observed for many years; the atmosphere was on this day very oppressive, its temperature, when under the influence of

currents of heated air, was, in some situations, as high as 90° F. The thermometer in the sun rose to 130° F.; the three following days were also very hot and sultry. After these four days of excessive heat the temperature decreased; thermometer generally at 80° F., or 81·5 F., in the hottest part of the day. Prevailing clouds, cumuli; most days were almost cloudless till evening, when beautifully formed masses of golden-tinged clouds would rise towards the west, and remain long above the mountains after sunset.

August, 1844.—The temperature was variable during the month. Maximum temperature observed on Europa-flat was 79·5° F., minimum 71 F., prevailing clouds, cumuli; occasional nimbi.

September. 1844.—From the 1st to the 21st, the diurnal decrease of temperature was small, and scarcely perceptible. On the 22nd the maximum temperature was 74·5° F., and the minimum 64° F., giving a diurnal range of 10·5° F. From the 23rd, the maximum temperature varied from 69·5° F. to 71·5° F., and the temperature of the coolest part of the night varied from 60° F. to 63° F., the average daily range for the same period being only 8° F. The evenings and mornings throughout the month were cool and agreeable.

GENERAL REMARKS FOR THE QUARTER ENDING SEPTEMBER 30, 1845.

1845.—The atmosphere throughout this quarter was unusually cool for this season of the year. The maximum temperature observed last year was 87° F. This year the thermometer rose only in a few places as high as 80° F., but in most parts of the rock it rarely stood higher than 77° F. The weather during the latter end of August was rather sultry and oppressive, and distant thunder was occasionally heard. The early part of the month of September was cloudy, with frequent light showers; towards the middle of the month the weather became delightfully clear and serene; light showers were again prevalent during the latter end of the month; the temperature also increased; but, upon the whole, so agreeable a summer rarely occurred in Gibraltar, and the health of the military and civil population continued remarkably good.—N.B. Easterly winds are most prevalent from July to November. (See Appendix.)

E. F. Kelaart, Medical Staff.

Gibraltar, October 1, 1845.

The foregoing tables show a striking difference in the heat of the summers of 1844 and 1845; and I might here observe, that the former was a very unusually hot summer, and the latter a very pleasant and agreeable one.

The barometer seldom rises higher than thirty inches, or sinks lower than 29·300; the average daily range being about 0·150.

Gibraltar is much exposed to all the changes of wind. The south-easterly wind generally prevails for nearly half the year. In some years there is less of it, much to the satisfaction of the garrison, as it is considered by most people a very unwholesome wind. This leads us to the consideration of the climate of Gibraltar. Various are the opinions advanced upon this subject, but as I do not intend this description of Gibraltar to be received in the light of its medical Topography, I shall briefly sum up my observations on this head, reserving for a future opportunity a more detailed account. The climate of Gibraltar had been represented to me as equal to any in the south of Europe, but great was my disappointment not to find it what I expected. The heat of summer is more oppressive than even the thermometrical observations would indicate, owing principally to the want of a free circulation of air, which is prevented by the height and peculiar configuration of the rock, most of the winds blowing only in certain quarters of the rock, and often when the wind is raging tempestuously on the eastern side, there is scarcely a breath of wind in the town of Gibraltar: then the only consolation

the inhabitants have, is a dense fog, which rather cools the air. On returning into the garrison, from a ride on the sandy beach outside the barrier, the difference of temperature is painfully felt. In passing the *Puerta de la Terra*, blasts of heated air oppress the rider, and on entering the main street, he again experiences the undescribable sensations of breathing confined and impure air. The summer nights retain nearly all the heat of the day, there not being sufficient time for the rock to become cool before the sun rises again. The reflected heat from the rocky surfaces of Gibraltar is of itself a great source of suffering to the inhabitants.

The vegetation on the rock being comparatively of a diminutive kind, does not afford much shelter; and I am sure if General Don's plan was still further carried out, by planting more poplars, firs, and *bella-sombras* on the higher parts of the rock, Gibraltar might be rendered a cooler residence in the course of years. The winters are certainly milder and less variable, as must be naturally expected, than those of more northerly climes, but there are years when some of the winter months are nearly as bad as any in England. The cold is, occasionally, even in the most favourable winters, very intense; snow is observed in many parts of the neighbouring hills for many weeks, and sometimes thin pellicles of ice are formed in some parts of the rock itself. Gibraltar is also occasionally visited by hail and thunder storms. The lightning is never very prolonged; distant thunder is of much more frequent occurrence. Rain frequently

falls, with scarcely any intermission, for seven or eight days together, and in two or three instances the torrents of water rushing down the gullies have produced serious consequences. On one occasion the main street was deluged for several feet, and the force of the water was so great, as to carry in its course children who were unfortunately exposed to its influence.

What renders the climate of Gibraltar peculiarly distressing to invalids, is the prevalence of the easterly wind, or Levanter, which blows sometimes for four and five weeks together, and during nearly all this period, thick dark clouds hang over the rock, and the fog on the neutral ground is frequently as thick as any November fog in London. The mornings especially are very foggy on the narrow isthmus; sometimes there is a fog in the town when there is none outside the garrison, and it is then a great relief to the inhabitants to walk or "ride out into Spain." Various are the sensations ascribed to the Levant wind, but the general one is that of lassitude and dulness of spirits; and frequently one feels as if covered with a wet blanket, or walking, when heated, in a damp cellar. However unpleasant this wind may be to personal comfort, still the hospital statistics do not show any increased sickness whilst it prevails; but whether its effects are ultimately shown on the constitution of long residents, I cannot say, as there are not sufficient data to come to a correct conclusion on this subject, but I may venture to assert, that the native inhabitants of the rock (*i. e.* those

people whose families have probably been established for centuries), do not appear to possess the same physical strength as the inhabitants in their fatherland.

To persons suffering under pulmonary complaints, the winters in Gibraltar are of course more suitable than those of England or Scotland; but what is gained in climate, is perhaps lost in the want of good accommodation, &c. The hotels on the Commercial-square are situated in a noisy locality, ill suited for any invalid, and in summer the stench from the line wall is intolerable. The lodging-houses, of which there are few, are badly situated, surrounded by dirty and filthy habitations of segar-makers, &c. The only house of the kind suitable for an invalid, is one on the new mole parade, in the south district, but that can only accommodate two families. If Gibraltar is ever to be made a sanatorium for consumptive patients during the winter months, more suitable accommodations should be first provided. Malaga, under all circumstances, is a more desirable place for invalids from northern climes. In Gibraltar, my limited experience tells that pulmonary consumption runs a very rapid course in summer, with which opinion I believe nearly all the medical officers of the garrison concur. Although the mortality among soldiers from this disease does not appear at first strikingly great, yet the numbers who are sent home for pulmonary diseases, before the advanced symptoms have set in, are perhaps more than one could possibly conceive; the future history of these cases is seldom known

in Gibraltar. The question is, therefore, how many of these cases, if left in Gibraltar, would not have terminated in death? So that, before more conclusive evidence can be brought forward, we must hesitate still in forming our opinion, whether Gibraltar is or is not a favourable place for phthisical patients.

Gibraltar has, unfortunately, still the reputation of being an unhealthy station, for memory calls back the number of dreadful epidemics which have prevailed within its walls. A medical history of the rock will always be acceptable to the profession, and it is to be regretted that Dr. Gillkrest, the principal medical officer of the garrison, has not yet favoured the public with all his valuable researches. Although there are not very marked sources of epidemics in Gibraltar, still there is sufficient room for great improvements in the comfort and accommodation of especially the poorer classes of its inhabitants, the filthy state of whose houses is almost proverbial, though an intimation of this kind from the governor was received by the Jewish population with extremely bad grace. From some cause or other, the sewers emit, in the summer months, a most fœtid smell; this mephitic odour, no doubt, proceeds from causes which may be removed. In the summer of 1844, the stench along the line wall was intolerable, and silver articles belonging to persons living in houses in this locality were almost entirely blackened, evidently from the quantity of sulphuretted hydrogen gas composing the effluvia from the sewers which open into the sea near this locality. Whatever may be said to the contrary,

I have not the least doubt that improvements in cleaning the sewers, &c., will be followed by a better state of health of the garrison. Long will the boon conferred upon the inhabitants by the late General Don be remembered. The improvements effected under his orders were made after the last epidemic of yellow fever in 1828. To these succeeded those of Sir Alexander Woodford, to whom Gibraltar is much indebted for various benefits conferred upon it. This fever has not since appeared in an epidemic form, and it is to be hoped Gibraltar will in future be spared so fearful a visitation.

The general reader may not, perhaps, be aware that the yellow fever, the great scourge of the West Indies and the western coast of Africa, was alike fatal in its effects in Gibraltar and in other parts of Spain, in several visits it made there, though it cannot be considered an endemic disease of the country. This fever, under various names, has no doubt prevailed in Gibraltar, previous to the first detailed account we have of it, but perhaps not to the same extent as it did in 1804. In that year the yellow fever made its appearance in August, and disappeared about the beginning of January the following year. During this dreadful epidemic there died, fifty-four officers, eight hundred and sixty-four soldiers, one hundred and sixty-four soldiers' wives and children, and four thousand eight hundred and sixty-four of the civil population. On the whole, more than one-third of the troops and civilians who were attacked, died. In 1810 the disease again made its appear-

ance, but was confined to the soldiers of one regiment, of whom six died. In July, 1813, the yellow fever again broke out, and carried off four hundred and sixty-one of the troops, and 883 of the civilians, and the disease ceased to rage only in December. This epidemic again prevailed in the following year, from August to the end of October; in this instance it destroyed one hundred and fourteen of the military, and one hundred and thirty-two of the inhabitants. After a lapse of nearly fourteen years, this fever again broke out in August, 1828, when, notwithstanding the adoption of the most prompt and useful measures, this epidemic carried off 1796 of the military and civil population, and, according to Major Tulloch's account, in the following proportions:—

	Strength.	Admitted.	Died.
Commissioned officers	158	53	10
Non-commissioned officers and soldiers	3,494	1,514	422
Women and children	...	447	83
Civilians	17,000	4,701	1,281

Although this disease has been known to the profession for so long a time, still there is much difficulty in arriving at any decided conclusion as to its nature. Some medical officers have laboured to prove that it is only an aggravated form of the remittent fever of tropical climates; and others, that it is a disease *sui generis;* whilst a large number once believed in its contagious nature. I must confess that my faith in the doctrines of most schools, that the yellow fever

is a distinct disease from all other forms of fever, has been much shaken from the recent prevalence of a "nondescript" fever on board Her Majesty's ships Caledonia and Formidable, whilst in the Gibraltar bay, during the late disturbances between Morocco and France; the former vessel was fresh from England and the latter from Malta, and had been only a few weeks off Gibraltar when a fever broke out among the crews, several of those labouring under it, being admitted into the military hospital when I was doing duty there. All, however, did not present the same symptoms, but the majority had the deep yellow colour of the skin, and one fatal case had many symptoms, which even the most experienced pronounced to be those of the epidemic yellow fever. Here, then, we had patients suffering from the mildest form of remittent fever to that of the severest form of yellow fever, all occurring on board the same vessels, the disease, at the same time, not attacking, to the best of my knowledge, any on shore, and it left the vessels immediately on going to sea. To what cause are we to attribute the fever in this case? Surely to a local origin, though perhaps not to one on shore, for then it was likely to have prevailed also among the inhabitants. The only circumstance I observed, which might in the slightest degree be supposed to have contributed to the production of the disease, was the stench along the line wall, produced conjointly by the effluvia from the sewers which empty there, and the gaseous emanations from the decomposition of sea-weed, &c.; and although I do not wish it to be

inferred that sulphuretted hydrogen is the cause of yellow fever (Niger expedition), I may here remark that Major Tulloch observes, in his valuable medical statistical report on Gibraltar, that the yellow fever prevailed in epidemics, more in some situations than others, particularly along the line wall facing the sea. It is still more remarkable, and perhaps, does away with any inference the above facts may have induced, that the fever was not known to prevail on board the different vessels at the same time in the bay with the Caledonia and Formidable. The origin of fever of nearly all kinds is still involved in mystery, and that perhaps of none more so, than the fevers of Gibraltar; although apparently there are so few visible sources of malaria, fevers of various kinds prevail from year to year within the garrison, and even well-marked cases of intermittent fever are recorded by medical officers who have served there. No unusual atmospherical phenomena were observed during the epidemics of yellow fever; the disease could neither be traced to rain, heat, nor wind; all nature appeared to smile; the flowers and plants looked as beautiful as ever; there was nothing unusual in the atmosphere; and the "sea rolled on as it rolled before;" man alone seemed to wither and die. Nor could any atmospherical cause account for the recent prevalence of cerebral disease in almost an epidemic form among the civil population of Gibraltar.

In the early part of the winter of 1843-4, a singular affection of the brain broke out among the poorer classes of the civil population. This was at

first supposed to be merely a form of fever, complicated with inflammation or congestion of the brain; but from the suddenness of the attack, its disposition to terminate in paralysis, and very often in death, after only a very few days' suffering; besides, from other circumstances (which would be out of place to be mentioned in a work of this kind), there is no doubt that the disease was the same as that described by Monsieur Rollet, in the "Transactions of the Royal Academy of Medicine, at Paris," viz., the *cerebro rachidian meningitis*, or *encephalo meningitis*, which had prevailed for some years past in the garrisons of Versailles, Lyons, Bayonne, Groits, Metz, Strasbourg, &c., where its course was as destructive as it was in Gibraltar; the epidemic, however, being more prevalent among the military, whilst it prevailed more sparingly among the civil population of the environs of these garrisons; whereas in Gibraltar it was almost confined to the civil population. At the same time that the disease was also prevailing among all classes in several other towns in the south of Europe, I believe there is no record of a similar disease having ever before appeared in the garrison of Gibraltar, at least not in an epidemic form. Its appearance in this instance cannot be traced to any causes which are not always in operation in Gibraltar. If atmospherical vicissitudes produced the disease, as some would wish to infer, the soldiers, who are more exposed to them, must have suffered also; therefore we are obliged to place this epidemic among many others whose origin will perhaps always remain a

mystery to us. The same may be said of the *erysipelas*, which prevailed to so alarming an extent in Gibraltar, soon after the cessation of the head disease.

Much yet remains to be learned from medical officers of the army, although medical science is already indebted to the labours of Mr. Henry Marshall and Major Tulloch, for bringing in a condensed form to the notice of the profession and to the public the mass of hospital facts collected under the admirable arrangement of Sir James M^{c}Grigor, the Director-General of the Army Medical Department, whose anxious wish to encourage researches in Natural History, will also doubtless continue to be responded to by the medical officers serving in the colonies.

CHAPTER II.

The town of Gibraltar is situated on the north-west portion of the rock. It is nearly five thousand, eight hundred and twenty feet long, and about one thousand feet broad, defended on all exposed sides by fortifications of the highest order; perhaps there is no garrison in the world better equipped in warlike appointments than Gibraltar. The new works which are now being constructed at an enormous expense, will render this little rock still more impregnable. The excavated galleries, which are mounted with heavy metal, are wonderful works of human art, and are considered as master-pieces of skilful engineering; they are objects of interest as well as of curiosity, to every stranger who may be so fortunate as to procure admission into these subterranean batteries.

The number of houses in the town was estimated, a few years ago, at one thousand, three hundred and eighty-four, not including government quarters, of which there are nearly four hundred, besides three hundred and thirty private houses in the southern part of the rock. The town is composed of only a few wide streets, running nearly parallel with each other, and others intersecting these at right angles. The generality of the streets are irregularly laid out, and from the nature of the rock, little or no uniformity

has been observed in the building of the houses. Most are built in the Spanish, or rather, Moorish style, with open courts, or *patios*, in the centre. A few modern ones are, however, built more in conformity with English taste. The greater number of houses are built on the hill-side, and are approachable only by immense flights of steps. Several families reside in different small apartments in one house; often have I seen houses with fifteen or twenty families occupying a space, which, in most places, would be devoted to only half that number of inmates.

The main street runs from the quay, or Water-port barrier, to the South-port, a distance of about half a mile, having for the most part well-built houses on each side. This street terminates, or rather extends into a road, leading to what is called the South-district, where nearly one-twelfth part of the population of Gibraltar resides. Other roads penetrate to various parts of the rock; one runs to Europa-flat, for more than two miles, winding round the governor's cottage on the east side of the rock. Bridle-paths are cut out on the highest parts of the rock; the signal station, and even the Rock-gun and O'Hara's tower, may be reached on horseback with perfect safety. A winding road, from near the governor's cottage, leads up to the Mediterranean stairs, and it is said that a bold young officer of the garrison rode up to the top of the stairs, an exploit which few would be found willing to attempt.

Few public buildings in Gibraltar possess any

importance, and in none is there any successful display of architectural embellishments. Among the principal ones are the cathedral, exchange, court-house, convent, naval hospital, garrison library, and civil hospital.

The cathedral is a poor modern imitation of Moorish architecture, badly adapted for the purpose intended, and certainly not built with any regard to the principles of acoustics. The Queen's chapel is formed of a small part of the chapel of the old convent, the rest having been turned into a ball-room and stores. This chapel claims particular attention, as containing the *manes* of many who have, during life, rendered important services to their king and country. Among these are deposited the remains of the eminent and philanthropic principal medical officer, Dr. Hennen,* who, by his works, has established a fame and reputation which few have attained. The exchange is a commodious building, part of which is also used as a library for the use of the respectable class of the civil population of Gibraltar. The court-house is a chaste building, and since the *bella-sombras* have been lopped off, its "plain and miniature imitation of the Parthenon" is seen to better advantage. The Catholic chapel, one of the few remaining monuments of the Spaniards, is a neat building. The 'convent of Franciscan friars' is now the residence of the governor, to which a fine garden is attached. The

* The author of 'The Medical Topography of Gibraltar,' &c.

Wesleyan congregations have two chapels, one in town and the other at the furthest end of the South-district. The garrison library is a spacious building, founded in 1793 by Colonel Drinkwater, the author of the celebrated book on 'The Siege of Gibraltar.' This valuable institution, without which Gibraltar would, indeed, be an undesirable residence, reflects great credit on those who have propounded and encouraged its establishment. It is entirely supported by subscriptions from the military, naval, and civil officers, at the time stationed in Gibraltar. It contains upwards of twenty thousand volumes of all kinds and descriptions, and in different languages. The committee of management have, for some years, with great liberality, allowed the purchase of a limited number of medical works, and the library now possesses a pretty fair stock of standard medical books and periodicals, which the subscribing medical officers of the garrison are too thankful to obtain the reading of, now that the military medical library is defunct, and its books lie mouldering on shelves in an upper room of the garrison dispensary.

The only Moorish remain of any importance is the castle (bearing date A. D. 746). It stands on the north-west side of the rock, and its decaying walls enclose a large space of ground, on which are built a few quarters for officers, &c. A great part of the giralda, or tower, has resisted the work of time, and forms part of the prison for civil and military offenders. The old Moorish walls have lately been restored, destroying, however, much of their picturesque effect.

The accommodation for the troops is commodious, and in general well constructed, and in good situations; nearly one-third of the troops is located in casemated barracks. The military hospital (formerly the naval hospital, and known still better by this designation), is a noble pile of buildings, situated on a flat below Buena Vista; it can accommodate upwards of four hundred patients. Each regiment has so many wards allotted to it, of which their respective medical officers have charge; the whole establishment being under the immediate supervision of the principal medical officer. A lunatic asylum, for the temporary accommodation of insane patients among the soldiers, has lately been added to this establishment, the arrangement and construction of which have occupied the constant attention of Dr. Gillkrest,* the late principal medical officer. The ordnance hospital, situated on a higher flat, called Buena Vista, above the naval hospital, is a small range of old buildings, which can only accommodate about thirty patients. The civil hospital is situated on a projecting hill in the town, but sufficiently away from other houses of the inhabitants (the adjoining buildings are commissariat quarters). This establishment owes its origin to the late Sir George Don. It affords medical and surgical relief to the sick poor of Gibraltar, and even to strangers who may seek relief there; sailors from the shipping in the bay are also admitted into its wards.

* The writer of the article on yellow fever in the 'Cyclopædia of Medicine.'

The expenses of this hospital are partly defrayed by government, and partly by private donations and legacies. Patients are also admitted into this hospital, by paying one shilling and six-pence per diem, who cannot claim the usual certificate of pauperism. The Jews, Roman Catholics, and Protestants have each their board of directors, but from this multiplicity of masters, much of the efficiency of the establishment is destroyed. The hospital can accommodate eighty patients, but rarely are there more than thirty or forty in it. Besides the in-door patients, the dispensary attached to it affords relief to a large number of out-door patients. There is some room for improvement in the whole institution, and a well qualified resident English surgeon would be a great advantage to the establishment. Perhaps no class of people object to go into hospital more than the poor of Gibraltar; and it is only when the case is hopeless, or when the supply is stopped, that they can be persuaded to enter the hospital, relief to them having been, in the meantime, afforded by efficient medical practitioners. I had much pleasure in noticing, in my last Annual Report on the sickness and mortality of the civil population, the existence of a benevolent fund, called the "Liberal Society of Friends United," which should be encouraged by all parties, as it enables a working man, in case of his own illness, to obtain a sufficiency to keep him above want for a period extending to even twelve months. Thus I have known some labouring men draw from the funds of this useful society one shilling and six-pence per

day, his only qualification for this demand being one shilling and six-pence admission-fee, and nine-pence weekly subscription; but he was not entitled to the benefits of the society until he had continued a subscriber for six months. I have briefly alluded to this subject, as I shall, no doubt, be excused for pointing out any means which ameliorate the condition of the poor.

The dead were all formerly buried in various parts of the rock, and in the sand-pit. At present only the civil and military officers and members of their families are allowed to be buried in the cemetery in the sand-pit. The soldiers and the civil population are buried in the cemetery on the neutral ground. The Jews are, however, still permitted to bury their dead on an elevated part of the rock on the road to St. Michael's Cave.

The convict establishment is a new feature in the modern history of Gibraltar. Between six and seven hundred convicts from England are located in well-built quarters in the neighbourhood of the dockyard. They are a very useful body of men on the rock, and have plenty of work to perform. Their sick are accommodated in a floating hospital within the new mole harbour.

The south district commences from the South-port gate, and extends, it may be said, to Europa-point; but the majority of houses are situateda bout half-a mile from the town. This district is, from its airy and elevated situation, considered a very healthy part of Gibraltar; Europa-flat being still more so.

The South-district is cooler by one or two degrees than the town. There are very commodious houses in this locality, many of these well-situated, and commanding a full view of the beautiful bay and the coasts of Spain and Africa; to some of these houses small gardens are attached. The habitations of the poorer classes, even in this district, are too crowded, and the generality of them in very bad repair.

Catalan bay is on the east side of the rock, facing the Mediterranean. The small village attached to it is picturesquely situated near the shore, bounded on three sides by the rock; on the southern aspect is also the immense mound of blown sand, which attracts the attention of even the casual visitor. The approach to Catalan bay is, after leaving the garrison, by a road on the left of the bay-side guard; this road runs round the base of the northern side of the rock, having the neutral ground before it, and it terminates in a bridle-path, about a quarter of a mile from Catalan bay; this pathway is rather dangerous, from the nature of the sandy soil, and a deep precipice overhanging the sea on the left side of the road; danger is always to be apprehended from the rolling down of loose fragments of the rock, a casualty to which the little village is also liable. There have been instances of large blocks of the rock rolling over into the interior of the houses through the roof. The late commanding officer's quarter was thus visited on one occasion by a heavy boulder, but the family fortunately escaped being hurt. During tempestuous weather, the sea approaches some of the houses, and

the water finds its way sometimes into the lower apartments. In summer this village might be made a delightful residence, were it not for the easterly wind which has here its worst effects. The sun sinking a few hours after noon behind this part of the rock, leaves the rest of the day cool and agreeable; there are, however, but few commodious houses available to families requiring summer quarters. The population of the village scarcely exceeds three hundred souls; they are chiefly engaged in fishing. There is here a Roman Catholic chapel, with a small school attached to it. About thirty soldiers are always stationed here, in charge of a captain, who is also the civil superintendent of the place.

Gibraltar being a free port, and affording so many facilities for smuggling into Spain, attracts within its walls men of nearly all nations, so that a stranger arriving at Gibraltar, meets in the principal street people of various colours and tongues. The most attractive of these are the stately Moors from Barbary, with flowing drapery around their manly forms. Some of this fine race of people are nearly as fair as Europeans, with light grey eyes. Most of the Jews retain their ancient costume; but the wealthier, or rather the better educated classes, wear the European dress.

The following is a tabular view of the civil population of Gibraltar.

CENSUS TAKEN IN 1840.

Classes of Population.	Males.		Females.	
	Above Twelve Years.	Under Twelve Years.	Above Twelve Years.	Under Twelve Years.
British born subjects	387	39	413	29
Native Christians	2610	1757	2934	1761
Native Jews	456	175	537	165
Barbary Jews	251	2	21	
Belgians	1	...	...	
Brazilians	1	...	1	
Danes	1	...	...	
French	42	1	22	
Genoese	612	6	339	6
Greeks	2	...	...	
Ionians	3	...	1	
Italians	95	...	13	
Moors	15	...	...	
Portuguese	368	1	219	3
Persians	1	...	...	
Spaniards	774	18	1352	16
South Americans	2	1	...	
Swedes	1	...	1	
Swiss	1	...	1	
Turks	9	...	2	
Natives of the United States	1	...	1	2
Germans	23	...	3	

RECAPITULATION.

British subjects	11,313	Protestants	1,343
Aliens	4,241	Catholics	12,577
		Hebrews	1,620
Total	15,554	Mahomedans	14
		Total	15,554
Married	4,029		
Single	10,275		
At school	1,141 Boys. 824 Girls.		

The census for 1844 gives an increase of nearly three hundred over that of 1840, and it is with considerable difficulty that the increase is kept within

certain limits, for as it is, Gibraltar is over-populated. From the foregoing table, it will appear that the major part of the population is composed of the descendants of Spaniards, Portuguese, Jews, and Genoese. The number of English descendants is comparatively few. The occupations of this mixed class of population are necessarily various. The following list is from Martin's 'Account of Gibraltar.,' which the reader should consult for further information on the rock, which could not possibly be introduced in this summary account of its topography.

160 Merchants.
226 Shopkeepers.
303 Clerks.
48 Landed proprietors.
4 Lawyers and notaries public.
24 Medical practitioners and apothecaries.
99 In government civil service.
19 In religious establishments.
25 Brokers.
309 Hawkers and dealers.
1042 Tradesmen and mechanics.
43 Wine and spirit dealers.
267 Gardeners, butchers, milk and fruit sellers.
880 Tobacconists and cigar-makers ! !
408 Mariners and fishermen.
646 Porters and labourers.
2473 Servants, &c.
364 Various other occupations.

The following are without employment, or assisting in domestic affairs:—625 men, 1,985 boys, 2,957 women, 2,101 girls.

The civil population is considered particularly orderly and well-behaved; crimes are not frequent or numerous; seldom are there more than five or six cases in the quarterly criminal calendar. The civil suits rarely possess any public interest. Drunkenness is not common among the poorer classes; however, the wine-houses are usually full:—this is perhaps owing to the idle propensities of the people, and their *penchant* to loitering habits.

The military consists of the six service companies of five regiments, five companies of artillery, and three companies of sappers and miners, amounting to nearly four thousand men, with the usual complement of general and medical staff officers.

The duties of the soldier in Gibraltar are considered rather severe, particularly to those of newly arrived corps; and to young soldiers the pioneer duties must be very fatiguing. I have not the least doubt that the increased proportion of sickness in these corps is, in a great measure, attributable to this cause, especially in the summer months. However, medical officers in general consider the employment of soldiers in the public works as conducive to health, or, in other words, that "it keeps them in healthful exercise;" whilst they regret that the extra pay allowed to soldiers for this kind of labour enables them to drink larger quantities of spirits and wine.

The ration in this garrison consists of one pound of bread, and one pound of meat per day, fresh or salt; the salt meat being usually served once in four days. This allowance, with a proportion of wine

and vegetables, is divided into two meals in the day; the breakfast at eight, A.M., consisting of bread and coffee; and the dinner at one, P.M., consisting of the beef and potatoes, or any other vegetable which may be provided. There is no regulated evening meal; most of the soldiers resort in the evenings, when off duty, to wine-houses and taverns; and since the Temperance Coffee-room was opened, under the superintendence of Captain Carter, of the "Royals," a few spend their leisure hours there. If, by any possible means, an evening meal could be established throughout the service, I am sure the result would be very beneficial; for, as it is, eighteen hours is too long fasting for healthy men. The poorer classes of the civil population subsist chiefly upon fish and vegetables, which are to be had, in great abundance, both cheap and good. The beef is of cattle imported from Barbary; but, though stall-fed just before killed, it rarely equals the common kinds of English beef. Nor is the mutton much better. English mutton, brought by the steam packets, is highly prized; it is seldom seen but in the regimental messes, where the demand for a "slice of English mutton" is more frequently made than for any other dish. Veal and lamb, of inferior qualities, are also sold in the market; pork is by far the best meat in Gibraltar. Poultry is abundant, and tolerably cheap. Seldom is there any other game than hares, red-legged partridges, and quails, found in the market.

The government of this settlement is in the hands of the governor, who is also the general officer com-

manding the troops of the garrison. Justice is administered according to the English law. The police regulations have lately been much improved, under the supervision of its present learned attorney-general. By one of the police regulations, no alien can reside in the garrison without special permission being first obtained from the police magistrate, and this he will not receive unless some respectable householder on the rock stands security for his good conduct.

The society of Gibraltar resembles the society of most garrison towns, the nature of which can be best understood by those who have at any time resided in one. There are few sources of amusement in Gibraltar. In vain will the lover of the fine arts seek to gratify his tastes. Opera and theatrical companies have very little support, and consequently their visits to the rock are few and far between. The officers of the garrison keep a tolerably good pack of hounds, which is to them a great source of healthful enjoyment, and to the Spaniards one of astonishment. The races, too, come off with great *éclât*. Public balls are held in the winter, which serve to keep the young people amused.

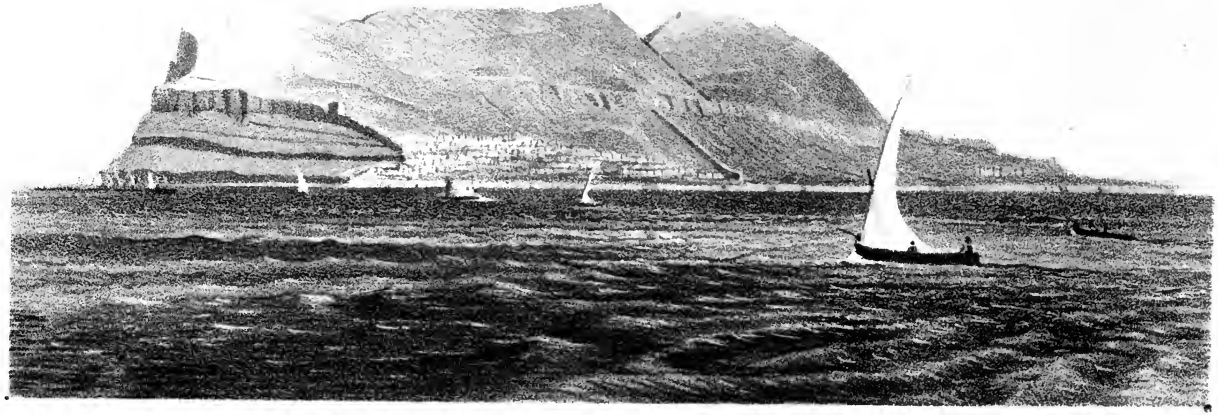
I have thus brought to a conclusion this sketch of the town and inhabitants of Gibraltar, which I regret to say is necessarily a very short one. The curious reader will, however, find the little guide-book to Gibraltar a very good Itinerary.

PART II.

BOTANY OF GIBRALTAR.

Fair Nature! thee, in all thy varied charms,
Fain would I clasp, for ever, in my arms!
Thine are the sweets which never, never sate:—
Thine still remain, through all the storms of fate.

H. KIRKE WHITE.



WEST VIEW, TOWN.

PART II.

BOTANY OF GIBRALTAR.

On entering the Mediterranean Straits, Gibraltar appears to be a barren rock; but as the stranger approaches land, he is happily undeceived by finding a great part of the rock covered with vegetation. After he has passed the South-port gate, he finds himself in the Alameda, which is tastefully laid out; and as he prolongs his walk, he is still more surprised to find that Gibraltar can boast of its gardens and walks lined with beautiful shrubs and plants, shaded by stately poplars and *bella-sombras*.* Even as early as December the colour of the rock is varied by luxuriant vegetation, though of a diminutive description, which with magical rapidity changes its summer dress and arid appearance, immediately after the first falls of rain; masses of green of every tint, harmonising beautifully with the yellow bloom of the Spartium and Genista, and the fragile umbels of the Oxalis cernua, which grows here almost wild. The whole appearance of the rock, near the Alameda,

* Phytolacca dioica.

is charming, and one who has not seen tropical vegetation, would scarcely believe that at such a season nature could look so beautiful. On a fine sunny day these attractions tempt every lover of nature to quit his home for a ramble over this picturesque ground, or to saunter in the gayer paths of the Alameda gardens, where, with "fairer flowers" of all shades and figures, he may breathe the air scented by a thousand blossoms; these are the beauties of the "sunny south" found even on this small rock. Earlier in the spring, before other brilliant flowers can draw one's attention, the promenade in these gardens is rendered captivating enough by the thousand gorgeous chandelier-like groups of the Barbadoes aloe, mixing its red pine-shaped blossoms with pelargoniums of every tint, while the graceful "silver broom"* waves its delicate foliage and white flowers over the sides of the narrow and tortuous paths, leading to charming alcoves and silent retreats.

A narrow pathway leads from the Alameda to the high road, on the sides of which the botanist may gather a number of most interesting plants, such as Vinca media, Convolvulus althæoides, Verbascum sinuatum, Clematis cirrhosa, Asphodelus ramosus, Acanthus mollis, Psoralea bituminosa, &c. On walls by the road-side he will find Lactuca tenerrima and Barkhausia taraxacifolia. A road to the left leads up to St. Michael's cave; before proceeding further he will find here elegant specimens of Genista lini-

* Spartium monospermum.

folia, Centaurea polyacantha, Aristolochia glauca, the Smilax aspera, and the beautiful Lonicera implexa. A little higher up is a pathway, leading to a romantic little garden, solely made by an old man, whose retreat was not known till he had made this small spot "his little paradise." There, under the shade of Pinus sylvestris and Ceratonia siliqua, the middle classes, with their families, spend a few hours, taking such refreshment as their humble means afford.

The botanist, after visiting this spot, may retrace his steps to the road leading to St. Michael's cave; on his way down he will, perhaps, find specimens of Jasminum fruticans, and, if later in summer, he will see Daphne gnidium in blossom, with a hundred other interesting plants, such as Lavandula dentata, Teucrium fruticans, and T. lucidum. It is quite necessary to leave the road, and climb up the rocks (which, however), is no easy matter, to gather anything like a variety; having done so, he meets with a great number of plants, and they become more interesting the higher he ascends, from the scarcity of some of the species. The whole side of the rock in this locality is covered with the broom tribe of plants, Genista linifolia and Sarothamnus bœticus being the most conspicuous, and here are seen different species of Centaurea, Kentrophyllum arborescens, Scolymus hispanicus, and, at distant intervals, Atractylis cancellata, Scabiosa stellata, and a few comparatively rare plants, such as Linum maritimum, Lychnis dioica, Biscutella microcarpa, Campanula erinoides. We shall now suppose the botanist to have examined

this locality, and to proceed eastward towards O'Hara's tower, after also having visited St. Michael's cave, where he has, perhaps, found Scolopendrium Hemionitis, and Adiantum Capillus-Veneris, and some others of the fern tribe, in the crevices of the rock. A road leads up to O'Hara's tower, but the lower one, leading round to the Mediterranean stairs, is still more interesting; and on his way he will find the sides of the rock covered with Teucrium polium, Stachys circinata, Conyza saxatilis, and occasionally he will meet with Calendula incana, and more rarely Calendula stellata, and Convolvulus siculus. Anchusa italica and Borago officinalis he will also see here, but they are more abundant on the lower parts of the rock. On arriving at about the old subterranean barrack, now in ruins, before entering the tunnel which leads round the rock, it will be well to scramble a little over the rocks in this locality, and he will here see Silene velutina, and occasionally Silene gibraltarica, with fine specimens of Delphinium pentagynum. After passing the first tunnel he will observe on the sides of the rock Linaria tristis and L. villosa, and above these he will see Rhamnus oleoides and Phylleria media. A little further on takes him to the winding path leading to the Mediterranean stairs, and in this locality there is a rich field of plants; Phlomis purpurea and Chamærops humilis being the most conspicuous. Among many others he will gather Allium roseum, A. sphærocephalum, Linaria amethystina, Nepeta tuberosa, Statice emarginata, Aristolochia mauritanica, Ceras-

tium gibraltaricum, and Melica aspera. In the crevices of the rock and caves in this neighbourhood he will find Umbilicus pendulinus, Asplenium trichomanes, Ceterach officinarum, &c. On ascending the Mediterranean stairs, he will observe Helichrysum rupestre, Jasione montana, Scilla peruviana, Iberis gibraltarica; and in this locality he will also gather the beautiful Iris filifolia of Boissier.

It will be fruitless for me to attempt giving a lengthened account of the vegetation of the different localities; this can be better understood by referring to the Synopsis of Plants; however, I shall now proceed to give briefly a general view of the vegetation of the lower parts of the rock.

On Europa-flat is situated the mess-room of the regiment stationed on Windmill-hill; on the most southern point is a lighthouse, recently erected. This part of the rock contains but few shrubs, and upon the whole there are not here many species. The most common species are—Momordica Elaterium, Ornithogalum umbellatum, Moræa sisyrinchium, Asphodelus fistulosus, and Glaucium luteum. A little further on, are found in great abundance, the Statice sinuata, Anthyllis tetraphylla, Ixia Bulbocodium, Ononis serrata, Buphthalmum maritimum. On the slopes below he will find the beautiful Senecio minutus, and several species of Medicago and Lotus. Above the road is situated the governor's cottage, a delightful summer residence; behind this building are several interesting plants, and among them is a species of Iris which has not yet been identified.

The road from Europa leads to a romantic little place, called Glenrocky, near Europa-pass, on which is situated the house now occupied by the chief justice; a pretty little garden is attached to it, and the ivy and aloe cover most part of the rock surrounding it. In this neighbourhood, on the other side of the road, grows Narcissus niveus; and early in autumn the Colchicum is also seen here. We now pass large plantations of Agave americana. A few houses are here scattered, and surrounded by small but neat gardens. On the side of the rock, in this locality, grows, in great abundance, Sempervivum arboreum. Keeping the high road, we come to the residence of Mr. Bracebridge, who has several acres of his land cultivated with flowers of the choicest kinds; and here grows a gigantic fig-tree, which is well worth the stranger's attention. Adjoining this garden is the residence of the captain of the port. The house has been lately rebuilt, but it has no claims to architectural merit. The grounds around it are certainly spacious, and planted with some taste, considering the small extent of the rock. On these grounds grow many stately old trees, among which is a beautiful specimen of Magnolia. A variety of plants is found at the back of these premises, such as Linaria lanigera, Lotus angustifolius, Fumaria capreolata, Pallenis spinosa, &c. Descending the Windmill-road, a long flight of steps leads to the road which communicates with the Naval Hospital and South Pavilions. On these steps I gathered Coronopus didyma; and on the side walls were a few elegant specimens

of Lactuca tenerrima, whose light lilac flowers attract general attention nearly throughout the summer, the flowers appearing even long after the leaves have died. On reaching the Naval Hospital, an open space of ground is seen before it, shaded by fine specimens of Phytolacca dioica. Under the most sheltered one may be seen a seat reserved for the use of the medical officers of this large establishment, who, after their morning labours, usually assemble here, when the junior officers learn from the lips of one or the other senior surgeons the result of their experience at the bedside of the sick soldier. Those who are botanically inclined, will find in this neighbourhood a small but interesting field to explore; and perhaps they cannot find a pursuit more likely to benefit and at the same time to amuse them, after leaving their respective wards, than to study the beauties of even the few flowers within the walls of the hospital. On the grassy surface is a variety of Medicago and Lotus; and on the walls and sides of the rock are seen Iberis gibraltarica, Linaria tristis, Campanula mollis, Buphthalmum maritimum, and the lofty Sempervivum arboreum. Andryala integrifolia and a few specimens of the Solanum sodomeum may also be seen in this locality. The available spaces in the South-district are all densely cultivated with vegetables, flowers, &c. The soil is very productive, consisting of a vegetable mould, highly impregnated with animal matter, of which there is never a deficiency in Gibraltar.

The road from the town which leads to the galle-

congenial to his tastes. On descending by a lower road from the signal-station, two or three small apologies for farms are passed; and just above the middle part of the town is the elegant residence of Dr. Burrow, the archdeacon of Gibraltar, who has, with great taste and horticultural skill, laid out the garden surrounding the "palace" with rare and beautiful trees. I doubt not that he has ere this succeeded in naturalizing some of the plants which grew from seeds sent to me by my friends in Ceylon; indeed, before I left the rock, I had the pleasure of seeing several ornamental plants of that "garden of flowers" thriving as well as they can be expected to do in Gibraltar. The stranger could scarcely picture to himself a good garden in Gibraltar; but there are several, even in the town, which may come under this designation. The extent of some of these would perhaps surprise him; among the principal ones are, the gardens attached to the quarters occupied by the colonels of artillery and engineers; the garden belonging to the celebrated wine-merchant, Mr. Glynn; the one just mentioned, belonging to the archdeacon; and, the largest of all, the convent garden. In the South-district there are several very excellent flower-gardens; the one attached to the Alameda is under the particular care of Captain Pogson, the garrison quarter-master, to whom indeed much credit is due for the excellent preservation and increasing beauty of the Alameda; and it is surprising how much has been done, with so little pecuniary means at his command. Mr. Danino's nursery, though not very extensive, is kept in good

order. Most of the civil public officers have small gardens attached to their houses; the principal ones are those of the judge, attorney-general, and registrar of the supreme court. Besides flower-gardens, there are several large spots of ground, in various parts of the rock, cultivated with vegetables, but not in sufficient quantities to supply the whole market;—two-thirds of the articles sold there are supplied from Barbary, and the adjoining parts of Spain. To visit the market early in the morning is indeed a treat, especially during the fruit season: the quantities of oranges, grapes, melons, figs, &c., piled up in every stall, is a remarkably pleasing sight; before evening comes, the size of these heaps of luscious fruit is greatly diminished: the quantity sold is almost incredible. The shipping in the bay, which often amounts to between two and three hundred sail, helps to consume the enormous quantities of fruits and vegetables seen in the Gibraltar market.

After visiting the market, the botanist will direct his steps to the neutral ground; but before he proceeds a few yards (if he is also an ichthyologist) he will be glad to meet with so large a collection for examination as is to be seen on the well-supplied fish-stalls near the fruit-market. The abundance of fish in the market of Gibraltar is almost proverbial, and their variety is still more remarkable: however, I shall not stop here to inquire into their number, but confine myself to enumerating a few most commonly met with, viz.—the Zeus faber, Pleuronectes solea, Mullus barbatus, Clupea encrasicolus, two species of

Scomber, the Muræna anguilla, and Sepia octopus. The most favourite kinds are the John Dorées, red surmullets, anchovies, and sardines,—especially the three latter, which are to be had in great perfection, and are exceedingly cheap. A pennyworth of fish is sufficient for a moderate-sized family; the poorer classes rarely eat any other animal food.

Ayala, a Spanish writer, in his interesting 'History of Gibraltar,' mentions that an extensive tunny-fishery was rented to the city of Gibraltar for 10,000 *maravedies*, though now this fish is not at all common in the Mediterranean; whereas, some centuries ago, ships were loaded with them from neighbouring ports, and the fishery afforded a large revenue to the state. "Above all things," says Portillo (quoted by Ayala), "is there in Gibraltar a great abundance of fish; that from thence great part of Andalusia is supplied with carriers, who, to get a load of fish, carry there one of bread or oil; as are also Malaga, Almeria, and the neighbouring towns."* Even in the present day, large quantities of preserved anchovies and sardines are exported from Gibraltar.

The botanist, after having gratified his taste for fishes, will pass through the Puerta de la Tierra, and find himself outside the rock of Gibraltar. On the left is the bay, which at this part has extensive oyster-beds, reserved for the Gibraltar market. The lagoon (see Ayala), now turned into a kind of moat, called the

* See Mr. Bell's excellent translation of Ayala's work, just published by Pickering.

" inundation," contains large quantities of sea-weed; the removal of which is almost the constant occupation of several men, as its accumulation rapidly increases, and it is very liable to putrefy, the water in this reservoir being a mixture of rain and sea-water. Ruppia rostellata, and a species of Potamogeton, are found in this basin. On a small bank to the right may yet remain a few specimens of Lotus tetragonolobus, Physalis somnifera, Datura Metel, and Silene vespertina. It was here that I gathered the Centaurea solstitialis, which might have been introduced, as this bank is a depository for rubbish. The glacis in this neighbourhood is covered with Cucubalus behen, and a variety of grasses, among which are Dactylis hispanica, and Hordeum murinum.

Passing along the moat, after leaving the bay-side guard, a road to the right leads to Catalan-bay, almost round the northern side of the rock, which has lately been extensively quarried for stones to erect the new works; at the same time making this part of the rock more inaccessible to the enemy. On the left of the road is the neutral ground, and near its edge are found fields of Ranunculus bullatus, and R. flabellatus: later in summer these are succeeded by the large variety of Thrincia hirta. The road to the bay terminates in a bridle-path, cut through the sandy bank, which extends for more than half-a-mile eastward, and in a crescentic-shaped part is situated the small village, seen now from the highest part of the road. On this bank grow, in great abundance, Ononis ramosissima, Delphinium peregrinum, and Matthiola Brous-

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sonetii. At distant intervals may be seen the delicate Linaria amethystea, and L. pedunculata. Proceeding on further, this path descends, and its right side becomes rocky: on the edges of these rocks are found large masses of Statice emarginata, and Crithmum maritimum; and in their fissures is seen the beautiful Linaria villosa. Having gained the little fishing village, one might rest here a while, and see the fishermen drawing in their nets, and no doubt their contents will also be interesting to the naturalist. After this little variety he must be prepared to walk through nearly ankle-deep sand, in order to reach the small sandy bay beyond the village; and having arrived there, he will scarcely find more than a dozen plants, such as Medicago marina, Pancratium maritimum, Salsola rosacea, &c. On some of the blocks of limestone may be seen handsome clusters of the Adiantum Capillus-Veneris. This little bay is romantically situated facing the Mediterranean, but it is not inhabited, and only resorted to by pic-nic parties, and fishing-boats put in there occasionally. The sandy deposits are here distinctly stratified, and hardened evidently by calcareous infiltrations. There is no passage to lead the botanist to the other side of the rock; he must retrace his steps to the neutral ground, where he will find a number of plants which he has not seen on the rock.

The greater part of the sandy isthmus belonging to the garrison is covered with good turf, on which, during the race-weeks, may be seen some fine specimens of Andalusian horses. The race-course is at

this time a very animated scene: here are found the Spaniards, in their national costume; and to afford a little variety a race is run by horses ridden by their Spanish masters, not dressed as jockeys but in their native garbs. On a late occasion, even the commandant of the Spanish lines was seen taking an active part in the emulative spirit of his countrymen. The scene is rendered still more interesting by the presence of well-dressed Spanish women, in their graceful mantillas, seated on gaily painted Spanish calecas. The race-stand, though small, contains also a choice collection of Spanish and English ladies and gentlemen, taking evidently a very animated interest in the exciting pleasures of the turf. The cricket-matches also go off on these grounds. Upon the whole, without this part of the isthmus, the rock of Gibraltar would afford to the inhabitants but a very small space for recreation and healthful exercise. What indeed would Gibraltar be to the large number of gentlemen of this garrison, if they had neither races, hunting, nor cricketing? However, I must no longer exhaust the patience of the botanist with these desultory matters, but hasten to tell him a little of the beauties which vegetable nature presents on this anything but *neutral* ground.

The governor, town-major, and I believe the town-adjutant, have small portions of this land allotted to them, which are used for various useful purposes, and where also a few flowers and vegetables are cultivated. A large space is rented out to gardeners, who make the best use of the land by cultivating all

sorts of vegetables: the soil is richly manured with the refuse from the garrison, which unfortunately makes this place very unpleasant to the olfactory organs. On the uncultivated parts grow a variety of beautiful plants, such as the Muscari comosum, Erodium moschatum, Verbena officinalis, Centaurea calcitrapa, &c. Later in summer these are replaced by the curious Tribulus terrestris, and the not less interesting Euphorbia Chamæsyce. On the eastern side, where the soil is more sandy, the Picridium tingitanum is found in great abundance, as also a few specimens of the Eryngium ilicifolium and Caucalis maritima; both these plants are more frequently met with beyond the line of British sentries. Near a damp place, about twenty yards from the middle part of the vegetable-garden, may be seen a large collection of Mentha Pulegium var. tomentella: no doubt this plant was called by Willdenow M. Gibraltarica, from seeing it grow here. Bentham, the celebrated authority on this tribe of plants, has shown it to be only a variety of the M. Pulegium. Cichorium Intybus, or divaricatum, grows here in great abundance, as also Mentha rotundifolia. The vegetation on the western side of this part of the isthmus presents a somewhat different character; very few plants which grow on the other side are found here, whereas Euphorbia Paralias, Erodium cicutarium, and Glaucium luteum supply their place. The same remarkable difference is observed on the *real* neutral-ground, beyond the localities just described. On the eastern side, the soil being nearly composed of sea-sand, scarcely

eighteen species are found; the prevailing ones being Pancratium maritimum, Ononis variegata, Picridium tingitanum, Cachrys Pterochlæna (which covers nearly one-fourth of both sides of the neutral-ground*), and Silene nicæensis. On the western side, the sand being thinly covered with soil, and also being much lower than on the eastern side, contains, in addition to the plants just enumerated, several other kinds equally interesting, such as Juncus acutus, Cyperus badius, Ononis natrix, O. reclinata, and several sorts of grasses, among which are found the beautiful Festuca Alopecurus, and the singular Schœnus mucronatus.

Till very lately it has not been the good fortune of any of the medical officers of the garrison to spend a night on the neutral-ground, and it is to be hoped that the opportunities which are now afforded will be taken advantage of, and that a series of hygrometric observations will be made, and all atmospherical phenomena recorded. The temperature of the neutral-ground, especially during night, is often as much as five degrees less than in the town. A moonlight view of the rock, from the old north-front guard (where by turn, in common with the other medical officers of the garrison, have I spent some delightful hours), is indeed a sight well worth being shut out of the garrison to be enabled to see, and is a full compensation

* This is that remarkable umbelliferous plant, the abundance of which fails not to attract the attention of the most indifferent.

for the few hours spent by professional men on guard.*

I have now to apologize to the reader for confining myself, in this botanical sketch, to the limits of the neutral-ground, hoping, in another part of the work, to satisfy his further curiosity; and I take this opportunity, in presenting the following list of Gibraltar plants, to acknowledge most thankfully the interest shown by several botanical friends in this undertaking.

Sir William Hooker I have to thank for the generous manner in which he so kindly permitted me the use of his valuable collection; and his son, Dr. Hooker (the learned author of the FLORA ANTARCTICA), for his able assistance in settling the specific characters of some rare plants. I am also under similar obligations to Dr. Lemann, Mr. Bennet, of the British Museum, and Mr. Kippist, of the Linnean Society; and the interest shown by Mr. Robert Brown, is not likely to be effaced from the memory of one of his humble admirers.

* Previous to Sir Robert Wilson's government, nearly 600 people, living on the neutral-ground and at Catalan-bay, were totally unprovided with medical advice on the spot. The governor having seen the inconvenience of disturbing the authorities to open the gates, perhaps at dead of night, has very considerately placed a medical officer, at night, on one of the guards, to meet any casualties which may occur during the hours the gates are closed.

PART III.

SYNOPSIS OF PLANTS.

" Despise not thou the wild flower! — Small it seems,
And of neglected growth, and its light bells
Hang carelessly on every passing gale: —
Yet it is finely wrought, and colours there
Might shame the Tyriau purple; and it bears
Marks of a care eternal and divine.
Duly the dews descend to give it food;
The sun revives it drooping, and the showers
Add to its beauty; and the airs of heaven
Are round it for delight."

" Consider the lilies of the field, how they grow; they toil not, neither do they spin: And yet I say unto you, That even Solomon in all his glory was not arrayed like one of these."

PART III.

SYNOPSIS OF PLANTS.

DICOTYLEDONES.*

RANUNCULACEÆ, *Juss.*

Clematis cirrhosa, ***L.***
Cl. semitriloba, Lag. Gen. et Sp.

Hab. Portugal, Spain, Corsica, Italy. Barbary. Syria.

Obs.—Grows in great profusion on the declivities of the rock, opposite the Alameda, and in hedges along the high road to Europa-point.

Ranunculus bullatus, ***L.*** Crowfoot
R. autumnalis, Clus.

Hab. South of Europe. Barbary.

Ranunculus flabellatus, ***Desf.***
R. Chærophyllos, var. *β. flabellatus,* Boiss.

Hab. Mediterranean regions. Portugal. Asia Minor. Barbary.

Obs.—Both species are found in some abundance on the neutral-ground and Spanish race-course.

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* Where no particular locality is mentioned, it is to be understood that the plant is found in more than one part of the rock.

Ranunculus blepharicarpos, *Boiss.*

Boiss. tab. 1, A.

R. monspeliacus, Desf.

Hab. South of Spain, Portugal. Barbary.

Obs.—Found on Europa-flat, near the artillery-barracks, by Dr. Lemann.

Nigella damascena, *L.*

Hab. South of Europe. North of Africa. Canary Isles.

Obs.—*N. Hispanica* is found near St. Roque.

Delphinium peregrinum, *L.* larkspur

Var. α. *confertum,* Boiss. Rami abbreviati, racemi conferti, pedicelli calcare breviores.

Var. β. *longipes,* Boiss. *D. longipes,* Moris. Rami elongati, flores distantes, pedicelli elongati, bracteâ calcareque longiores.

Hab. South of Europe. Palestine.

Obs.—These two varieties, though considered by some botanists as two distinct species, have been pointed out by Boissier to be only varieties. The former grows on the declivities near Catalan-bay, and the latter near the Spanish lines and neutral-ground; and is found also in great abundance on the road to St. Roque.

Delphinium pentagynum, *Desf.*

Hab. South of Europe. Barbary.

Obs.—This beautiful species of larkspur is rather rare in Gibraltar, and is met with only on the higher parts of the rock.

PAPAVERACEÆ, *De C.*

Papaver Rhœas, *L.* Poppy

Hab. Asia. Europe—Britain. North of Africa. Canaries.

Papaver dubium, *L.*

Hab. Europe—Britain. (Rare in Gibraltar).

Papaver Argemone, *L.* Long prickly poppy

Hab. Europe—Britain. Asia Minor. North of Africa.

Papaver hybridum, *L.*

Hab. Europe—Britain. Canaries. (Rare in Gibraltar).

Papaver somniferum, *L.* White poppy.

Hab. Portugal, Spain, France. Africa.

Obs.—I have met with so few specimens of this species away from cultivated soil, that I am inclined to believe it is not indigenous to the rock. It is found in abundance in gardens.

Glaucium luteum. *Scop.* Yellow horned poppy

Hab. Europe—Britain. Asia Minor. North of Africa. North America. Canary Isles.

Obs.—Chiefly met with on Europa-flat, and on the neutral-ground. A few specimens are also seen above the Alameda, near the beds of Ononis and Verbascum sinuatum.

FUMARIACEÆ, *De C.*

Fumaria capreolata, *L.* Fumitory

Hab. Europe—Britain. Barbary.

Obs.—This plant forms a peculiar feature in the vegetation of the lower parts of Gibraltar, where it is found in great abundance, covering almost every hedge and road-side.

Fumaria parviflora, *Lam.*

Hab. Europe—Britain. Africa.

Obs.—Not quite so common as the above species.

Fumaria officinalis, *L.*

Hab. Europe—Britain. Africa.

Obs.—Rare on the rock, but found in great abundance in the neighbourhood of St. Roque and Algeciras.

MAGNOLIACEÆ.

Magnolia grandiflora, *L.*
Var. *elliptica.*

Hab. Florida, Carolina.

Obs.—Cultivated in Gibraltar. Fine specimens of it are seen in Sir John Sinclair's grounds, among a variety of exotics rarely met with elsewhere.

ANNONACEÆ, *Rich.*

Annona Cherimolia, *Mill.* Custard apple

Hab. South America.

Obs.—Cultivated, but rarely. The tree arrives at great perfection near Malaga.

CRUCIFERÆ, *Juss.*

Malcomia littorea, *R. Br.*

Hab. Portugal, Spain, France. Barbary.

Malcomia Broussonetii, *De C.*

Hab. Mediterranean shores, &c.

Obs.—M. Boissier makes this species only a variety of the former; and indeed it is difficult to find characters sufficiently marked to separate one from the other. The second species is more numerous on the little sandy desert between the neutral-ground and foot of Queen of Spain's Chair. It is also found with the other species on the sandy hills near Catalan-bay.

Matthiola tricuspidata, *R. Br.*

Hab. Mediterranean shores, &c.

Hesperis matronalis, *Lam.*
Var. *sylvestris,* De C.

Hab. Europe.

Obs.—Rare. Communicated by Dr. Lemann.

Cardamine hirsuta, *L.*

Hab. Europe—Britain. North Africa. Persia.

Brassica papillaris, *Boiss.*

Hab. Portugal, Spain.

Obs.—This is a new species described by Boissier. *(See Appendix).* Found on the neutral-ground.

Brassica Sinapistrum, *Boiss.*
Sinapis arvensis, L.

Hab. Europe. Canary Isles.

Sinapis incana, *L.*

Hab. Germany, Britain, France. Canary Isles.

Sinapis alba, *L.*

Hab. Germany, England. Asia Minor. Canary Isles.

Rapistrum rugosum, *Mœnch.*

Hab. Italy, Germany. Canaries.

Coronopus didyma, *Sm.*

Hab. England. Malaga.

Obs.—Generally found on the neutral-ground, beyond the vegetable-garden, in the neighbourhood of Mentha Pulegium; as also on steps leading to Windmill-road, &c.

Capsella Bursa-pastoris, *L.*

Hab. Europe—Britain.

Koniga maritima, *R. Br.*

Alyssum maritimum, L.

Hab. South of Europe—Britain. Barbary.

Iberis Gibraltarica, *L.*

Hab. Gibraltar.

Obs.—This is by far the most beautiful species of candy-tuft; but strange to say, it is rarely cultivated in Gibraltar, whilst other less beautiful species are found in every garden. This species has as yet been found only in Gibraltar; but it is quite possible that it may grow on the opposite coast of Africa, all the botanical treasures of which have not yet been determined. Large masses of its light lilac-coloured flowers are seen on the eastern side of the rock in the early part of summer, mixing with the dark blue of the Scilla hemisphærica. Specimens of it are also seen on the sides of other parts of the rock, near the Naval Hospital, Buena-vista, &c.

Biscutella microcarpa, *De C.*

Hab. Asia Minor. South of Europe.

Biscutella saxatilis, *Boiss.* non *Schl.*

Hab. Europe. North of Africa.

Obs.—Communicated by Dr. Lemann. I have also gathered specimens of Var. tomentosa.

Bunias balearica, *L.*

Succowa balearica, De C.

Hab. Sardinia. Algiers. Sicily. Canary Isles.

CAPPARIDEÆ, *Juss.*

Capparis spinosa, *L.* Caper bush.

Hab. Portugal, Spain, France. N. Africa.

Obs.—Cultivated in gardens; grows in great perfection round the convent walls.

CISTINEÆ, *Dun.*

Cistus albidus, *L.*

Hab. Spain, Portugal. North of Africa.

Obs.—The Cistus populifolius, C. salvifolius, C. hirtus, and several other species, grow on the Queen of Spain's Chair, and other hills in the neighbourhood of Gibraltar. The road to the Cork-wood is covered with them in summer.

POLYGALEÆ, *Juss.*

Polygala saxatilis, *Desf.* Milkwort

Hab. France, South of Spain. Barbary.

Obs.—If not mistaken, I have gathered also the P. amara.

FRANKENIACEÆ, *St. Hil.*

Frankenia lævis, *L.*

Hab. Europe, Britain. Canary Isles. Barbary.

Obs.—Grows in great abundance on the neutral-ground, and is also found on Europa-flat and Windmill-hill.

RESEDACEÆ, *De C.*

Reseda undata, *L.*

Hab. Spain. Barbary.

Reseda alba, *L.*

Hab. South of Europe, Britain. North of Africa.

Reseda luteola, *L.*

Hab. Europe, Britain. Barbary. Canary Isles.

Obs.—Sometimes mistaken for the R. virescens; but the small teeth at the base of the leaves are sufficiently characteristic of this species; however in some specimens the teeth are wanting on the upper leaves.

Reseda lutea, *L.*

Hab. Europe, Britain. Barbary.

Obs.—I have met with this species only on and near cultivated parts of the rock, and therefore I doubt whether it is indigenous to Gibraltar. The scented Mignonette (R. odorata) is also cultivated extensively here, and grows to great perfection in almost any soil, and is occasionally seen on old walls and roofs of houses.

CARYOPHYLLEÆ, *Juss.*

Dianthus caryophyllus, *Desf.* vel. *Auct.*

Hab. Spain, Portugal. Barbary.

Obs.—This beautiful plant is only found on the north face of the rock, above St. George's-hall, where I for the first time found it on a visit to the galleries, with Captain Aylmer, of the Royal Artillery, to whom I am indebted for the *locales* of several rare

plants. I believe it may hereafter be found that this plant is the D. sylvestris of Wulf, which Boissier found in Alhaurin, Monda, &c., for it differs in a few points from the D. caryophyllus of Desf.*

Dianthus prolifer, *L.*

Hab. Europe, Britain. Barbary.

Obs.—Not common on the rock, but found in great abundance on the Queen of Spain's Chair and Cork-wood.

Silene bipartita, *Desf.*

Hab. Italy, Greece. Canaries. Barbary.

Silene nicæensis, *All.*

Hab. Greece, Spain. Barbary.

Obs.—Generally with white flowers; one of the few plants characteristic of the vegetation of the neutral-ground; found also in great abundance on the sandy bank on the road to Catalan-bay.

Silene velutina, *Pourr.*

Hab. South of Spain, Corsica, Majorca, &c.

Obs.—Found on the higher parts of the rock.

Silene Gibraltarica, *Boiss.*

Boiss. tab. xxvi. A.

Hab. Gibraltar (rare).

Obs.—Before I had access to the work of M. Boissier, on 'The Plants of Spain,' I considered this species as only a variety of the Silene velutina, to which it bears a strong resemblance; but on obtaining fresh specimens, through the kindness of Lt. Scott, R. E., I was enabled to determine its specific characters.

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* Since writing the above remarks, I have compared the Gibraltar plant with specimens of D. sylvestris in Sir W. Hooker's collection, and found it to correspond.

It is a rare plant, found in almost inaccessible fissures on the eastern side of the rock. Silene velutina is found more frequently on the western side of the rock. " Cette espèce" (S. Gibraltarica), says M. Boissier, " dont je n'ai pu me procurer qu'un seul échantillon, tant les lieux où elle croît sont inaccessibles est voisine du S. velutina, mais elle en est très distincte, par ses feuilles radicales bien plus arrondies, d'une teinte noirâtre, par ses tiges, parfaitement cylindriques et glabres dans la partie supérieure, tandis que le S. velutina les a visqueuses et sulquées, par des calices beaucoup plus renflés dans la partie supérieure, même pendant la floraison, et munis à la base de bractées bien plus courtes, par ses pétales violets et bifides seulement au tiers, de leur longeur." The plate given by Boissier of this plant is a faithful representation, only that in the majority of specimens I obtained, the branches were more numerous and ramified. The fresh flowers have a pleasant fragrant odour, and scent the whole room in which they may happen to be. *(See Appendix).*

Silene villosa, *Forsk, Æg.*

Var. *β. nana.*

Obs.—The whole of this plant is viscid and pubescent, peduncles short, leaves oblong-lanceolate. Found on the eastern side of the neutral-ground, and occasionally on the roofs of houses.

Silene inflata, *Sm.* Catchfly

Hab. Europe, Britain. Barbary. North America.

Obs.—A few specimens of this plant are scattered over most parts of the rock; but the glacis before the Landport-guard is covered with it.

Silene vespertina, *Retz. Obs.*

Hab. South of Spain. Morocco. Greece.

Obs.—Rare on the rock. The solitary flower at the bifurcation of the stem sufficiently distinguishes this species from the others.

Lychnis dioica, *L.* var. *β. L.* Red Campion

Lychnis vespertina, Sibth.

Hab. Europe. Barbary.

Obs.—Not very common on the rock.

Cerastium Gibraltaricum, *Boiss.* Chickweed

Boiss. tab. xxxii.

Hab. Gibraltar, and the Sierra de Agua.

Obs.—A new species of Boissier. *(See Appendix).* This plant is found in great abundance on the eastern side of the rock, and it is also found in small numbers on almost every part of the rock, and on old walls (known in Gibraltar as the C. tomentosum). "La viscosité de toutes les parties de la plante," says Boissier; "la longeur des feuilles et leur glabréité, la longueur des sépales, la forme et la grandeur des pétales qui sont pliés et non simplement striés, distinguent bien cette espèce du C. repens et de ses variétés. Elle aurait plus de rapports avec le C. grandiflorum, W. K, mais ce dernier a des feuilles tout-à-fait lineaires, et les dents de la capsule un peu roulées en dehors du haut en bas." The figure in Boissier's work is extremely good.

Stellaria media, *Vill.* Stitchwort

Hab. Europe, Britain. Canary Isles.

Alsine rubra, *Wahl.*

Hab. Spain, Germany, Britain.

Alsine procumbens, *Wahl.*

Hab. Spain, Italy, Sardinia. Barbary.

Alsine marina, *Mert.*

Hab. Europe. Barbary.

Alsine tenuifolia, *Wahl.*

Hab. Europe, Britain.

Obs.—Rare. Found at the back of the rock by Dr. Lemann.

Arenaria serpyllifolia, *L.*

Hab. Europe, Britain. Barbary.

Obs.—The A. spathulata, Desf., is found near Algeciras.

Arenaria montana, *L.*

Hab. Pyrenees, Spain, Portugal, France.

Spergula arvensis, *L.*

Hab. Europe. Barbary.

Obs.—Communicated by Dr. Lemann,

LINEÆ, *De C.*

Linum tenue, *Desf.*

Hab. South of Spain and Portugal. Barbary.

Linum usitatissimum, *L.*

Hab. Europe. North Africa.

Obs.—Although this plant is generally known as a cultivated species, the specimens I gathered were not growing in cultivated parts of the rock.

Linum strictum, *L.*

Hab. South of Europe. Barbary.

Linum maritimum, *L.*

Hab. South of Europe. Barbary.

Linum angustifolium, *Huds.*

Hab. Britain, France, Spain, Italy, Greece. Barbary.

Obs.—Communicated by Dr. Lemann.

MALVACEÆ, *Br.*

Malva hispanica, *L.*

Hab. Spain, Portugal. Barbary.

Malva rotundifolia, *L.*

Hab. France, Britain, Spain, Greece. Asia Minor.

Malva nicæensis, *L.*

Hab. South of Europe. Barbary.

Malva sylvestris, *L.* common mallow

Hab. Europe, Britain. Barbary.

Lavatera arborea, *L.*

Hab. Britain, South of Europe, Greece, Sicily.

Lavatera maritima, *L.*

Hab. South of Spain, France, Sardinia. North of Africa.

Lavatera trimestris, *L.*

Hab. Portugal, Spain, South of Italy. Barbary.

Obs.—Most of these species are very common in Gibraltar. Dr. Lemann has in his collection specimens of a Lavatera, which he found on one of the sloping banks near the governor's cottage at Europa, but which he has not been able to identify. The leaves are large, five-lobed, covered with soft hair; flowers small, axillary, on short peduncles: probably a variety of L. cretica, *L.*

AURANTIACEÆ, *Corr.*

Citrus Limonum, *Riss.*

Vulgo, *Lemon*, E. *Limon*, Sp.

Hab. Asia.

Citrus medica, *Riss.*

Vulgo, *Citron*, E. *Citron*, Sp.

Hab. Asia.

Citrus Aurantium, *Riss.*

Vulgo, *Sweet Orange*, E. *Narango*, Sp.

Hab. Asia.

Citrus vulgaris, *Riss.*

Vulgo, *Seville Orange*, E. *Limon de confitar*, Sp.

Hab. Asia.

Obs.—The climate of Gibraltar is well suited to the cultivation of this tribe of useful plants; but, with the exception of a few specimens for ornamental purposes, lemon and orange trees are only seen in a few spots in the south-district, where the fruit arrives at as great perfection as in more favoured situations; but owing to the frequent communication with Barbary and the interior of Spain (from which places the Gibraltar market is chiefly supplied with fruits and vegetables), there is no great inducement for their more extensive cultivation on the rock.

HYPERICINEÆ, *De C.*

Hypericum hircinum, *L.*

Hab. South of Europe.

Obs.—Introduced evidently, although it appears to grow wild in hedges, &c. The H. pubescens, H. tomentosum, and other species, are found in the near neighbourhood of Gibraltar; and one or two may possibly be found in Gibraltar.

MELIACEAÆ, *Juss.*

Melia azedarach, *L.*

Hab. Asia.

Obs.—This species of the bead-tree is extensively cultivated in all parts of Spain, and forms one of the chief ornaments of the Alameda. In Gibraltar this tree is only met with in gardens.

AMPELIDEÆ, *H. B. et K.*

Vitis vinifera, *L.*

Hab. South of Europe, &c.

Obs.—The grape is cultivated in Gibraltar more for ornamental than useful purposes. Some of the vines produce fine fruit, though not in sufficient quantities to make wines. The Jews manufacture a home wine from the black grapes purchased in the market, which is abundantly supplied from the vineyards of Andalusia. The muscatel grape grows in great perfection at Sandy-bay, near Algeciras, to taste the luscious juice of which, this retreat is frequented in summer by the residents of Gibraltar.

GERANIACEÆ, *De C.*

Geranium dissectum, *L.*

Hab. Europe, Britain. North of Africa. Canaries.

Geranium molle, *L.*

Hab. Europe, Britain. North of Africa.

Geranium robertianum, *L.*

Hab. Europe, Britain. Barbary. Canary Isles.

Erodium moschatum, *Willd.*

Hab. South of Europe, Britain. Canary Isles. Barbary.

Erodium malachoides, *Willd.*

Hab. Mediterranean shores. Canary Isles.

Erodium cicutarium, *Lem.*

Hab. Europe, Britain. Asia Minor. Barbary.

Obs.—This extremely polymorphous species is only seen on the neutral-ground. The most common species in Gibraltar are the E. moschatum and E. malachoides. Several varieties of Pelargoniums are cultivated in the Alameda.

OXALIDEÆ, *De C.*

Oxalis cernua, *Thunb.*

Hab. Cape of Good Hope.

Obs.—A double variety of this beautiful Oxalis is also met with in Gibraltar. This plant being found so abundant near the Alameda, and likewise near the signal-station, it has been supposed by casual visitors to be a native of the rock; but there is no doubt that it is a Cape plant, introduced into Gibraltar about twenty years ago (as Colonel Mitchell, R. A., informed me that it was not found in Gibraltar before that time). It appears also to have been introduced into Sardinia (Boiss.) and Malta, and that it grows there almost as wild. The Oxalis corniculata is found in the Cork-wood, and unauthenticated specimens of it were shown to me as growing on the rock of Gibraltar.

ZYGOPHYLLEÆ, *R. Br.*

Tribulus terrestris, *L.*

Vulgo *Abrogos*, Sp. *Caltrops*, E.

Hab. Mediterranean regions of Europe. Asia Minor. North of Africa.

Obs.—This plant is found in great abundance on the neutral-ground, and is easily known by its fruit, which is composed of five nuts, united in a subglobular whorl, armed with prickles, resembling the machine called *caltrops*, formerly in use to obstruct an enemy's cavalry.

RUTACEÆ, *Juss.*

Ruta angustifolia, *Pers.*

Var. *β. bracteosa. R. bracteosa*, De C. Varietas bracteis latioribus è maris vicinio solum orta. *Boiss.*

Hab. South of France, Italy, Sicily. Barbary.

Obs.—Indigenous, and also cultivated.

RHAMNEÆ, *R. Br.*

Rhamnus alaternus, *L.*

Hab. South of Europe. North of Africa.

Obs.—Dr. Lemann has found two varieties of this species in Gibraltar, one of which approaches the character of R. integrifolia, *De C.*

Rhamnus Lycioides, *L.*

Hab. Spain, Portugal. North of Africa.

Obs.—Rare, communicated. The Lycium Europeum, which is used for fences, owing to its prickly stems, is often mistaken for this plant.

Rhamnus Oleoides, *L.*

Hab. South of Spain, Sardinia, Greece. Barbary.

Obs.—This species is generally found growing from the fissures of high rocks. Several specimens of it grow in the undermined sides of Mr. Costello's garden, on Windmill-road.

TEREBINTHACEÆ, *Juss.*

Pistacia Terebinthus, *L.* *Turpentine Tree.*

Hab. South of Europe. Asia Minor. North of Africa. Canary Isles.

Obs.—Communicated by Dr. Lemann.

Pistacia lentiscus, *L.*

Hab. South of Europe. Asia Minor. North of Africa. Canary Isles.

Schinus molle, *L.*

Vulgo, *Arbol de pimenta*, Sp. *Pepper-tree.*

Hab. America.

Obs.—Introduced. Cultivated extensively in Spain, Italy, and Sardinia. It forms perhaps the most ornamental tree cultivated in Gibraltar. Its graceful foliage, and delicate drooping clusters of flowers, succeeded by clusters of red berries, form picturesque objects in almost every garden in the south-district. The term *molle* is not used in reference to any quality of the plant, but is a slight modification of the Peruvian word *mulli*. The berry tastes like black pepper,—hence sometimes called the *pepper-tree*.

LEGUMINOSÆ, *Juss.*

Spartium junceum, *L.* Broom

Hab. South of Europe, Sicily. North of Africa. Azores.

Obs.—This species appears to have been introduced into Gibraltar.

Spartium monospermum, *L.*

Retama monosperma, Boiss.

Hab. South of Europe, Sicily. North of Africa. Arabia Petræa. Canary Isles.

Obs.—This beautiful single-seeded broom is a graceful plant, cultivated in gardens and in the Alameda. It does not appear to be indigenous to the rock; it is common in the neighbourhood of Tangier.

Spartium spinosum, *L.*

Hab. South of Europe.

Obs.—Found on the higher parts of the rock.

Sarothamnus bœticus, *Boiss.*

Sarothamnus Bœticus, Webb, Iter Hisp.

Hab. South of Spain. Barbary.

Obs.—This species, known also as the Cytisus arboreus of *Salzm.* is easily distinguished by its trifoliate petiolated obovate-obtuse glabrous leaves. "Cette espèce," says Boissier, "se distingue bien de toutes les précédentes par la forme de sa carène, qui n'est plus recourbée et rétrécie à l'extrémité, mais obovée, arrondie et fort obtuse, de même que dans les espèces suivantes."

Genista candicans, *L.*

Cytisus candicans, L.

Genista Canariensis, Bory, *non* L.

Hab. South of France, maritime provinces of Spain, Portugal, south of Italy, Sicily, Greece. Madeira. Canary Isles.

Genista linifolia, *L.*

Spartium linifolium, Desf.

Cytisus linifolius, Lam.

Hab. South of France, Spain, Greece. North of Africa. Canary Isles.

Obs.—This species is the most common one on the rock, especially above the high road to Europa.

Genista Gibraltarica, *De C.*

Hab. South of Spain. Morocco.

Obs.—Found in great abundance on Queen of Spain's Chair, and in the neighbourhood of St. Roque;—I have not met with it on the rock of Gibraltar. To enable others to observe it, I shall quote here Boissier's remarks on this elegant species. "Petite plaute de 1 à 2 pieds de haut, à épines rameuses, courtes, nombreuses et un peu courbées; à feuilles linéaires, et le plus souvent changées aussi en épines. Elle est voisine du G. tricuspidata, *Desf.*, qui est beaucoup plus grand dans toutes ses parties, qui a des épines droites, trois fois plus longues et

plus fortes, des feuilles ovales ou lancéolées, point épineuses et pubescentes, ainsi que les rameaux. Ses fleurs se verdissent par la desiccation, ce qui n'arrive pas au G. Gibraltarica."—*Boissier*, p. 143.

Ononis viscosa, *L.*

Var. *α. O. fœtida,* Schousb. Calycis dentes corolla breviores setacei, legumen calyce longius.

Hab. South of Europe. Morocco.

Obs.—A near neighbour of the O. natrix. Found on the declivities of the rock, above the Alameda.

Ononis Gibraltarica, *Boiss.*

Hab. Gibraltar and its neighbourhood.

Obs.—This species is found on the eastern declivities of the rock. "Cette espèce," observes Boissier, "est bien distincte de toutes les formes de l'O. natrix, par la nature des poils extrêmement courts et visqueux qui la couvrent, la longueur et l'etroitesse de ses folioles, la forme de son calice et de son étendard, la longueur de ses légumes." *(See Appendix).*

Ononis pubescens, *L. Mont.*

Hab. Mediterranean region, Portugal. Asia Minor. North of Africa.

Obs.—Found on the road to St. Michael's cave.

Ononis mitissima, *L.*

Hab. Mediterranean region of Europe. North of Africa.

Ononis variegata, *L.*

O. aphylla. Lam. Dict.

Hab. Southern Mediterranean region, Spain, Corsica, Sardinia, Sicily, South of Italy, Greece. Barbary.

Obs.—This small species is found on the neutral-ground, and along the sandy plain at the foot of Queen of Spain's Chair. It is rarely met with on the rock.

Ononis serrata, *Forsk.*

O. diffusa, Ten. Neap.

Hab. Southern Mediterranean region, Spain, Sardinia, South of Italy, Sicily, Greece. North Africa. Asia Minor.

Ononis reclinata, *L.*

Hab. Britain, South of France, Spain, Portugal, Balearic Isles, Italy, Sicily.

Obs.—Flowers occasionally a mixture of purple and white. Found on the neutral-ground.

Ononis ramosissima, *Auct.* non *Desf.*

O. natrix, var. *β. media.* Caulibus abbreviatis ascendentibus, foliolis angustioribus canaliculato recurvatis, floribus minoribus in spicas laxiores dispositis, pedunculis folia superantibus.

Hab. South of Spain, Sicily, Barbary.

Obs.—The sandy sides of the rock, near Catalan-bay, are covered with this species; and it is also met with on the neutral-ground.

Cercis siliquastrum, *L.*

Vulg. *Judas-tree.*

Hab. South of Europe.

Obs.—This tree is cultivated in gardens. Its crowded bright purple blossoms form a pleasing contrast with the green of early summer.

Anthyllis vulneraria, *L.*

Var. *β. rubriflora.*

Hab. Britain, Europe. North Africa. Asia Minor.

Anthyllis tetraphylla, *L.*

Hab. South of Europe. Morocco. Asia Minor.

Obs.—M. Boissier has placed this plant under the new genus, Physanthyllis. It grows in great abundance near the governor's cottage at Europa.

Medicago coronata, *Lam.*

Hab. South of France, Spain. Egypt.

Medicago marina, *L.*

Hab. Spain, Portugal. Asia Minor. Barbary. Egypt.

Obs.—Not very common on the neutral-ground, more frequently seen on the sandy desert beyond the Spanish lines. It is also found on the sandy bank behind Catalan-bay, on the road to Sandy-bay.

Medicago sativa, *L.*

Hab. Britain, Spain, South of France, &c.

Obs.—I believe cultivated in Gibraltar.

Medicago terebellum, *Willd.*

Hab. South of Europe.

Medicago uncinata, *Willd.*

Hab. South of Europe.

Medicago nigra, *Willd.*

Hab. South of France.

Obs.—This last species bears an affinity to the M. uncinata.

Medicago orbicularis, *L.*

Hab. Mediterranean region of Europe. Barbary.

Obs.—I have not the least doubt that several other species are found in Gibraltar; and, if I am not mistaken, I have seen the Medicago tribuloides of *Desf.*, and the Medicago turbinata grow likewise here.

Melilotus sulcata, *Desf.*

Hab. Europe, Sicily. North of Africa.

Obs.—From its strong resemblance to M. officinalis it was often mistaken for it. I found in a waste place, near the Inundation, a few specimens with light blue flowers, and others have found a white variety.

Trifolium pratense, *L.* creeping Red

Hab. Britain, Europe. North of Africa.

Obs.—This is a variety of the T. pratense found in Scotland.

Trifolium repens, *L.*

Hab. Britain, Europe. North of Africa.

Trifolium stellatum, *L.*

Hab. In many parts of Europe. Asia Minor. North of Africa.

Trifolium fragiferum, *L.*

Hab. Britain, Europe, Asia Minor.

Trifolium tomentosum, *L.*

Hab. South of Europe. Barbary. Egypt.

Trifolium procumbens, *L.*

Hab. Britain, Europe. Asia Minor. Barbary.

Obs.—Evidently a variety of the species found in Scotland.

Trifolium angustifolium, *L.* narrow leaved Red

Hab. South of Europe. North of Africa.

Trifolium subterraneum, *L.*

Hab. Britain, Europe. Asia Minor. North of Africa.

Obs.—Communicated by Dr. Lemann. The neutral-ground and the littoral flats on the rock are the chief localities of the Trefoil, Lotus, &c.

Lotus corniculatus, *L.* Bird's foot Trefoil

Var. *hirsuta.*

Hab. Britain, Europe. Asia Minor. Barbary.

Obs.—There is another variety on the rock, which I am inclined to believe is the L. major of *Scop.*, or L. corniculatus, *var.* β. major, *De C. Prod.*

Lotus edulis, *L.*

Hab. South of Europe, Sicily. Cyprus. North of Africa.

Lotus parviflorus, *Desf.*

Hab. South of Europe, Sicily. Barbary.

Lotus ornithopodioides, *L.*

Hab. South of Europe, Sicily, Cyprus. North of Africa.

Obs.—Communicated by Dr. Lemann.

Tetragonolobus purpureus, *Mœnch.*

Lotus tetragonolobus, L.

Hab. Mediterranean region of Europe, Sicily, Cyprus. Barbary.

Obs.—This beautiful species of Lotus is seen on Windmill-hill, and on waste places near the Inundation.

Psoralea bituminosa, *L.*

Hab. South of Europe. North Africa. Sicily. Arabia Petræa.

Obs.—A very common plant in Gibraltar and its neighbourhood. It is found even on the highest parts of the rock: those on the lower part are much larger.

Phaca bætica, *L.*

Vulg. *Garbuncillos,* Sp.

Erophaca bætica, Boiss.

Hab. South of Europe, Cyprus. Asia Minor. North of Africa.

Obs.—The Cicer arietinum (vulg. *Garbanzos*) is also cultivated.

Astragalus bæticus, *L.*

Hab. Portugal, Spain, South of France, Sicily, Greece. Barbary. Egypt.

Astragalus depressus, *L.* rock

Hab. South of Europe, Pyrenees, Sierra Neveda.

Obs.—Communicated by Dr. Lemann.

Scorpiurus sulcata, *L.*

Hab. Mediterranean coasts of Europe, Portugal, South of Spain. North of Africa.

Scorpiurus subvillosa, *L.*

Hab. South of Europe.

Obs.—I have a doubt whether this may not be merely a form of the S. sulcata; however Boissier says, each has characters sufficiently distinct.—" Les légumes (de S. subvillosa) sont dès leur jeunesses si fortement et irrégulièrement contourriées et garnis d'aiguillons si rapprochés, qu'ils forment une masse confuse dans laquelle il est impossible de distinguer les torres. Dans le sulcata au contraire, les légumes sont enroulés à peu près sur un seul plan, et l'on en suit facilement les circonvolutions, de même qu'on aperçoit le point d'attache des aiguillons qui sont moins nombreux."

Scorpiurus vermiculata, *L*

Hab. South Mediterranean region, Greece, Italy. North of Africa.

Obs.—Rare on the rock; abundant on the Spanish race-course.

Ornithopus compressus, *L.*

Hab. South of Europe. Asia Minor. North of Africa.

Obs.—Communicated by Dr. Lemann.

Hippocrepis multisiliquosa; *L.*

Hab. South of Europe. Cyprus. Egypt. North of Africa.

Obs.—I have met also with another form, which is perhaps a variety, or the H. ciliata of *Willd.* A friend has shown me a specimen of the H. comosa, but he was not sure of having gathered it in Gibraltar. It is found near St. Roque.

Hedysarum coronarium, *L.*

Hab. South of Spain, and other southern parts of the Mediterranean region. North of Africa.

Obs.—Very rare in Gibraltar; abundant in the cultivated fields on the road to St. Roque. The H. fontanesii is also found in the neighbourhood of St. Roque and Gaucin.

Vicia atropurpurea, *Desf.* vetch

V. benghalensis, L.

V. perennis, De C.

Hab. Southern Mediterranean region, Sicily. North of Africa. Azores.

Vicia gracilis, *Boiss.*

Ervum gracile, De C.

Hab. Portugal, Spain, South of France, Italy, Greece.

Vicia sativa, *L.*

Hab. Britain, Europe. North of Africa.

Obs.—The Vicia faba and Phaseolus vulgaris are cultivated in the south-district. The Vicia vestita *(Boiss.)* is also said to

have been observed in Gibraltar; but its characters being so distinct from those of the other species, there could have been no difficulty in making it out. (*See Appendix*).

Lathyrus Aphaca, *L.*

Hab. Britain, Europe. Asia Minor. North of Africa.

Lathyrus tingitanus, *L.*

South of Spain, Sardinia. North of Africa.

Lathyrus sativus, *L.*

Hab. Europe. North Africa.

Lathyrus clymenum, *L.*
Lathyrus tenuifolius, Desf. Atl.

Hab. South of Spain, Greece. North of Africa.

Erythrina corallodendron, *Willd.*

Hab. West Indies.

Obs.—Cultivated. Fine specimens of the coral-tree are seen in the cemetery at the sand-pit.

Dolichos purpureus, *L.*

Hab. East Indies.

Obs.—Extensively cultivated throughout Spain. The seeds were, I believe, originally sent to England from Gibraltar, and it was supposed at one time to be a native of Gibraltar. It is never seen there but in or near cultivated grounds.

Acacia farnesiana, *Willd.*
Mimosa farnesiana, L.
Vulg. *Carumbuco,* Sp.

Hab. America.

Obs.—Cultivated. Several other kinds of Acacia are also cultivated in Gibraltar.

Ceratonia siliqua, *L.*

Vulg. *Algarabo,* Sp. Locust or carob-tree.

Hab. South of Europe. Asia Minor. North of Africa.

Obs.—This is erroneously considered to be the "locust-tree" of Scripture. The pod contains a sweet fecula, and it is eaten in Spain. "Ignorance of eastern manners and natural history," observes Professor Martin, "induced some persons to fancy that the locusts on which John the Baptist fed were the tender shoots of plants; and the wild honey was the pulp of the pod of the carob-tree,—whence it had the name of St. John's bread." It would have been more correct to suppose that St. John ate *locusts*, as the natives of some parts of the East do even in the present day. The pods of this tree formed the principal food of the British cavalry horses during the war of 1811 and 1812. *(See Loudon's Encyclopædia of Plants).*

ROSACEÆ, *Juss.*

Rubus fruticosus, *L.*

Hab. South of Europe. Asia Minor. North of Africa.

Fragaria vesca, *L.* wood strawberry

Hab. Europe. Asia media.

Obs.—Rarely cultivated in Gibraltar.

Poterium mauritanicum, *Boiss.*

Hab. South of Spain. North of Africa.

Obs.—Since I have consulted Boissier, it appears to me that the species in Gibraltar corresponds with the characters of his new species; it is, however, still considered by others in Gibraltar to be the P. polygonum of *Willd.*, which is a smaller plant.—*Boiss. (See Appendix).*

Rosa canina, *L.* common wild rose

Hab. Europe. Asia Minor.

Obs.—Rare in Gibraltar; it seems to have been introduced where it is now found; but as it is met with on the neighbouring hills, I suspect the R. canina was at one time found on the higher parts of the rock. The R. sempervirens is also seen in a few gardens.

Cratægus maroccana, *Pers. Webb.* Thorn

Hab. Morocco.

Obs.—Boissier is inclined to believe this species is the same as the C. maura, *L.*; at all events it has a strong resemblance to it. This plant is found in great abundance on the rock. Other forms of *thorn* are also cultivated.

Eriobotrya japonica, *Lindl.*
Vulg. *Loquat.*

Hab. Japan, China.

Obs.—Cultivated in a few gardens. The fruit arrives at perfection in this climate.

Amygdalus communis, *L.* Almond tree

Hab. South of Europe, Levant.

Obs.—Cultivated in gardens. The peach-tree is also cultivated, but the fruit is very indifferent.

Pyrus communis, *L.* Quince tree

Hab. Europe.

Obs.—Cultivated, but not extensively.

Prunus armeniaca, *L.* Apricot

Hab. Levant.

Obs.—Almost every garden has one or two specimens of this tree. Its fruit is known in the market by the name of "kill-johns," from its supposed deleterious effects upon British soldiers; however, my experience there does not confirm the opinion formed by the natives of the rock.

GRANATEÆ, *Don.*

Punica granatum, *L.*

Hab. South of Europe. North of Africa. Asia Minor.

Obs.—The plant arrives at great perfection; but it is not extensively cultivated in Gibraltar, as the market is abundantly supplied from its immediate neighbourhood.

LYTHRARIEÆ, *Juss.*

Lythrum hyssopifolium, *Desf.* Loosestrife
Lythrum flexuosum, Lag.

Hab.

Obs.—The L. hyssopifolium of *Lam.* is a very different plant; its flowers are larger and distinctly pedunculated; however that plant is also said to grow in Gibraltar; (*Spix* and *Von Martius*). I have also found a few specimens of the L. salicaria, *L.*, near St. Roque, behind the Almandral; but it is not a plant frequently seen in this part of Andalusia; whereas the L. flexuosum is seen almost on every meadow and road-side.

TAMARISCINEÆ, *Desf.*

Tamarix gallica, *L.*

Hab. France, Germany, Spain. Barbary.

Obs.—Cultivated in gardens and in the Alameda.

CUCURBITACEÆ, *Juss.*

Bryonia dioica. *Jacq.* Red berried Bryony
Vulg. *Nueza blanca.*

Hab. Europe, Britain.

Momordica elaterium, *L.*
Echbalion momordica, Rich.
Vulg. *Cohombrillo amargo*, seu *Pan de Porco.*

Hab. Mediterranean region of Europe. North of Africa.

Obs.—The squirting cucumber grows in great abundance on Europa-flat, and forms a peculiar feature in the vegetation of that part of the rock; one can scarcely walk there when the fruit is matured, without provoking a few of the *pepos* to squirt out their contents, even up to the face, they are so sensitive. Cucumbers and melons of all descriptions are extensively cultivated in Gibraltar. The market abounds with them; they are the chief articles of consumption among the poorer classes.

PARONYCHIEÆ, *St. Hil.*

Corrigiola littoralis, *L.*

Hab. Britain, France, Germany, Spain. Barbary.

Paronychia hispanica, *Clus.*
Paronychia argentea, Lam.
Illecebrum paronychia, L.
Vulg. *Yerba de la sangre*, seu *Sanguinaria menor.*

Hab. South of Europe. North of Africa. Malta.

Obs.—A very common plant all over the rock.

Polycarpon tetraphyllum, *L.*

Hab. Mediterranean region of Europe, Germany, Britain. Caucasus. Canaries. North of Africa.

Obs.—Abundant on the lower parts of the rock.

CRASSULACEÆ, *De C.*

Umbilicus pendulinus, *De C.*

Cotyledon umbilicus, var. α. L.

Vulg. *Sombrerillos.*

Hab. Europe, Britain.

Obs.—Found in fissures of rocks and caves, as also on old walls and roofs of houses.

Sedum album, *L.* white stonecrop

Hab. Europe, Britain.

Sedum altissimum. *Poir.*

Hab. South of France, Spain, Greece, Italy.

Obs.—A Sedum resembling the S. arenarium is also said to grow on the rock, which I have not seen.

Sempervivum arboreum, *Desf.*

Hab. Portugal. Crete. North of Africa.

Obs.—A good plate of this plant is given in *Sibth. Fl. Gr.* This elegant plant grows in great abundance on the elevated sides of the rock, near the naval hospital, and on the road to Europa-point, near Clapham quarters. Its yellow blossoms, supported upon long foot-stalks, give a peculiar character to the early vegetation of the south part of the rock.

FICOIDEÆ. *Juss.*

Mesembryanthemum Aitoni, *Jacq.*

Hab. Cape of Good Hope.

Obs.—Extensively cultivated in Gibraltar, and forms an elegant ornament to the walls of the hanging-gardens of Calpe. I should not be surprised if this plant were to extend itself, like some others, to higher parts of the rock. I found a small specimen of it in a fissure above St. George's Hall; I have therefore introduced this plant in this catalogue, contrary to the arrangement of excluding cultivated ornamental flowering plants, with which every garden abounds. I have heard it stated, that the Mesembryanthemum nodiflorum, *L.*, is to be found in Gibraltar.

CACTEÆ. *De C.*

Opuntia vulgaris, *Mill.*

Cactus opuntia.

Vulg. *Higuera chumba,* Sp. *Prickly pear,* Eng.

Hab. Tropical America.

Obs.—Introduced, but now growing so abundantly as almost to indicate its being indigenous to Gibraltar and other parts of Spain. The fruit is sold in the market, and is considered a great delicacy by the natives. This plant forms excellent barricades and fences. Several kinds of Cacti are cultivated.

SAXIFRAGEÆ, *Vent.*

Saxifraga globulifera, *Desf.*

Var. *gibraltarica,* Ser. in De C. Prod. Intensiùs viridior. Caules magis elongati. Folia pedunculique pilis longioribus copiosioribus albis hirsuta. Panicula ramosior magis divaricata. Gemmæ axillares magis elongatæ. *Boiss.*

Hab. Gibraltar.

Obs.—On the northern side of the rock, near the Rock-gun. Flowers in April and May.

UMBELLIFERÆ, *Juss.*

Eryngium ilicifolium. *Lam.*

Hab. South of Spain. Barbary.

Obs.—Rare on the neutral-ground; it is a much larger plant than the one represented by *Desf.* in his *Fl. Antl.*

Apium graveolens, *L.*

Hab. Europe, Britain. North of Africa. North America.

Anethum fœniculum, *L.*

Fœniculum, vulg. *Gæsta.*

Hab. Europe, Britain, North of Africa.

Fœniculum piperitum, *Ten.*

Hab. Sardinia, South of Spain, Italy.

Obs.—Very frequently met with on the eastern side of the rock.

Bupleurum Gibraltaricum, *Lam.*

B. coriaceum, L'Her.

B. verticale, Ortega.

Vulg. *Chucillega.*

Hab. Spain, Portugal. Asia Minor. North of Africa.

Obs.—It is not a common plant in Gibraltar; hence Boissier thinks B. verticale, the name given by Ortega, is more appropriate. A few specimens are seen near the landslip, on the road to Europa. I have also seen it above St. George's Hall, growing out of the sides of the rock.

Œnanthe pimpinelloides, *L.*

Hab. Britain, South of Europe. Asia Minor.

Sium siculum, *L.*

Brignolia pastinacæfolia, Bert.

Kundmannia sicula, De C.

Ligusticum balearicum, L.

Campderia sicula, Lag.

Hab. Spain, Balearic Isles, Greece, South of Italy. North of Africa.

Crithmum maritimum, *Tourn.*

Vulg. *Peregril de la mar.*

Hab. Britain, West of Europe. North of Africa. Asia Minor. Canaries.

Obs.—Found growing generally on the eastern sides of the rock; abundant at Catalan-bay.

Ferrula communis, *De C.* Common fennel
F. nodiflora, L.

Hab. South of Europe. North of Africa.

Obs.—Communicated by Dr. Lemann.

Anethum segetum, *L.*

Hab. South of Europe. Asia Minor.

Thapsia villosa, *L.*

Hab. Spain, Portugal, France, Greece. North of Africa.

Obs.—Communicated by Dr. Lemann.

Orlaya maritima, *Koch.*
Caucalis maritima, Gorv.

Hab. South of France, Portugal, Spain, Italy. North of Africa.

Obs.—Found on the neutral-ground, and on the eastern declivities of the rock.

Orlaya platycarpos, *Koch.*
Caucalis platycarpos, L.
Vulg. *Cachorro.*

Hab. South of Europe. North of Africa.

Daucus Carota, *L.* Wild carrot.
Vulg. *Zanahoria.*

Hab. Europe, Britain. America.

Daucus gingidium, *L.*
D. hispanicus, De C.

D. hispidus, Desf.

Hab. Portugal, South of Spain. North of Africa.

Obs.—The D. Carota (vulg. *zanahoria*) is cultivated extensively in Gibraltar.

Caucalis leptophylla, *L.*

C. humilis, Jacq.

Hab. South of Europe. Asia Minor, Persia. North of Africa.

Obs.—Found in the middle parts of the rock.

Torilis nodosa, *Gærtn.*

Caucalis nodosa, Huds.

Caucalis nodiflora, Lam.

Tordylium nodosum, L.

Hab. Britain, South of Europe. Asia Minor. North of Africa.

Scandix pecten-veneris, *L.* Shepherd's needle

Hab. Europe, Britain. Asia Minor. North of Africa. Canary Isles.

Obs.—Communicated by a friend.

Cachrys Pterochlæna, *De C.*

C. sicula, L.

Hab. South of Spain, Portugal. North of Africa.

Obs.—Abundant on the neutral-ground, near the Spanish-lines, and covers a large space of the sandy soil beyond it too. This is perhaps the Cachrys libanotis enumerated by Von Martius, in the second vol. of his "Travels in Brazil." The Cachrys libanotis of *Gon.* I gathered near Malaga.

Conium maculatum, *L.* or Common hemlock

Hab. Britain, Europe. Asia Media. Siberia.

Obs.—I only saw two or three specimens of this plant in the burial-ground, perhaps sown by accident.

Smyrnium olusatrum, *L.*

Hab. Britain, Europe. North of Africa.

ARALIACEÆ, *Juss.*

Hedera Helix, *L.*

Vulg. *Yedra*, Sp., *Ivy*, Eng.

Hab. Britain, Europe. North of Africa.

Obs.—The sides of the rock on the road to Europa are covered with it. Glenrocky is much increased in beauty by this ornamental vine.

CAPRIFOLIACEÆ, *Juss.*

Sambucus nigra, *L.*

Vulg. *Sauco*, Sp.

Hab. Europe, Britain. North of Africa.

Lonicera Periclymenum, *L.*

Hab. Europe, Britain. North of Africa.

Obs.—"The Spanish plant is always pubescent," observes Mr. Webb; it may have been introduced into Gibraltar. The next species is certainly wild on the rock.

Lonicera Caprifolium, *Desf.*

L. balearica, De C.

L. implexa, Ait.

Hab. France, Spain, Balearic Isles, Italy. North of Africa.

Obs.—Most abundant above the Alameda; also met with on the higher parts of the rock.

RUBIACEÆ, *Juss.*

Sherardia arvensis, *L.*

Hab. Britain, Europe. Asia Minor. North of Africa.

Crucianella maritima, *L*,
Rubia marina, Clus.

Hab. Mediterranean shores of Europe. North Africa. Egypt. Asia Minor.

Rubia lucida, *L.*
R. sylvestris, Brot.
R. splendens, L. et Hoffm.

Hab. Spain, Portugal, South of France, Italy. Crete.

Obs.—This plant, so like the R. peregrina, is very common in Gibraltar, generally found in hedges, and on the sides of the upper road.

Galium saccharatum, *All.*

Hab. Britain, France, Germany, Mediterranean regions.

Galium tricorne, *With.*

Hab. Europe, Britain.

Obs.—Two other species, G. aparine and G. rubioides, are said to be found in Gibraltar. I have met with the G. glomeratum, *Desf.*, on the Spanish race-course.

VALERIANEÆ, *De C.*

Valerianella coronata, *De C.*
V. *discoidea*, Dufr.

Hab. Mediterranean regions of Europe, South of France, Italy, Spain, Greece.

Obs.—Communicated by Dr. Lemann.

Fedia cornucopiæ, *De C.*
Valeriana cornucopiæ, L.

Hab. Mediterranean region of Europe, Levant. North of Africa.

Obs.—A very common plant of Gibraltar.

Centranthus Calcitrapa, *Dufr.*
Valeriana Calcitrapa, L.

Hab. Britain, Mediterranean region of Europe. North of Africa.

Valeriana tuberosa, *L.*

Hab. South of Europe. Asia Minor. Caucasus. Cyprus.

Valeriana rubra, *L.*
V. *angustifolia,* Cav.

Hab. South of Europe. North of Africa.

Obs.—This species is sometimes met with on old walls, and I have also found it in fissures on the rock, but always near some garden, and it had all the appearance of being accidentally sown. It is cultivated in every garden.

DIPSACEÆ. *Vaill.*

Scabiosa stellata, *L.*
Scabiosa hispanica major, Cluss.

Hab. Spain, Portugal, South of France. North of Africa.

Obs.—Found on the higher parts of the rock; easily distinguished by its transparent starry calyx. The petals (which are blue) drop off very early, leaving the transparent starry calyces.

Scabiosa maritima, *L.*

Var. β. *grandiflora*. *Sc. grandiflora*, Scop.
Var. γ. *atropurpurea*. *Sc. atropurpurea*, L.

Hab. Mediterranean shores of Europe. Var. γ. in south of Spain, Sicily.

Obs.—The var. β. is very common in Gibraltar. The purple variety is rare in Gibraltar.

Scabiosa urceolata, *Desf.*

Var. β. *bipinnatisecta*, Bois. Major; caulis 2—4 pedalis ramosus breviter pubescens; folia bipinnatisecta laciniis lanceolato-cuneatis obtusiusculis ad nervos marginesque hirsutis scabridis; capitula duplò major longissime pedunculata; involucri adpressè hirti foliola usquè ad tertiam partem concreta corollas ochroleucas radiantes subæquantia; paleæ foliaceæ.—*Boiss.*

Hab. South of Europe. North of Africa.

Obs.—Found on the neutral-ground, near the Spanish lines.

COMPOSITÆ, *Vaill.*

Bellis annua, *L.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa. Canary Isles.

Bellis sylvestris, *Cyr.*

Hab. Mediterranean region of Europe. Asia Minor. North-west of Africa.

Obs.—Found by Mr. Turnbull (Auditor-general), on the higher parts of the rock.

Bellis perennis, *L.* Common daisy

Hab. Europe, Britain.

Phagnalon saxatilis, *Cass.*

Conyza saxatilis, L.

Hab. South of Europe. Asia Minor. North of Africa. Canary Isles.

Inula viscosa, *Ait*, Var. *β.* laxiflora, *Boiss.*

Erigeron viscosum, L.

Solidago viscosa, Lam.

Vulgo, *Altobaca.*

Hab. South of Spain, France, Italy. Palestine. North of Africa. Canary Isles.

Obs.—The whole plant is aromatic; flowers early in autumn, or rather late in summer (September and October). Grows in great abundance all over the rock, above the Alameda; and is also seen on old walls on the road to the naval hospital, and in hedges near Mr. Ramsbottom's garden.

Asteriscus maritimus, *Mœnch.*

Buphthalmum maritimum, L.

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—This plant is extremely variable in size; it is generally seen on the sides of rocks and on old walls.

Pallenis spinosa, *Cass.*

Buphthalmum spinosum, L.

B. aureum, Salzm.

Hab. Same as the last species. Canary Isles.

Obs.—Also a very common plant; found generally growing with the Andryala integrifolia, *L.*

Anthemis arvensis, *L.*

Hab. Europe, Britain. North of Africa. Asia Minor.

Anthemis maritima, *Desf.*

Hab. Mediterranean shores.

Perederæa fuscata, *Webb.*
Maruta fuscata, De C.
Anthemis fuscata, Brot.

Hab. South-western Mediterranean region, and north-western parts of Africa.

Obs.—Found generally on moist parts of the neutral-ground, and near the inundation. Abundant on the Spanish race-course.

Anacyclus radiatus, *Lois.*
Var. β. *purpurascens,* De C.

Hab. South of France, Portugal, Spain. North of Africa.

Obs.—Both varieties are found in Gibraltar; the purple variety not quite so common.

Cladanthus proliferus, *De C.*
Anthemis arabica, L.

Hab. South of Spain. North of Africa.

Artemisia pontica, *L.*

Hab. Europe.

Obs.—This plant is said to grow here, but I have not been able to identify it.

Chrysanthemum segetum, *L.*
Pyrethrum segetum, Mœnch.

Hab. Europe, Britain. North of Africa.

Crysanthemum coronarium, *L.*
Vulgo, *Flor de muerto.*

Hab. South of Europe. Asia Minor. Barbary. Canary Isles.

Obs.—Both species are found in great abundance near the gardens in the South-district.

Helichrysum rupestre, *De C.*

H. plùs minusve cano-tomentosum, caulibus basi suffruticosis erectis, foliis linearibus elongatis, capitulis ovato-hemisphæricis in corymbum laxiusculum dispositis, involucri squamis latis acutis, infimis superiores subæquantibus.—*Boiss.*

Gnaphalium rupestre, Raf.

Gn. stæchas, var. *β. inodorum,* Desf.

Hab. South of Spain. Balearic Isles. Sicily. North of Africa.

Obs.—Found in the fissures of the higher parts of the rock, near the Mediterranean-stair and St. George's-hall.

Helichrysum stæchas, *De C.*

Gnaphalium stæchas, L.

Hab. Europe, middle and south. North of Africa.

Obs.—The leaves of this species have an aromatic odour. Evidently introduced into Gibraltar, called by the natives *Semperviva amarilla.* It is a common plant between Gibraltar and Estepona.

Filago germanica, *L.*

Hab. Europe, Britain. Asia Minor, Persia. Africa.

Obs.—Rare in Gibraltar.

Filago gallica, *L.*

Hab. Europe, middle and south, Britain. North of Africa. Madeira. Canary Isles.

Senecio gallicus, *Vill.*
S. squalidus, Willd.

Hab. South of France, Spain, Portugal.

Obs.—This small but elegant species is found near Europa-flat.

Senecio vulgaris, *L.* Common Groundsel
Vulgo, *Yerba cana.*

Hab. Britain, Europe. Asia. North of Africa.

Senecio minutus, *De C.*
Cineraria minuta, Cav.

Hab. South of Spain.

Obs.—This beautiful species is found on the lower parts of Europa-plain.

Senecio Jacobæa, *L.* Common Ragwort

Hab. Europe, Britain.

Obs.—This plant grows to a great height in Gibraltar and the south of Spain. Found above the high road, near the Alameda.

Calendula incana, *Willd.*
C. marginata, De C. Prod.
C. tomentosa, Desf.

Hab. South of Spain and Portugal. North-west of Africa.

Calendula suffruticosa, *Boiss.*
C. suffruticosa, Vahl.
C. stellata, var. *atlantica,* Desf.
C. denticulata ? (Medical Officer's Report).

Hab. Spain. North of Africa.

Calendula arvensis, *L.*

Hab. Europe. North of Africa. Canary Isles.

Carlina corymbosa, *L.*

C. hispanica, Lam.

Vulg. *Cabeza de pollo.*

Hab. Mediterranean region of Europe. North of Africa.

Obs—Found on the neutral-ground and Spanish race-course.

Atractylis cancellata. *L.*

Hab. Mediterranean region of Europe. North of Africa.

Obs.—Found on the middle parts of the rock.

Centaurea pullata, *L.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—This appears to be the form *a.* acaulis. The plant is nearly procumbent; the cauline leaves are not always lyrate. It is a very common plant in Gibraltar and its neighbourhood.

Centaurea calcitrapa, *L.*

Hab. Europe, Britain. North of Africa. Madeira.

Obs.—A very common species in Gibraltar and its neighbourhood.

Centaurea polyacantha, *Boiss.*

Boiss. tab. c. v., fig. A.

C. tota hirtula, radice incrassatâ brevi, caule humili erecto subsimplici monocephalo, foliis radicalibus lyratis lobis dentatis terminali multò majore dentibus mucronato-spinulosis, caulinis amplexicaulibus runcinato-pinnatifidis, squamis in appendicem patulam fasciculato-spinosissimam abeuntibus, spinis per 9—13 super paginam superiorem appendices erinaceè dispositis,

terminali aliis vix longiore, corollis exterioribus fæmineis valdè radiantibus.—*Boiss.*

Hab. Spain, Portugal. Morocco.

Obs.—I found only a few specimens of this species near the Spanish lines, and on the neutral-ground; but it is abundant higher up the sands near Campo.

Centaurea sphærocephala, *L.*

C. cæspitosa, Vahl.

Hab. Spain, Portugal, Sardinia. Egypt. Barbary.

Obs.—Found on the western side of the neutral-ground, and also met with on the lower parts of the rock.

Centaurea solstitialis, *L.*

Hab. Levant. Britain.

Obs..—Communicated as the C. veratrum. I found only a few specimens in a waste place, and may have been introduced.

Kentrophyllum arborescens, *Hook.*

Carthamus arborescens, L.

C. hixinus, Lag.

Vulg. *Cardo santo*, seu *cardo lechero.*

Hab. Spain.

Obs.—A very common plant in Gibraltar; and Boissier observes "Cette belle espèce donne une physionomie toute particulière à la région chaude inférieure." The plant in Gibraltar is often seen higher than six feet.

Galactites tomentosa, *Mœnch.*

Centaurea galactites, L.

Hab. South of Europe. North of Africa. Madeira.

Obs.—Found in great abundance on the middle part of the rock. The var. β. integrifolia, "folia integra aut denticulata," is also to be found in Gibraltar.

Carduus tenuiflorus, *Sm.*

Hab. Europe, Britain. Asia Minor. Persia. Madeira.

Obs.—The Carduus giganteus, *Desf.* (Cirsium giganteum, *Spr.*) grows in great abundance near the Almandral, St. Roque. Some specimens were nearly eight feet high. It is said to grow in Gibraltar too, but I never met with it there.

Cirsium lanceolatum, *Scop.*

Var. β. *hypoleucum*, De C.

Hab. Languedoc, Sicily. Other varieties in Europe, Britain. Asia. America. (Introduced).

Cynara horrida, *Sibth.*

Cynara cardunculus, L.

Hab. Portugal, Spain, south of France, Sicily. North of Africa.

Obs.—More frequently seen near Campo. It is a rare plant in Gibraltar. The Cynara alba is also found on the Spanish race-course.

Scolymus hispanicus, *L.*

Vulg. *Cardo Maria.*

Hab. Europe. North of Africa. Canary Isles.

Obs.—Found in great abundance in Gibraltar.

Scolymus maculatus, *L.*

Vulg. *Tagardina.*

Hab. Mediterranean shores of Europe. Asia Minor. North of Africa. Madeira.

Obs.—Rare in Gibraltar.

Cichorium Intybus, *L.* Blue succory

Var. β. *divaricatum*, De C.

C. divaricatum, Schousb.

Hab. Europe, Britain. Egypt. Barbary. Madeira.

Hyoseris microcephala, *Cass.*

H. scabra, L. non Mœnch.

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—Communicated by Dr. Lemann.

Hedypnois arenaria, *De C.*

Hyoseris arenaria, Schousb.

Hab. South of Spain. Morocco.

Obs.—Rare on the eastern side of the rock, where Boissier gathered it.

Rhagadiolus stellatus, *Tourn.*

Lapsana stellata, L.

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Thrincia hispida, *Roth.*

Thr. hirta, Rehb.

Var. α. *minor*. Pusilla. Folia vix dentata. Scapi pauci 1—3 pollices longi. Capitula magnitudinis eorum *T. hirtæ*. Pedunculi fructiferi non incrassati.—*Boiss.*

Th. hirta, Sched.

Var. β. *major*. Major, hirsutior, multicaulis. Folia profunde sinuato-dentata. Capitula duplò majora. Pedicelli fructiferi apice subincrassati.—*Boiss.*

Th. mauritanica, Webb.

Hab. South of Spain, Portugal. North of Africa. Madeira. Canary Isles.

Obs.—The first variety is found on the lower parts of the rock in the south-district. The var. β. *major* is found on the neutral-

ground in great abundance, in the neighbourhood of the Ranunculus bullatus. I have also gathered the Thr. tuberosa on the Queen of Spain's Chair.

Helminthia echioides, *Gaertn.*

Hab. Middle and south of Europe, Britain.

Obs.—Rare in Gibraltar; found on Scud-hill by my friend, Dr. Dumbreck. It is found in great abundance on the road to St. Roque.

Lactuca tenerrima, *Pourr.*

Var. *β. scabra,* Boiss.

Caules ramique pilis rigidis albidis scabridi.

Hab. Spain.

Obs.—A very common plant, found on old walls; *its purplish syngenesious flowers* close about noon: the plant is nearly perennial. The variety *a.* glabra of Boissier may perhaps grow in Gibraltar; but the specimens I gathered were all of the second variety.

Taraxacum dens-leonis, *Desf.*

Var. *lævigatum.* Capitula minora, involucri squamæ apice subcorniculatæ.

T. lævigatum, De C.

Hab. Europe. North of Africa.

Obs.—Found on the sides of the rock and on old walls.

Taraxacum obovatum, *De C.*

Hab. South of France, Spain, Italy.

Obs.—The leaves are not runcinate as in the former species. Found on the lower parts of the rock.

Barkhausia taraxacifolia, *De C.*

Crepis taraxacifolia, Thuill.

Crepis interruptus, Sibth.

Var. *hænseleri*. Tota planta glabrescens. Folia obtusa sæpe solum dentata.—*Boiss.*

Hab. Britain, France, Germany, Italy, Spain, Portugal.

Barkhausia fœtida, *De C.*
Crepis fœtida, L.

Hab. Middle and south of Europe, Britain. North of Africa. Canary Isles.

Obs.—This last species is less common in Gibraltar than the former, and is generally found on old walls.

Picridium vulgare, *Desf.*
Scorzonera picroides, L.
Sonchus picroides, Lam.
Var. β. *maritimum* Majus, bienne aut perenne, basi suffruticosum. Folia elongata glaucescentia.—*Boiss.*

Hab. South of Europe, Sicily. Canary Isles. Asia. North of Africa.

Obs.—First found by Boissier, on the eastern declivities of the rock.

Picridium tingitanum, *Desf.*
Scorzonera tingitana, L.
Pic. orientale, De C.

Hab. Portugal, Spain, Majorca, Sicily, Cyprus. Asia Minor, Arabia. Egypt, Barbary.

Obs.—Generally found on the neutral-ground, particularly on its western side.

Sonchus tenerrimus, *L.*
S. pectinatus, De C.

Hab. Mediterranean regions of Europe. North of Africa.

Sonchus oleraceus, *L.*

Sonchus ciliatus, Lam. De C. Prod.

Vulg. *Cerajas.*

Hab. Europe, Britain.

Obs.—Found in nearly every cultivated or manured soil. These two varieties, found in Gibraltar, are not unlike the varieties found in Great Britain. The var. *asper* is less common.

Andryala integrifolia, *Desf.*

Andryala parviflora, Lam.

Hab. France, Spain. North of Africa,

Obs.—This plant is found in several forms, all of which Boissier places under the head of A. parviflora of *Lam.* The most common variety in Gibraltar is the var. latifolia; the variety arenaria is also seen in the sandy soils. I found the variety angustifolia of *De C.* in Tangiers. The specimen of Andryala sinuata of *Linn.*, now in the Linnean Society's collection, resembles the Gibraltar plant, and I observe that Boissier has made the species sinuata of *Linn.* his var. γ. sinuata of the A. parviflora, *Lam.*

CAMPANULACEÆ, *Juss.*

Jasione montana, *L.*

Var. *littoralis.* Multicaulis, prostrata, plus minùsve hirsuta.

Hab. Europe, Britain. Asia Minor. Barbary.

Campanula mollis, *L.*, var. α.

C. velutina, Desf.

Hab. Mediterranean regions. Morocco.

Obs.—This beautiful species of Campanula grows nearly on every part of the rock, generally on shady sides; and is frequently seen on old walls. Its graceful purple blossoms are out for

nearly five months of the year. I have occasionally seen flowers of a pale white colour, from plants growing on the sides of old ramparts.

Campanula erinoides, *L.* Bell flower
C. loefflingii, Boiss.

Hab. Portugal, Spain. North of Africa.

Obs.—This is doubtless Boissier's plant. Mr. Webb, who found it in Gibraltar, however observes that it differs only slightly (by its outspread calyx, with toothed laciniæ) from the C. loefflingii, so abundant in Portugal. This plant is not very common in Gibraltar; it is generally found on the higher parts of the rock; it is more frequently met with in the Cork-wood.

JASMINEÆ, *R. Br.*

Jasminum fruticans, *L.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—This elegant species is chiefly found about the centre of the rock, above the Alameda, under the shade of the Pinus sylvestris. The flowers are scarcely odoriferous. The J. grandiflorum and other species are cultivated in gardens.

OLEINEÆ, *Hoffsgg.*

Olea Europæa, *L.*
Var. *β. sylvestris.*
Olea oleaster, L. et Hoffm.
Vulg. *Aceytuno.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—The var. *a.* is not cultivated in Gibraltar; there are scarcely a dozen specimens on the rock. On the road to Grenada the

olive and vine are seen flourishing in great perfection. The var. β. sylvestris is frequently met with on the higher parts of the rock of Gibraltar. About the origin of the cultivated olive, Boissier observes that the var. sylvestris " n'est pas le type sauvage de l'espèce, mais une simple forme venue d'olives cultivés et disseminés au hasard. L'olivier n'est spontané dans aucune partie de l'Europe, et tire son origine d'orient." And in another place he observes, that " la variéte sauvage diffère de la forme cultivée par un tronc plus court, des rameaux spinescents et un peu quadrangulaires, des feuilles plus étroites et plus courtes, moins blanchâtres à la surface inférieure, des fruits plus petits."

Phyllirea media, *L.*

Hab. South of Europe. North of Africa.

Obs.—Some authors have united the genus Phyllirea with Olea, from its strong resemblance to the wild olive; the plant in Gibraltar has been frequently mistaken for it.

APOCYNEÆ, *R. Br.*

Vinca media, *L. et Hoffm.* Periwinkle

V. *acutiflora,* Bertol.

Hab. South of France, Portugal, Spain. North of Africa.

Obs.—This beautiful plant adorns the hedges and sides of the walks in the Alameda; it is likewise found on the higher parts of the rock. Boissier observes that this plant was for a long time confounded with the V. major, *L.*, and that *he* has not seen the V. major in any part of Spain. This plant is known also in Gibraltar as the V. major. The V. rosea is cultivated in gardens, and grows as luxuriantly as I have seen it in Ceylon.

Nerium Oleander, *L.*

Vulg. *Adelfa.*

Hab. Mediterranean region of Europe, &c.

Obs.—I met with only one specimen in Gibraltar, at all looking like a native plant of the rock. The Oleander is cultivated in gardens. It is found in great abundance near Castellar, and in the vallies near St. Roque.

GENTIANEÆ, *Juss.*

Erythræa Centaurium, *Pers.* Common Centaury
Var. *suffruticosa*, Griseb.
Ch. Centaurium, Desf.

Hab. Europe, Britain. North of Africa. Azores.

Obs.—Not frequently met with in Gibraltar, but found in great abundance on the road to the Cork-wood, where it grows in company with E. major.

BIGNONIACEÆ, *R. Br.*

Catalpa syringifolia, *H. K.*

Hab. North America.

Obs.—Cultivated in the Alameda gardens.

CONVOLVULACEÆ, *Juss.*

Convolvulus althæoides, *L.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa. Madeira.

Obs.—A very common plant, found generally on the lower parts of the rock. The leaves in some specimens found in rich soils are divided at the base, but not quite so attenuated as in the plant cultivated in England.

Convolvulus sepium, *L.*
Calystegia sepium, R. Br.

Hab. Europe, Britain. North America.

Convolvulus arvensis, *L.* field convolvulus

Hab. Europe. Asia Minor. North of Africa.

Convolvulus siculus, *L.*

Hab. Britain, South of Europe. Sicily. North of Africa. Canary Isles.

Obs.—Abundant on the glacis below Victoria-battery. Dr. Dumbreck found it also on the rocks near the naval hospital.

Convolvulus tricolor, *L.*

Hab. Spain, Portugal. North of Africa.

Obs.—Rare in Gibraltar; abundant on the road to St. Roque. The leaves and stem of the few specimens I gathered (near the naval hospital) were pubescent. The Convolvulus batatas (sweet potato) is cultivated in the vicinity of Gibraltar. The sweet potato makes a delicious preserve, and is highly prized by the Spaniards. Ornamental species of this tribe of plants are rarely seen in gardens.

BORAGINEÆ, *Desv.*

Heliotropium europæum, *L.*

Hab. Middle and South of Europe. Arabia. North of Africa. Azores.

Obs.—Found on the road side, and on cultivated soils. Large beds of it are found on the neutral-ground.

Cerinthe major, *L.* Great honey wort.

C. aspera, Roth., var. *purpurascens.* Bracteæ floresque nigro-purpurascentes.

Hab. Mediterranean region of Europe. North of Africa.

Echium glomeratum, *Poir.*

E. pomponium.

Boiss. tab. cxxiv.

E. perenne, foliis radicalibus rosulatis patulis lanceolatis acutis utrinquè velutino-hirsutis, caulinis brevioribus basi subcordatis infrà subcarinatis valdè nervosis carinâ et marginibus longè spinuloso-ciliatis, caule strigosissimo simplicissimo à basi spicis distichis bifidis abbreviatis densè unosto thyrsoideo, bracteis acutis calycibusque pectinato-ciliatis, corollâ pallidè carneâ calyce duplò longiori subirregulari, filamentis inæqualibus longè exsertis partè inferiori hirtulis, stylo parte inferiori plumoso apice bifido.—*Boiss.*

Hab. South of Spain, in the province of Grenada, &c. North of Africa. Syria.

Obs.—This magnificent species of Bugloss is rare in Gibraltar; a few specimens of it were found by Dr. Lemann, on the eastern side of the rock; and I believe Captain Robinson found one.

Echium plantagineum, *L.*

E. violaceum, Lam., De C., an L.?

Hab. Portugal, Spain, South of France, Italy. North of Africa.

Obs.—Found above the Alameda and on the neutral-ground with the following species.

Echium pustulatum, *Sibth.*

E. tuberculatum, Link.

E. vulgare, var. *grandiflorum*, Bertol.

Hab. South of France, Portugal, Spain, Italy.

Obs.—This species differs from the last, in some of the hairs rising from tuberculous points. Upon the whole it appears to be a large variety of E. vulgare, and some observers only consider it as such.

Echium creticum, *L.*

Hab. Crete, Levant.

Obs.—Enumerated by Von Martius.

Lithospermum officinale, *L.*
Vulg. *Mijor del Sol.*

Hab. Europe, Britain. America.

Lithospermum purpureo-cæruleum, *Willd.*

Hab. Europe, Britain.

Obs.—Communicated.

Borago officinalis, *L.* common borage
Vulg. *Borraja.*

Hab. Britain, Middle and South of Europe. North of Africa.

Obs.—A very common plant.

Anchusa italica, *L.*
A. paniculata, Ait.
A. officinalis, Desf.

Hab. Middle and South of Europe. Asia Minor. North of Africa.

Cynoglossum pictum, *Ait.*
C. officinale, Desf. Atl. non L.
Vulg. *Viniebla.*

Hab. Mediterranean region of Europe. North of Africa. Madeira.

Obs.—Found in great abundance on the middle parts of the rock.

Cynoglossum cheirifolium, *L.*

Hab. Portugal, Spain, &c. North of Africa.

Obs.—Communicated. Found in Lieut. Flint's collection.

Symphytum tuberosum, *L.*

Hab. Germany, France, Spain, Britain.

Obs.—Communicated.

SOLANEÆ, *Juss.*

Datura Metel, *L.*

Vulg. *Yerba hediendo.*

Hab. Asia, Africa. Canaries.

Obs.—Rare in Gibraltar; perhaps introduced.

Datura arborea, *L.*

Hab. Peru.

Obs.—Introduced. Splendid specimens of this plant are found in gardens: the fragrant odour of its beautiful pendulous white flowers scents the air to a great distance. The D. Stramonium is also cultivated in a few gardens.

Hyoscyamus albus, *L.*

Vulg. *Beleno.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Solanum nigrum, *L.*

Var. β. *villosum.*

Hab. Europe, Britain. Asia Minor. North of Africa.

Solanum miniatum, *Bernh.*

Hab. Europe, Britain.

Solanum sodomæum, *Willd.*

Hab. Spain, Portugal, Sicily. North of Africa.

Obs.—This species is easily distinguished by its spiny leaves, large violet flower, and spiny calyx. The berries are large, globose, and assume a bright yellow colour when ripe. Mr.

J. Hogg, in his very interesting observations on the classical plants of Sicily (*Hooker's Journal of Botany*, vol. i.) says, that "it is the tempting and deceitful fruit of this plant, which grows abundantly, according to travellers, on the shores of that well-known lake of Avernus, the Dead Sea, which, as soon as bitten, becomes dry dust, like ashes. A small insect frequently punctures it, and converts the inside into powder, leaving the skin whole, and of its original colour. From this arose the story of the delusive apple,

'which grew
Near that bituminous lake where Sodom flamed.'

The S. tuberosum (potato) is cultivated in Gibraltar and its neighbourhoood; as also the Capsicum annuum, C. cerasiforme, and C. grossum (capsicums). The Physalis peruviana and P. somnifera are found in gardens. The Solanum lycopersicum (tomato) is also extensively cultivated, and likewise the "egg apple plant" *(Brinyall's)*; and hedges are formed of the Lycium Europæum, which has often been mistaken for a species of Rhamnus.

SCROPHULARINEÆ, *R. Br.*

Verbascum sinuatum, *L.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—The principal locality for this plant is on the declivities above the Alameda, where it gives a peculiar feature to the vegetation of that part of the rock.

Scrophularia mellifera, *Vahl.*

S. sambucifolia, L.

Hab. South-west region of Europe, Portugal. North of Africa.

Scrophularia frutescens, *L.*

S. canina, L., var. *frutescens,* Boiss. Folia obo-

vato-cuneata obtusa obtusè crenata, floralia ovata oblonga integerrima.

Hab. South of Europe, France, Germany. Asia Minor. North of Africa.

Obs.—This species is rare in Gibraltar; more frequently met with in the neighbourhood of St. Roque.

Antirrhinum majus, *L.*

Hab. Europe, Britain. North of Africa. Asia Minor.

Obs.—A very common plant.

Antirrhinum Orontium, *L.*

Hab. Europe, Britain. Asia Minor. North of Africa.

Obs.—I have also seen a variety with light purple flowers. Both species are found in great abundance on the roofs of houses, and on old walls. The A. viscosum I gathered near the Nut-walk, Grenada.

Linaria villosa, *De C.*

Antirrhinum villosum, L.

Hab. Spain.

Obs.—The sides of the rocks and old walls are covered with this elegant plant, and it is generally found in the neighbourhood of the Convolvulus mollis. The Linaria glauca is said also to grow in Gibraltar; but the specimens shown to me as such were nothing more than the Linaria tristis.

Linaria lanigera, *Desf.*

Hab. North of Africa. South of Spain. Azores.

Obs.—Some of the specimens I gathered have two or three broad teeth at the base of the leaves. Abundant near the mess-room of the South-pavilion.

Linaria tristis, *Mill.*

L. marginata, Desf.

Hab. South of Spain. North of Africa.

Obs.—The leaves in the plants of Gibraltar are less scattered than in the specimens I gathered at Grenada.

Linaria pedunculata, *Spreng.*

Antirrhinum pedunculatum, L.

Hab. Spain.

Obs.—This beautiful species, a figure of which is given in Boissier's splendid work, is found in great abundance on the eastern side of the rock; generally in the neighbourhood of the following species.

Linaria amethystina, *L.*

Var. *albiflora,* Boiss.

Corolla alba. Palatum luteum. Labium inferius violaceo-punctatum. Calcar pallidè violaceum corollam æquans.

Antirrhinum bipunctatum, Cavan.

Hab. South of Portugal, south of Spain.

Obs.—The whole face of the middle part of the rock above Windmill-hill is covered with this elegant species, and it may also be seen on the sandy banks near Catalan-bay.

Veronica cymbalaria, *Bertol.*

V. *hederifolia,* var. *β. L.*

Hab. Mediterranean region of Europe. North of Africa.

Rhinanthus versicolor, *L.*

Bartsia versicolor, Auct.

Hab. Spain, Italy, Portugal. North of Africa. Asia Minor.

Rhinanthus Alectorolophus, *Poll.*

Bartsia viscosa, L.

Hab. Europe.

Obs.—A species of Euphrasia is said to grow in Gibraltar, but I have not found it. Von Martius also enumerates the Antirrhinum bellidifolium as a plant of Gibraltar.

OROBANCHEÆ, *Juss.*

Orobanche fœtida, *Desf.*

Hab. South of Spain. North of Africa.

Orobanche minor, *Sutt.*

Hab. South of Europe. North of Africa.

Orobanche ramosa, *L.*

Hab. Britain, Europe. North of Africa.

Orobanche cærulea, *Vill.*

Hab. Europe, Britain.

Obs.—Another species of Orobanche is in Dr. Lemann's collection, which has not yet been identified.

LABIATÆ, *Juss.*

Lavandula stæchas, *L.*
Vulg. *Canteuso.*

Hab. South of Europe. North of Africa. Canary Isles.

Obs.—Rare in Gibraltar; abundant on the neighbouring hills.

Lavandula dentata, *L.*

Hab. Spain. Balearic Isles. North of Africa. Madeira.

Lavandula multifida, *L.*
Vulg. *Alhucemilla.*

Hab. South of Portugal, Spain, and Italy. North of Africa.

Mentha rotundifolia, *L.*

Vulg. *Maestranzo.*

Hab. Britain, Middle and south of Europe. North of Africa. Madeira.

Mentha Pulegium, *L.*

Var. *β. tomentella,* Boiss.; vel var. *hirsuta,* Bentham. Tota præcipuè caules et capitula densius tomentosa.

M. Gibraltarica, Willd.

Hab. South of Europe, Denmark. North of Africa. Canary Isles.

Obs.—Found in moist places on the neutral-ground; large plots of it are seen opposite the vegetable-garden, on the left of the road to the old north-front guard-room.

Salvia officinalis, *L.* Sage

Hab. South of Europe. Barbary.

Salvia bicolor, *Lam.*

Hab. Spain. North of Africa.

Obs.—Communicated. The S. viridis is also said to grow in Gibraltar.

Rosmarinus officinalis, *L.*

Vulg. *Romero.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Thymus vulgaris, *L.* Wild Thyme

Hab. Spain, South of France, Italy.

Obs.—Cultivated.

Thymus hirtus, *Willd.*

Boiss. tab. cxxxviii.

Var. *α. legitimus*, Boiss.

Caules procumbentes. Folia ferè eglandulosa inferiora lineari-lanceolata subrevoluta. Capitula oblongo-cylindrica basi interrupta è verticillis approximatis constantia. Corolla rosea.

Hab. Varieties found in the South of Spain, var *α.* on the Sierra Bermeja and Sierra Tejeda.

Obs.—In Gibraltar this plant is vulgarly known as the wild thyme.

Thymus diffusus, *Salzmann, non Boiss.*

Hab. Spain, Gibraltar.

Obs.—In Dr. Lemann's collection.

Micromeria græca, *Benth.*

Var. *latifolia*, Boiss. Caules elati sæpè 1—2 pedales. Folia latiora ovata. Subtùs valdè nervosa.—*Boiss.*

M. nervosa, Boiss., Schedul non Desf.

Hab. South of Europe. North of Africa. Several varieties in Spain.

Obs.—Communicated by Dr. Lemann.

Melissa Nepeta, *L.*

Hab. South of Europe. North of Africa.

Calamintha vulgaris, *Sweet.*

Hab. Middle and south of Europe. Asia Minor. North of Africa. Azores. Canary Isles.

Obs.—The Melissa cordifolia is said to grow in Gibraltar.

Nepeta tuberosa, *L.*

N. radice tuberosâ, caule quadrangulo villoso adpressè folioso, foliis sessilibus lanceolatis basi

cordatis obtusissimè crenatis subtùs præcipuè tomentosis, verticillastris in spicam longissimam densam confluentibus, bracteis membranaceis ovato-lanceolatis acuminatis violaceis, calycis arcuati villosi dentibus lanceolato-subulatis, corollæ cæruleo-violaceæ tubo valdè exserto.

N. tuberosa, L., non Desf. Fl. Atl.

Hab. Portugal, South of Spain, Sicily.

Obs.—This species so closely resembles the N. reticulata of *Desf.*, that, for a long time I called it by that name, until Boissier's remarks cleared up my doubts; and *he* does not think, with Mr. Bentham, that the two species should be united. Boissier observes, that they inhabit two different regions. "La N. tuberosa se reconnâit à sa tige toute couverte de feuilles dressées et tomenteuses, à son long epi terminal entre-mêlé de bractées violettes; la N. reticulata a ses verticilles séparés, ses bractées surpassent les calices en longueur, sont transparentes et reticulées, caractere, qui ne parâit pas au surplus très-constant." The Nepeta reticulata may perhaps also grow in Gibraltar or its neighbourhood; however, I cannot do wrong in giving Boissier's description of it, to enable my friends in Gibraltar to distinguish the two species:—

Nepeta reticulata, Desf.

N. tota viscidula, radice tuberosâ, caule quadrangulo pubescente, foliis sessilibus oblongo-lanceolatis crenatis pubescenti-viscidis, verticillastris subdistinctis, supremis confluentibus, bracteis ovatis acuminatis pellucidis viridi-reticulatis marginem versùs pallidè violaceis, calycis arcuati viscidi reticulato-nervosi dentibus triangulari-lanceolatis membranaceo-marginatis, corollæ pallidæ rubræ tubo è calyce vix exserto.—*Boiss.*

Stachys circinata, *L'Her.*

Hab. South of Spain. North of Africa.

Marrubium vulgare, *L.*

Hab. Europe, Britain, Asia Minor. North of Africa.

Obs.—The Ballota hirsuta is said to grow in Gibraltar.

Sideritis arborescens, *Salzm.*

Hab. Spain, Gibraltar *(Salzmann* and *Broussonet).*

Obs.—I have not seen this plant in Gibraltar.

Sideritis scordioides, *L.*

Vulg. *Samarilla blanca.*

Hab. South of Europe.

Obs.—A very common plant on the higher parts of the rock.

Phlomis purpurea, *L.*

Vulg. *Matagallos.*

Hab. Spain, Portugal.

Obs.—A very common plant in Gibraltar, particularly on the eastern side of the rock.

Phlomis fruticosa, *L.*

Hab. Spain, Sicily.

Obs.—Communicated by a friend.

Prasium majus, *L.*

Hab. South of Europe. Balearic Isles. Corsica. Asia Minor. North of Africa. Madeira.

Obs.—Found on Europa-flat and Windmill-hill.

Teucrium fruticans, *L.*

T. latifolium, L.

Vulg. *Olivilla* aut *Salvia amarga.*

Hab. South of Europe. North of Africa.

Teucrium pseudoscorodonia, *Desf.*

Hab. Spain. Algiers, Morocco.

Obs.—Rare.

Teucrium polium, *L.*

Var. *α. vulgare,* Benth.

Caules elongati lignosi. Capitula magna densa conglobata. Tota planta valdè cano-tomentosa.

Hab. South of Europe. Asia Minor. Arabia. North of Africa.

Obs.—Grows in great abundance on the higher parts of the rock. "No plant," observes Boissier, "is more polymorphous than this plant." The var. β. montanum, *Boiss.*, may possibly also grow in Gibraltar.

Teucrium lucidum, *Schreb.*

Hab. South of Europe.

Obs.—Communicated by Captain Robinson, 72nd Highlanders.

VERBENACEÆ, *Juss.*

Verbena officinalis, *L.* Common Vervain.

Hab. Europe, Britain. North of Africa. Asia Minor.

Obs.—This is not a common plant on the rock; it is more frequently met with on the neutral ground.

ACANTHACEÆ, *Juss.*

× Acanthus mollis, *L.* Smooth bears breech.
Vulg. *Yerba gigante.*

Hab. Mediterranean shores of Europe. Asia Minor. North of Africa.

Obs.—This is perhaps the most remarkable plant on the rock. Its graceful forms add to the picturesque beauty of the scenery in the vicinity of the Alameda and other parts of the rock.

PRIMULACEÆ, *Vent.*

Anagallis arvensis, *L.* Scarlet pimpernel

Hab. Europe, Britain. Asia Minor. North of Africa.

Anagallis cærulea, *E. B.*

Hab. Spain, Portugal, Britain.

Obs.—The Anagallis Monelli, *L.*, vel linifolia, *L.*, grows near St. Roque.

Samolus Valerandi, *L.*

Hab. Europe, Britain. Asia Minor. North of Africa. North America. New Holland.

Obs.—This widely-distributed plant is found in caves; large specimens of it cover the floor of a small cave above the Engineers' officers' quarters at Europa. The Primula officinalis is said to grow in Gibraltar.

PLUMBAGINEÆ, *Juss.*

Statice sinuata, *L.* Sea lavender

Vulg. *Siempreviva azul. Blue everlasting.*

Hab. South of Europe, Sardinia, Sicily. Asia Minor. Palestine. North of Africa. Teneriffe.

Obs.—Grows in great abundance on the eastern side of the rock, and covers a large space of ground below the governor's cottage. The beautiful violet colour of the calyx being permanent, the flowers are sought after, for making everlasting bouquets for fire-places.

Statice emarginata, *W. En.*

Statice spathulata, Desf., var. *emarginata*, Boiss. Planta basi valdè lignosa cæspites densos edens. Folia in petiolum eis breviorem attenuata spathulata emarginata.

Hab. South of Spain. North of Africa.

Obs.—Large quantities of this elegant plant are found on the eastern declivities of the rock, generally on its edges. This is no doubt the plant enumerated by Von Martius as the S. cordata. I have gathered the rare European species, S. ægyptiaca, at Malaga, on a hill by the road leading to the English cemetery, with many other plants, to whose locality Mr. Prolongo kindly directed me.

PLANTAGINEÆ, *Juss.*

Plantago Coronopus, *L.*
Vulg. *Estrella de mar.*

Hab. Europe, Britain. North of Africa. Canary Isles.

Obs.—Found on the lower parts of the rock, and on the neutral-ground.

Plantago psyllium, *L.*

Hab. South of Europe. Asia Minor. North of Africa. Teneriffe.

Obs.—A very common plant, usually seen on rocky surfaces.

Plantago Lagopus, *L.*
Var. *β. cylindrica.* Major. Scapi 1—2 pedales. Spicæ cylindricæ sæpè sesquipollicares.—*Boiss.*
P. lusitanica, L. Desf., Atl.

Hab. Mediterranean shores of Europe. Levant. North of Africa.

Plantago pilosa, *Pourr.*
P. Bellardi, All.

Hab. Mediterranean shores of Europe. Asia Minor. Barbary.

Plantago major, *L.*
Vulg. *Llanten.*

Obs.—The P. Loeflingii is said to grow in Gibraltar. The specimens shown me as such were merely varieties of the P. Coronopus.

AMARANTHACEÆ, *Juss.*

Achyranthes argentea, *Lam.*

Hab. South of Spain, Sicily. North of Africa.

CHENOPODEÆ, *Vent.*

Salicornia fruticosa, *L.*

Arthrocnemum fruticosum, Moq.

Salicornia radicans, Sm.

Vulg. *Sosa alacranera.*

Hab. South of Europe. North of Africa.

Chenopodium Bonus-Henricus, *L.*

Hab. Europe, Britain.

Obs.—Communicated by Dr. Dumbreck.

Chenopodium album, *L.*

Hab. Europe. Asia Minor. North of Africa.

Suæda maritima, *Moq.*

Chenopodium maritimum, L.

Salsola maritima, Poiret.

Hab. Europe. North of Africa. Cuba. St. Helena.

Obs.—I found also a few specimens of another variety, on the sea-shore, below Europa-flat; perhaps this is the Var. *salsa* of Moq. "*Folia obtusiuscula nec acuta. Glomeruli florum magis approximati.*"

Salsola Kali, *L.*

Salsola rosacea, Cavan. Non. L.

Hab. Littoral plains of Europe, Britain. North America. North of Africa. Asia Media.

Halogeton sativus, *Moq.*

Salsola sativa, L. non Cavan.

Vulg. *Barilla fina.*

Hab. Spain.

PHYTOLACCEÆ, *R. Brown.*

Phytolacca dioica, *L.*

Vulg. *Bella sombra,* Sp.

Hab. South America.

Obs.—This is one of the many foreign plants introduced into Gibraltar by General Don. This tree arrives at great perfection on the rock, and, from its thick foliage affording so much shade, it is a very valuable tree in that climate. It has likewise been introduced into Malaga. There is also a very healthy specimen of the P. decandra in the garden of the Colonel of Engineers; and it grows almost wild on the hills of Ronda. The term pepper-wood or pepper-tree is not applied (as Boissier states) to the P. dioica, but to the Schinus molle.

POLYGONEÆ, *Juss.*

Rumex thyrsoides, *Desf.*

Hab. South of Spain, Corsica, Sardinia, Sicily. North of Africa.

Rumex tingitanus, *L.*

Hab. Portugal, Spain, South of France. North of Africa.

Rumex bucephalophorus, *L.*

Hab. South of Spain, Italy. Canary Isles. North of Africa. Asia Minor.

Rumex scutatus, *L.*

Var. *glaucus.* Totus valdè glaucus, basi suffruticosus. Folia cordato-hastata.

R. glaucus, Jacq.

Vulg. *Decedara.*

Hab. Europe.

Obs.—Rare in Gibraltar; found on Europa-flat.

Emex spinosa, *Campd.*

Rumex spinosus, L.

Hab. South of Europe. North of Africa.

Polygonum aviculare, *L.*

Hab. Siberia, Britain, South of Europe. North of Africa. Asia Minor.

Obs.—Rare in Gibraltar.

Polygonum maritimum, *L.*

Hab. Britain, Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—Rare on the neutral-ground; more frequently met with on the sandy desert beyond it.

THYMELEÆ, *Juss.*

Passerina villosa, *Boiss.*

Boiss., tab. clvii., fig. B.

Daphne villosa, L.

Passerina tingitana, Salzm.

Hab. South of Spain, Portugal. North and west of Africa.

Obs.—Passerina hirsuta, *L.*, and the Passerina canescens, *Boiss.* are said to grow in Gibraltar; but I have not seen them near the rock. They are frequently found on sandy soils near St. Roque.

Daphne gnidium, *L.*

Vulg. *Torbisco* seu *Torovisco.*

Hab. Mediterranean region of Europe. North of Africa. Teneriffe.

Obs.—Found in great abundance about the middle third of the rock, above the Alameda. It is seen in flower even as late as September, and part of October.

SANTALACEÆ, *R. Br.*

Osyris alba, *L.*

Vulg. *Retama loco.*

Hab. South of Europe. North of Africa. Levant.

Obs.—Communicated by Dr. Lemann.

Thesium humile, *Vahl.*

Hab. Spain, Sardinia, Sicily, Greece. North of Africa.

Obs.—Communicated by Dr. Lemann.

ARISTOLOCHIEÆ, *Juss.*

Aristolochia longa, *L.*

Hab. South of Europe, Sardinia. North of Africa.

Aristolochia glauca, *Desf.*

A. bætica, L.

Vulg. *Balsimina.*

Hab. Spain, Portugal. Barbary.

Obs.—Generally found entwining itself among the leaves of the Chamærops humilis and Rhamnus oleoides. The A. rotunda is said to grow in Gibraltar, but I have not been able to identify it.

EUPHORBIACEÆ, *Juss.*

Ricinus communis, *L.*

Vulg. *Higuera de infierno.*

Hab. East Indies. Introduced into the South of Europe, &c.

Obs.—The castor-oil plant thrives well on the rock; and in many places it is found wild.

Mercurialis ambigua, *L.*

M. annua, Medical Officers' Report.

Hab. Britain, South of France, Spain, Portugal, Corsica, Greece. North of Africa.

Euphorbia chamæsyce, *L.*

Var. *canescens,* Ræper.

M. canescens, L.

Hab. South of Europe. Asia Minor, Palestine. North of Africa.

Obs.—This remarkable species of Euphorbia is found in small patches over all the grassy part of the neutral-ground, and cannot fail to attract the attention when it flowers, late in summer.

Euphorbia rupicola, *Boiss.*

Boiss., tab. clxi.

E. caulibus fruticosis ramosis parte superiori foliosis, foliis lanceolatis integerrimis mucronatis uninerviis subtùs parcè pilosis, umbellæ quinquefidæ radiis bifidis, involucris ovatis, involucellis suborbicularibus flores occultantibus, glandulis integris, capsulæ verrucis sparsis hemisphæricis, seminibus lævibus.—*Boiss.*

Hab. Spain.

Obs.—Not rare in Gibraltar.

Euphorbia esula, *L.*

Hab. Britain, South of Spain, Denmark, Germany, &c.

Obs.—Enumerated by Von Martius.

Euphorbia paralias, *L.*

Hab. Britain, Mediterranean region of Europe, North of Africa. Canary Isles.

Obs.—Rare on the neutral-ground, but abundant on the sands beyond it.

Euphorbia provincialis, *Willd.*

Var. *retusa.* Folia inferiora retusa aut emarginata.

E. heterophylla, Desf.

Hab. Mediterranean shores. Teneriffe. North of Africa.

Euphorbia peplis, *L.*

Hab. Britain, South of Europe. North of Africa. Canaries.

Obs.—A very common species.

Euphorbia serrata, *L,*

Hab. South of Europe. Egypt. North of Africa.

Obs.—Rare in Gibraltar.

Euphorbia medicaginea, *Boiss.*

Boiss., tab. clxii.

E. annua, glabra, caule erecto, foliis linearibus aut lanceolato-cuneatis sæpè etiam obcordatis

parte superiori subserrulatis, umbellæ quinquefidæ radiis iterato-bifidis, involucri phyllis oblongis aut lanceolatis, involucelli reniformibus subrhombeis aut trilobis mucronatis, glandulis bicornibus, capsulâ lævi, seminibus subtetragonis profundè vermiculato-insculptis.—*Boiss.*

E. italica, Salzm. non Lam.

Obs.—Very frequently met with on various parts of the rock.

Euphorbia segetalis, *L.*

E. portlandica, De C.

Hab. Middle and south of Europe. North of Africa.

Obs.—Enumerated by Von Martius; but it may be confounded with a variety of the E. retusa.

Euphorbia trinervia, *Boiss.*

Boiss., tab. clxiii.

E. perennis glabra multicaulis basi suffrutescens, caulibus erectis, foliis linearibus acuminatis deflexis subtrinerviis integerrimis, umbellæ quinquefidæ radiis bifidis, involucri phyllis folio conformibus sed latioribus, involucelli oblongo-linearibus acuminatis, glandulis bicornibus, capsulâ lævi, seminibus ovatis parcè et obsoletè punctato-depressis.—*Boiss.*

Hab. Spain.

Obs.—Boissier found this species between Gibraltar and St. Roque. I gathered only a few specimens on a waste place near the Inundation.

URTICEAÆ, *Juss.*

Thelygonum cynocrambe, *L.*

Cynocrambe alsinifolia, Barr.

Hab. Mediterranean region of Europe. North of Africa.

Parietaria diffusa, *M. K.*

P. judaica, var. Auct non L.

P. officinalis, Desf. (Medical Officers' Report).

Hab. Middle and South of Europe. North of Africa.

Obs.—A very common plant on the rock.

Urtica urens, *L.*

Hab. Europe, Britain. North of Africa.

Urtica dioica, *L.* common nettle

Hab. Europe, Britain. North of Africa.

Obs.—I have not seen the Urtica pilulifera in Gibraltar.

MOREÆ, *Endl.*

Ficus carica, *L.*

Vulg. *Higuera.*

Hab. South of Europe. Asia. Africa.

Obs.—The fig-tree is observed to grow in the fissures of the rocks where there is scarcely any soil, and in places where it could not have been cultivated. Several varieties of it are cultivated in gardens, where the fruit arrives at great perfection, when proper care is taken of them. There is a gigantic fig-tree in Mr. Bracebridge's garden, in the south; its trunk measuring 48 feet in circumference, and supposed to be upwards of 200 years old.

Morus nigra, *Willd.*

Vulg. *Moral.*

Hab. South of Italy. Persia.

Obs.—The climate of this part of Andalusia does not appear suited for the cultivation of the mulberry (M. alba). In the south district the black mulberry tree grows to an immense size, and bears a large quantity of fruit. Mr. Sprague, the very enterprising and hospitable American consul, has laid out a mulberry plantation, a few miles beyond Gibraltar, but which does not seem to thrive, owing to its bad situation.

CUPULIFERÆ, *Rich.*

Quercus suber, *L.* cork tree

Vulg. *Alcornoque.*

Hab. South of France, Italy. Portugal, Spain. North of Africa.

Obs.—A few specimens appear to have been introduced on the rock. The cork-tree grows in abundance in the woods near St. Roque, with the Q. lusitanica, var. *β.*;* hence the name of 'Cork-wood' is applied to a part of the extensive domains of the Marquis Medina Sidonia.

Quercus Ilex, *L.* oak

Vulg. *Incina.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—It is difficult to say whether this species was ever wild on the rock.

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* Quercus lusitanica, var. *β. bætica*, Webb; vel *Q. hybrida*, Brot. Fl. Lusit. Folia majora ferè plana ovata margine obtusè crenata basi sæpe cordata, juniora subtùs tomentella.

Quercus coccifera, *L.*

Ilex coccifera, Clu.

Vulg. *Carrasco.*

Hab. Mediterranean region of Europe. Asia Minor. North of Africa.

Obs.—Generally found under the shade of larger trees.

SALICINEÆ, *Rich.*

Populus alba, *L.*

Vulg. *Alama blanco.*

Hab. Britain, Middle and South of Europe. North of Africa.

Obs.—Cultivated extensively.

CONIFERÆ, *Juss.*

Ephedra fragilis, *Desf.*

E. distachya, Sched., Boiss., non Linn.

Vulg. *Yerba de coyunturas.*

Hab. South of Portugal, Spain. Balearic Isles. Sardinia. Arabia Petræa. North of Africa.

Obs.—Communicated by Dr. Lemann.

Ephedra altissima, *Desf.*

Hab. North of Africa. South of Spain.

Obs.—The eastern side of the rock is the particular locality of this interesting plant. It is easily distinguished from the last species, from its joints not disarticulating so readily, and its branches being longer and tortuous.

Pinus sylvestris, *L.*

Vulg. *Pino chapo.*

Hab. Europe, &c.

Obs.—Introduced. Planted even on the higher parts of the rock, above the Alameda. A few specimens of other species are also cultivated, and likewise the Cypress.

MONOCOTYLEDONES.

NAIADEÆ, *Rich.*

Ruppia rostellata, *Koch.*

Hab. Britain, France, Germany, Spain.

Obs.—This species is found in the Inundation, near the land-port, where also is seen a species of Potamogeton. This species is commonly known as the R. maritima. It is also found near the convict establishment.

Zostera marina, *L.*

Hab. Mediterranean shores. Britain.

Obs.—Found near the western beach.

Posidonia Caulini, *Koen.*
Zostera oceanica, L.

Hab. Mediterranean shores, &c.

Obs.—Found near the north-front guard.

AROIDEÆ, *Juss.*

Arisarum vulgare, *Kunth.*
Arum arisarum, L.
Vulg. *Candelillos de zorra.*

Hab. South of Europe. North of Africa.

Obs.—A very common plant in Gibraltar; found generally on the higher parts of the rock, and on the bastions on the line-wall. The pot-like cavities, in which is found a rich soil, are also favourite places for this remarkable plant. The Arum Dracunculus is seen in a few gardens; and the A. italicum is abundantly cultivated.

PALMÆ, *L.*

Chamærops humilis, *L.*

Phœnix humilis, Cavan.

Vulg. *Palmito.*

Hab. Mediterranean region of Europe. Sardinia. Sicily. North of Africa.

Obs.—The eastern side of the rock is nearly covered with this species of the fan palm; and it is also found in other parts of the rock, but not in so great profusion. The Spaniards consider its cabbage a great delicacy; and it affords, as has already been observed, food for the apes. Solitary specimens of other species of African palms are found in some gardens. The Phœnix dactylifera is the most frequently met with.

ORCHIDEÆ, *Juss.*

Orchis variegata, *All.*

Var. *acuminata,* N. Sepala basi ovata apice longè acuminato-attenuata, inferiora exterioribus sæpè dimidio minora.—*Boiss.*

O. acuminata, Desf.

O. conica, Willd.

Hab. Europe. North of Africa.

Obs.—This plant is erroneously called in Gibraltar the O. pyramidalis.

Ophrys apifera, *Huds.* bee orchis

Vulg. *Flor de la abeja.*

Hab. Britain, Middle and South of Europe. North of Africa.

Ophrys lutea, *Cavan.*

O. vespifera, Brot.

Hab. Mediterranean region of Europe. North of Africa.

Ophrys tenthredinifera, *Willd.*

Hab. Portugal, Spain, Greece, Italy. North of Africa.

Obs.—Communicated.

Peristylus cordatus, *Lindl.*

Orchis cordata, Willd.

Hab. South of Europe. Madeira. Canary Isles.

Obs.—Communicated by Dr. Lemann.

Neottia spiralis, *Sw.*

Spiranthes autumnalis, Rich.

Hab. Europe, Britain.

Obs.—Communicated by Dr. Lemann.

BROMELIACEÆ, *Juss.*

Agave americana, *L.*

Aloe americana, Clus.

Vulg. *Pita.*

Hab. Tropical America.

Obs.—Planted extensively over the rock, where it grows in great perfection, forming good barricades, and, when in flower,

a pleasing object in the landscape. A few specimens of the variety *variegata* (with yellow-margined leaves) are also seen in gardens and in hedges. This plant certainly lives after flowering; and a new plant, growing from it, flowering perhaps soon after, gives the idea that the same plant flowers more than once.

IRIDEÆ, *Juss.*

Trichonema bulbocodium, *Ker.*

Ixia bulbocodium, L.

Crocus vernus, Clus.

Hab. South of Europe. North of Africa.

Obs.—This beautiful little plant is seen in great abundance nearly every where on the south-east side of the rock. Europa-flat is covered with it.

Gladiolus segetum, *Gawl.* Corn flag.

Gl. italicus, Gaud.

Gl. communis, Sibth.

Hab. Mediterranean region of Europe. North of Africa.

Obs.—Generally seen above the Alameda.

Iris Sisyrinchium, *L.*

Var. *minor,* Cambess.

Sisyrinchium minus, Clus.

Morea Sisyrinchium, H. K.

Hab. Portugal, Spain. Corsica. Sardinia. Greece. Asia Minor. Egypt. North of Africa.

Obs.—The chief habitats of this plant on the rock are Europa-flat and the bastions near the New Mole; generally growing in company with the Ornithogalum umbellatum.

Iris filifolia, *Boiss.*

Boiss., tab. clxx.

Iris xiphium, var. *Gibraltaricum*, E. F. K.

Hab. Found by Boissier on the Sierra de Mijas, above Alhaurin, Cruz de Mendoza, Sierra Bermeja. Alt. 3000—4000. *B.* Flowers in May.

(See Appendix for description).

Obs.—The first specimen of this beautiful species was sent to me by Captain Aylmer, of the Royal Artillery, a few days before I left Gibraltar for Grenada. During my absence, Miss Mann, daughter of the late General Mann, collected for me several specimens near the Hole-in-the-wall, above the Mediterranean-stair, at an elevation of about 1400 feet. My first impression on seeing the plant was, that it was only a variety of the Iris xiphium, but subsequently I found many characters sufficient to constitute it a new species; and since having compared the specimen with Boissier's description and plate, I doubt not that this is his Iris filifolia: the *narrow convolute-canaliculated leaves* are almost sufficient to characterise the species. I have seen in Sir William Hooker's Herbarium a more perfect specimen from Gibraltar, presented to him by Dr. Findlay, to which, however, no name was affixed, until Dr. Hooker decided it to be the Iris filifolia of Boissier. Among my imperfect specimens there are also parts of an Iris resembling those of the I. xiphium, the leaves being narrow and flat; and it is yet to be ascertianed whether both species grow in Gibraltar. I have been also informed that the Iris filifolia is found on the Queen of Spain's Chair. The true Iris xiphium I gathered on the road to Grenada. There is also, above the governor's cottage, another Iris, with flat fan-shaped leaves, though I have not been so fortunate as to see it in flower; but, from all accounts, it seems to be a garden species. The Iris pseudacorus I gathered near Castellar, and second Venta on the road to the Cork-wood.

AMARYLLIDEÆ, *R. Br.*

Pancratium maritimum, *L.*

Hemerocallis valentina, Clus.
Vulg. *Sea Lily*.

Hab. South of Europe. North of Africa.

Obs.—A few specimens are found on the neutral-ground, and on the sandy banks beyond Catalan bay; but all along the sandy desert beyond the Spanish lines it grows in great abundance. When nearly every blade of grass is dried up, the white lily-like flowers of the Pancratium greet the eye of the rider on the western beach.

Narcissus niveus, *Loisel.*
N. stellatus, De C.
N. tazetta, Brot. non L.
N. totus albus prior, Clus. *N. latifolius*, H. Clus.
N. orientalis, Medical Officers' Report.
Vulg. *Meados de zorra.*

Hab. Western Mediterranean region. Portugal, Spain, South of France. North-west of Africa. Flowers in January and February.

Obs.—This is evidently the plant observed by Clusius in Gibraltar. In Smith's Herbarium (Linnean Society) there is a specimen of Narcissus resembling the Gibraltar plant, to which is affixed N. papyraceus *(M. S. Linn. fil)*. In Sir William Hooker's Herbarium there are specimens of the same plant from Tangier, where it grows in great abundance. The N. niveus is also found in great profusion on the swampy lands near the Cork-wood, growing among rushes.

SMILACEÆ, *R. Br.*

Smilax aspera, *L.*
Vulg. *Salsa parilla.*

Hab. Mediterranean region of Europe. Cyprus.

Obs.—This is the most common species in Gibraltar and its neighbourhood. Found in great abundance in the hedges on the road to St. Roque.

Smilax mauritanica, *Desf.*

Sm. nigra, Willd.

Sm. catalonica, Lam. Dict.

Hab. South of Spain. Corsica. Sardinia. South of Italy, Greece. Asia Minor. North of Africa.

Obs.—Not so common as the last species. Found generally in the neighbourhood of Aristolochia glauca, near the Mediterranean-stair, entwining itself among branches of Rhamnus Oleoides and leaves of Chamærops humilis.

Ruscus hypophyllum, *L.*

Laurus alexandrina vera, Barr.

Vulg. *Laureola.*

Hab. South of Spain, Italy, Greece. North of Africa.

LILIACEÆ, *De C.*

Fritillaria pyrenaica, *L., (Webb).*

Fr. meleagris, Desf.

Fr. messanensis, Rafin.

Hab. South of Spain, Sicily, Calabria. North of Africa.

Obs.—Very rare in Gibraltar; only a few specimens were gathered by Dr. Lemann in 1840. This tribe of plants, though rather common in Andalusia, has no other representative on the rock. The beautiful Tulipa celsiana is found in great profusion on the Queen of Spain's Chair. Both plants are usually found at an elevation of between 2,000 and 3,000 feet.

Ornithogalum unifolium, *Gawl.*

Hab. Gibraltar, *(Auct).* Portugal.

Obs.—I place this plant here upon the authority of authors *(see Loudon's Encyclopædia of Plants)*, though I have not seen a single specimen of it on the rock; but as it is found in great

profusion on the left side of the Spanish race-course (nearly two miles and a half from Gibraltar), the mistake may thus have originated.

Ornithogalum umbellatum, *L.*

O. bœticum, El. Boiss. No. 181.

Hab. Britain, middle and south of Europe, Denmark. North of Africa.

Scilla hemisphærica, *Boiss.*

Sc. peruviana, L.

Eriophorus peruvianus, Clus.

Var. *glabra.* Folia margine glabra nec ciliata.

Hab. Varieties in Spain, Portugal, France, Sicily. North of Africa.

Obs.—This beautiful species of squill (erroneously called in Gibraltar the Star of Bethlehem) grows on the higher parts of the rock. It has a near affinity to Scilla Ramburii of *Boiss.*, which is a smaller plant. It was at one time believed to come from Peru, hence its former specific designation. The Scilla pumila is found on the Queen of Spain's Chair, and another species, very like it, on the Spanish race-course; perhaps this is the S. campanulata, *Ait.*

Scilla autumnalis, *L.*

Hab. Britain, Europe. North of Africa.

Obs.—Found usually in the neighbourhood of the Colchicum, and, like it, flowers before the leaves appear, in September and October. Its raceme is not unlike that of the Asphodelus ramosus, which is in flower in March and April.

Allium ampeloprasum, *L.*

A. multiflorum, Desf.

Hab. Britain, Europe. North of Africa.

Allium roseum, *L.*

Hab. South of Europe. North of Africa.

Allium neapolitanum, *Cyr.?*

A. album, Santi.

A. lacteum, Sibth.

Hab. South of Spain, Italy, Greece.

Obs.—I am not quite certain as to the specific characters of this plant, the specimens being in a very imperfect state. Friends in Gibraltar must clear up the matter.

Allium triquetrum, *L.*

Hab. Mediterranean region of Europe. North of Africa.

Obs.—The Allium vineale, and A. ursinum are also said to grow in Gibraltar, but I have not been able to identify them.

Uropetalum serotinum, *Gawl.*

Hab. Western Mediterranean region of Europe. North of Africa. Teneriffe.

Obs.—Found on the back of the rock by Dr. Lemann.

Muscari comosum, *Mill.*

Hyacinthus comosus.

Hab. Europe. North of Africa.

Obs.—Found in great abundance on the neutral-ground (in flower during the race-weeks). It has also been seen on the glacis below Victoria battery, and above the Alameda. (Dr. Lemann).

Aloe arborescens, *H. K.*

Hab. South of Africa. Cultivated in Barbadoes, &c.

Obs.—This is one of the species of aloe from which the medicinal aloe is produced. It is cultivated extensively in Gibraltar as an ornamental plant. The Alameda abounds with it.

Asphodelus microcarpus, *Viv.*

A. ramosus, L.

Hab. Mediterranean region of Europe. North of Africa.

Obs.—A very common plant in Gibraltar.

Asphodelus fistulosus, *L.*

Asphodelus minor, Clus.

Vulg. *Gamones.*

Hab. Mediterranean region of Europe. North of Africa. Egypt.

Asparagus officinalis, *L.*

Hab. South of Europe, Britain.

Obs.—All but wild on the rock.

Asparagus albus, *L.*

Vulg. *Esparraguera.*

Hab. South of Europe. Corsica. Sardinia. North of Africa.

Obs.—Found near Europa-flat.

Asparagus acutifolius, *L.*

Vulg. *Asparago trigueru.*

Hab. Mediterranean regions of Europe. North of Africa.

Obs.—Found more widely distributed on the rock.

COLCHICACEÆ, *De C.*.

Colchicum autumnale, *L.* Meadow Saffron
Autumn Crocus

Var. *Gibraltaricum.*

Colchicum Bivonæ, Guss.?

Hab. Spain, Portugal, Greece.

Obs.—The only difference between the Gibraltar plant and the C. autumnale of other countries is in the petals, which are larger

and tessellated; but never have I seen more than two flowers in a spathe, generally only one. As I have observed specimens of C. Bivonæ, in several collections, with only one flower, I am inclined to think the Gibraltar plant only one form of it; more especially as Boissier does not give another species in his *Voyage Botanique dans le midi de l'Espagne.*

JUNCEÆ, *De C.*

Juncus acutus, *L.*

Hab. Mediterranean shores. Britain.

Juncus striatus, *Schousb.*

J. Fontanesii, Gay.

J. gibraltaricus, Salzm.

J. echinuloides, Webb, It. Hisp.

Hab. Portugal, south of Spain, south of France, Sicily, Greece. North of Africa.

Obs.—First observed by Salzmann in the neighbourhood of Gibraltar, where it grows in great abundance, but it is rare on the neutral-ground.

Juncus bufonius, *L.*

Var. γ. *fasciculiflorus*, Boiss. Flores in dichotomiis et ad apicem ramorum per 5—10 fasciculati.

J. fasciculatus, Bertol.

Hab. Varieties found in Europe, Britain. North of Africa. Arabia. Azores. South America.

Obs.—A very common plant on the sandy desert beyond the Spanish lines; rare on the neutral-ground.

CYPERACEÆ, *Juss.*

Cyperus rotundus, *L.*

C. olivaris, Targ.

Vulg. *Castanuela.*

Hab. South of Europe. Africa. India. America.

Cyperus badius, *Desf.*

Hab. South of Europe. North of Africa.

Obs.—Neither very abundant on the neutral-ground.

Schœnus mucronatus, *L.*

Cyperus ægyptiacus, Glox.

Hab. South of Europe. Asia Minor. North of Africa.

Obs.—A very common species on the neutral-ground.

Scirpus holoschœnus, *L.*

S. australis, L.

S. romanus, L.

S. longibracteatus, Salzm.

Hab. Britain, Europe. Palestine. North of Africa. Canary Isles.

GRAMINEÆ, *Juss.*

Phleum pratense, *L.*

Hab. Varieties in Europe, Britain. America.

Piptatherum cærulescens, *Pal.*

Milium cærulescens, Schousb.

Hab. Spain, South of France, Italy, Greece. North of Africa. Gibraltar, *(Salzmann).*

Piptatherum multiflorum, *P. de B.*

Agrostis miliacea, L.

Milium arundinaceum, Sibth.

Vulg. *Migera.*

Hab. Mediterranean region of Europe. North of Africa. Arabia Petræa.

Gastridium lendigerum, *Gaud.*

Milium lendigerum, L.

Agrostis lendigera, Brot.

Hab. South of Europe. Asia Minor. North of Africa.

Polypogon monspeliense, *Desf.*

Alopecurus monspeliensis, L.

Phleum crinitum, Sibth.

Hab. South of Europe. Arabia Petræa. Egypt. North of Africa. America.

Obs.—Rather abundant on the rock above the Alameda, and on the neutral-ground.

Ammophila arundinacea, *Hort.*

Arundo arenaria, L.

Hab. Littoral plains of Europe. North of Africa. North America.

Obs.—Rare on the neutral-ground; abundant on the sandy desert beyond the Spanish lines.

Arundo Donax, *L.*

Donax arundinaceus, Pal.
Vulg. *Cana.*

Hab. Mediterranean region of Europe. North of Africa. Asia Minor.

Obs.—Cultivated for forming fences. Found wild in the neighbourhood, as is also the Phragmites communis.

Avena neglecta, *Willd.*

Trisetum neglectum, R. et Sch.

Hab. South of Europe. North of Africa.

Poa annua, *L.*

Hab. Varieties in the Pyrenees, Corsica, Spain, Siberia, Britain.

Briza maxima, *L.* Quaking Grass.

Hab. South of Europe, Levant. North of Africa.

Briza minor, *L.*?

Hab. South of Europe. Asia Minor. North of Africa. America.

Dactylis littoralis, *Willd.*

Poa littoralis, Gou.
Dactylis maritima, Schrad.

Hab. South of France, Spain, Italy, Siberia.

Catapodium loliaceum, *Link.*

Triticum loliaceum, Sm.

Hab. Middle and south of Europe.

Obs.—Found in Gibraltar by Salzmann.

Festuca ciliata, *Danth.*

Hab. South of Europe. North of Africa.

Obs.—Communicated by a friend.

Festuca calycina, *L.*

Hab. Spain.

Festuca alopecurus, *Schousb.*

Vulpia alopecurus, Link. var. *α*. Panicula simplex, spiculæ 7—9 floræ, glumellæ margine ciliatæ glumellam suam æquantes, gluma exterior minima, interior flosculis paulò brevior.

Hab. Portugal, Spain. North of Africa. Italy.

Obs.—Found on the neutral-ground and near Cave-guard.

Bromus rubens, *L.*

Festuca rubens, R. et Sch.

Hab. South of France, Spain, Italy, Greece. North of Africa.

Lolium perenne, *L.*

Var. *tenue.*

Vulg. *Ballico-loco.*

Hab. Europe. North of Africa. North America.

Hordeum murinum, *L.*

Hab. Britain, Europe. Arabia. North of Africa.

Lepturus incurvatus, *Trin.*

Hab. South of Europe. North of Africa.

Obs.—Found by Salzmann.

Lepturus subulatus, *Kunth.*

Hab. Mediterranean region of Europe. North of Africa.

Obs.—Found by Salzmann.

Andropogon Gryllus, *L.*

Hab. South of Europe. Barbary.

Zea Mays, *Willd.*

Hab. America.

Obs.—Cultivated in and near Gibraltar.

Melica aspera, *Desf.*

Hab. South of Europe. North of Africa.

Obs.—Communicated by Dr. Lemann.

Lagurus ovatus, *L.*

Hab. Britain, Mediterranean region of Europe, south and west of France. Asia Minor. North of Africa.

ACOTYLEDONES.

EQUISETACEÆ, *Rich.*

Equisetum hyemale, *Br.*

Var. *ramosum.*

Hab. Britain, Europe. North and south of Africa. Arabia.

Obs.—Communicated by Dr. Lemann.

LYCOPODIACEÆ, *Rich.*

Lycopodium denticulatum, *L.*

Hab. South of Europe. Asia Minor. North of Africa.

FILICES, *R. Br.*

Davallia canariensis, *Sm.*
Trichomanes canariensis, L.

Hab. Portugal, south of Spain. North of Africa. Madeira. Canary Isles.

Obs. — Rare; communicated. Found by Boissier near St. Roque. Abundant in the Cork-wood, on oak trees.

Cheilanthes odora, *Sw.*
Polypodium fragrans, Desf.
Adianthum fragrans, De C.

Hab. South of Europe. North of Africa.

Gymnogramma leptophylla, *Kunth.*
Polypodium leptophyllum, L., Desf.

Hab. Mediterranean region of Europe. North of Africa. Canary Isles.

Notochlæna lanuginosa, *Kaulf.*
Acrostichum lanuginosum, Desf.

Hab. South of Europe. Madeira. Canary Isles. North of Africa. Gibraltar *(Boissier).*

Ceterach officinarum, *C. Bauh.*
Asplenium Ceterach, L.

Hab. Britain, middle and south of Europe. North of Africa.

Scolopendrium Hæmionitis, *Cav.*

S. sagittatum, De C.

Asplenium Hæmionitis, L. non Brot.

Hab. Spain, south of France. Corsica. Sardinia. South of Italy.

Obs.—Found in St. Michael's cave, as also in the caves below the Governor's cottage, the floors of which are now on a level with the sea.

Adiantum Capillus-Veneris, *L.*

Vulg. *Culantrillo* seu *araneula.*

(Maiden-hair).

Hab. Britain, south of Europe. North of Africa.

Asplenium Trichomanes, *L.*

Hab. Britain, Europe. North of Africa.

Asplenium Adiantum-nigrum, *L.*

Hab. Britain, middle and south of Europe. North of Africa.

Obs.—Communicated by Dr. Lemann.

Polypodium vulgare, *L.*

Hab. Britain, Europe, North of Africa. North America.

HEPATICÆ, LICHENES, &c.

Of Lichens, Mosses, &c. there are a great number of species on the rock, the moist atmosphere surrounding it giving opportunities for their development and rapid growth. I regret that unavoidable

circumstances have prevented my making any large collections of these interesting tribes of vegetable productions. The most common species on the rock are the following :—

Marchantia polymorpha.
Targionia hypophylla.
——— Michelii.
Lunularia vulgaris.
Rebonillia hemisphærica.
Roccella tinctoria.
——— fuciformis.

ADDENDA.

LEGUMINOSÆ.

Cytisus triflorus, *L'Herit.*

Hab. South of Europe. North of Africa.

Obs.—Rare; observed on the rock by M. Willkomm, a German botanist; more frequently seen on the Queen of Spain's Chair.

Cytisus lanigerus, *De C.*
Calycotome villosa, Link.

Hab. South of Europe. North of Africa. Asia Minor.

Vicia hybrida, *L.* Vrlch

Hab. South of Europe, Britain. Asia Minor. North of Africa.

Obs.—This plant is a near neighbour of V. vestita, *Boiss.* The leaves of the latter are lanceolate-mucronate; and the hairs of the pendulous flat pods rise from tuberculous points.

SANTALACEÆ.

Osyris quadripartita, *Salzm.*

Hab. South of Spain. North of Africa.

Obs.—Found on the rock by M. Willkomm. The specimens in Dr. Lemann's collection are certainly those of Osyris alba.

EUPHORBIACEÆ.

Euphorbia helioscopia, *L.*

Hab. Britain, Europe, &c.

Obs.—Observed on the rock by M. Willkomm.

URTICEÆ.

Urtica membranacea, *Poir.*

Hab. South of Europe. North of Africa.

Mercurialis annua, *L.*

Hab. Britain, Europe, &c.

GERANIACEÆ.

Erodium laciniatum

Hab. South of Europe. Asia Minor. Barbary.

COMPOSITÆ.

Ætheorhiza bulbosa, *Cass.*
Leontodon bulbosum, L.

Hab. Mediterranean region. Portugal. North of Africa.

Obs.—Enumerated by M. Willkomm.

PART IV.

VEGETATION

OF THE

NEIGHBOURHOOD OF GIBRALTAR.

" Arise
To trace the woods, the vales, — where thousand dyes
The ground adorn."

PART IV.

VEGETATION

OF THE

NEIGHBOURHOOD OF GIBRALTAR.

THE botanist, after having examined the rock and its immediate vicinity, will doubtless feel inclined to proceed further into Andalusia, where a richer and a more extensive field awaits him. On passing the boundaries of the neutral-ground, he enters the Spanish territory, where he will meet with customs and manners totally different from those he has been accustomed to see in Gibraltar. The Spanish peasantry, with whom the stranger must necessarily come in contact during his tours, is a manageable race, though report has made them to appear in an unfavourable light. They are, of course, like all their countrymen, easily irritated; but none are more influenced by civility and kind words than the Andalusian mountaineers. A cigar or cigaritto will obtain a courteous reception for the stranger which even the usual salutation of "Vaya vm con Dios" may fail to procure him; therefore the botanist will not do wrong

in providing himself with a supply of the dried leaf of the best Nicotiana tabacum, though he may not be himself addicted to its use. There have been a few instances of some unfortunate Gibraltarians being carried off by a gang of robbers from the neighbourhood of St. Roque, and only ransomed by large sums of money; but these instances are very rare, though it may be as well to be prepared for emergencies. The stranger may also find it convenient to engage a guide at St. Roque; at all events it will be prudent to enlist in his cause a kind friend from Gibraltar who is well acquainted with the country, for in many parts it is as wild and uncultivated as the forests of America.

Having passed extensive beds of Cachrys pterochlæna, the Spanish lines are approached. These lines consist of a few houses and barracks for soldiers stationed here, under the command of a colonel. There is scarcely a tree to be seen on this spot, and beyond it, is the little sandy desert spoken of in a former part of this book. The aridity of the soil prevents any extensive production; but such is the nature of the climate that, with a little care, a few vegetables are successfully cultivated. For more than a mile this bed of sand extends, and only near the lines are there any green patches to be seen. Here the Ononis Gibraltarica, O. natrix, Cachrys pterochlæna and Delphinium peregrinum grow in great abundance. On the left, near the western beach, there is scarcely any other plant than the lovely Pancratium maritimum, which continues to

flower when all other vegetation is dried up; at distant intervals are found a few specimens of Polygonum maritimum, Ononis variegata, Paronychia cymosa, *De C.*, Juncus acutus, J. bufonius, J. maritimus, Medicago marina, and the beautiful Eryngium ilicifolium; and less frequently the Matthiola sinuata, and Schœnus mucronatus. Beyond the large stream, about a mile and a quarter from the Spanish line, is an extensive plain, called the Spanish race-course, the property of Messrs. Francia, merchants in Gibraltar. It appears that at a remote period this part was extensively cultivated, and perhaps there was once abundance of underwood. The encampment of the combined forces during the siege of Gibraltar has removed all traces of vineyards and olive plantations which are said at one time to have also existed here; but it is to be hoped that the present owners of the ground will appropriate it to a better use than for the grazing of cattle. The botanist will not perhaps regret the continuance of its present uncultivated state, for the number of interesting plants found in this locality is very considerable. Early in autumn the ground is nearly covered with the graceful Leucojum tricophyllum. This is succeeded by a large riety of the Ornithogalum umbellatum (O. bœtica, *Boiss.*) On the left of the road leading to St. Roque are found large beds of the Scilla vernalis and Ornithogalum unifolium. The O. narbonense is in flower later in summer, but not found in so great abundance as the two other species. Lobelia urens is found near the hedges in great profusion. The abun-

dance and variety of plants found in this locality is truly surprising; however, there is scarcely any one species larger than the Ulex bœticus, which covers many acres of this extensive plain. Among several hundred species growing here, I gathered the Ranunculus gramineus, Hypericum tomentosum, Lupinus luteus, Lupinus hirsutus, and Scorpiurus vermiculata; more rarely the Anchusa calcarea, *Boiss.*, and the singular and elegant green narcissus (N. viridiflorus, *Schousb.*) Later in summer the whole of this plain is densely covered with Carlina corymbosa, Cynara horrida, several species of Centaurea, and a very large variety of Senecio Jacobea.

On the right of the Spanish race-course is the hill called Queen of Spain's Chair, so named from one of the queens of Spain having once sat on its summit. This hill, which is one of the terminating points of a series of hills rising from 1,500 to 3,000 feet high, chiefly composed of limestone and sandstone, affords an almost inexhaustible source of pleasure to the lover of wild flowers. Perhaps there is scarcely any other spot near Gibraltar more abundant in vegetation. The base of the hill, and a little way above, it is covered with masses of Lavandula stæchas and several species of Genista, Cistus, and Erica, of the latter, the Erica australis being most abundant; as also the Genista Gibraltarica. In the midst of these are found Briza maxima and Astrocarpus sesamoides, *De C.* Higher up the hill the orchideous plants are seen in great profusion, the most common being the Ophrys lutea, O. apifera, and, rarely, Satyrium den-

siflorum, *Brot.*, and Serapias lingua, *L.* In shallow pools, near the base of the hill, I found the Alisma ranunculoides, which is more frequently met with in the marshes near the rivers Gauderanque and Palmones. Among other plants on this hill I gathered Helianthemum monspeliaca, Thrincia tuberosa, and the elegant Tulipa celsiana, *De C.* Miss Mann has informed me that she has seen the Iris filifolia, *Boiss.*, on this prolific hill; and Dr. Lemann has specimens of the Scilla pumila from the same part. It appears singular that the Queen of Spain's Chair should abound with plants which have not a single representative on the rock of Gibraltar; and still more strange that some of the plants of Gibraltar are not growing on this hill, though they are scarcely three miles apart.

It is difficult to direct which way to proceed from this interesting hill: on every side is a large and perhaps unexplored locality, therefore the botanist will here be guided by circumstances. There is a pathway which will take him to St. Roque, through a small village called Pindalista; from thence he may proceed through the mountain range till he reach the Malaga road, which will bring him to St. Roque: or, if he choose, he can extend his walk to the eastern beach, and between Gibraltar and Estepona he will meet with a considerable number of very interesting plants, such as the Helichrysum stæchas, Dorycnopsis Gerardi, *Boiss.*, Campanula Rapunculus, *L.*, Gentiana maritima, *L.*, Teucrium spinosum, *L.*, Daucus mari-

nus, and another species, with many kinds of Centaurea, Carduus, &c.

For convenience sake we shall suppose the botanist to have regained the high-road to St. Roque. On the left of the Queen of Spain's Chair the small village of Campo is situated, near the upper end of the race-course; the road passes through, thus making it a kind of halfway-house to frequenters of St. Roque. It is considered a very salubrious place, and is consequently made the summer residence of invalids from Gibraltar; and a few merchants take apartments there for their families. The air about here is purer, but being much exposed to all winds, which frequently blow very boisterously across the plain, especially in the winter months, there is no inducement for making the village their permanent residence. A little way beyond the outskirts of Campo, towards the bay-side, is the newly-discovered Roman ruin alluded to in a former part of this book. Near this locality, the Centaurea polyacantha grows in great abundance; on the right of the high-road there are some extensive fields, where the beautiful Hedysarum coronarium is seen in great profusion; this plant is found nearly all the way to St. Roque, forming large crimson masses among the green of the barley and oats, and makes excellent fodder for cattle. On the road-side there is a variety of plants;—the principal kinds are Helminthia echioides, Passerina canescens, Mentha Pulegium, var. *tomentella,* Salvia rotundifolia, S. bœtica, Cerinthe major, Scorpiurus sub-

villosa, Vicia atropurpurea, Scabiosa maritima; the last three species in greatest number. In the lower parts, and near the water-courses, are found Lythrum flexuosum and Urtica membranacea. On the slopes of the hill through which the road is cut are seen the Ornithogalum narbonense, Cirsium syriacum, Nigella hispanica, and Lavatera trimestris. In the hedges the Smilax aspera and Aristolochia bœtica entwine round the branches of the Cratægus, Rubus, and Arundo donax, while also Convolvulus althæoides may be seen in great profusion. Midway between the village of Campo and St. Roque is the farm, or rather garden, of Mr. Francis Francia, British vice-consul at St. Roque, a native of Gibraltar, who has, with an industry and taste rarely found in this part of Spain, laid out a very large piece of ground in a flower and fruit garden where many exotics have been introduced; among these the Loquat (Eriobotrya japonica), and several rare varieties of the orange are found to grow in great perfection.* A little further on is the farm of the American consul, Mr. Sprague, who is endeavouring to cultivate grapes

* On excavating one part of this land a few years since, an artificial cave was discovered, which extended a great way into the body of the hill, and contained evidences of its former occupation by man. A grave was also discovered in the garden, containing several human skeletons, in a very perfect state of preservation; there were rude implements, chiefly of stone, buried with them, which are considered to indicate that the remains are those of Phœnicians.

and mulberries, the latter I believe not with much success, as there is a scarcity of water in the neighbourhood, and for this reason Mr. Sprague has been forming an Artesian well, which was not completed when I left Gibraltar.

About a mile from this farm is the town of St. Roque, picturesquely situated on a high hill, overlooking rich fields and pasture lands. From one of the most elevated points of this hill a panoramic view of perhaps more than a hundred miles in extent is obtained. The Mediterranean, with Afric's bold shores beyond it; Gibraltar, rising, like an island from amidst the ocean; behind the town, the Corkwood, seen in the distance, with ranges of blue hills, forming the chain of the Ronda mountains; the white snowy heights of the Sierra Nevada, also seen from this eminence; Algesiras, and the site where once stood ancient Carteia, with the classic rivers of Palmones and Guaderenque, emptying their crystal streams in the blue waters of the bay; all contribute to form a scene which, for grandeur and beauty, can scarcely be equalled even by the wildest dreams of fancy. The town of St. Roque is scarcely worthy of attention, except as being one of the cleanest of Spanish towns; there are but few modern houses in it, and the only buildings of importance are the church and town-hall, in the Plaza de la Constitucion. The latter is remarkable for containing, above the first staircase, a small but elegantly worked basso-relievo, found a few years ago among the buried ruins of Carteia. Most of the older houses in St. Roque are built of stones, reco-

vered from the same ruins. On the hill on which St. Roque now stands there was formerly a hermitage; but since the Spaniards of Gibraltar sought a refuge here, when that fortress was taken by the English, the number of houses has gradually increased, and from its close proximity to so great a commercial emporium as Gibraltar once was, the number of inhabitants has considerably increased. The poorer classes still live chiefly upon the people of Gibraltar, whom they supply with the produce of the country. The population does not, however, I believe, exceed ten thousand, including the military and strangers. This town, like most other towns in Spain, has occasionally produced men of military eminence, who have distinguished themselves in the revolutionary wars of the country. The writer of the 'Guide Book to Gibraltar' quaintly observes, that, "with a lingering hope of again possessing the fortress of Gibraltar, the city of Gibraltar is said to exist in San Roque." Be this as it may, it is notorious that in all public acts the Roquians still style themselves the inhabitants of Gibraltar residing at St. Roque, and the general at Algesiras is called the commandant of the *Campo de Gibraltar;* some even say, that like the remnants of the Grenada Moors now in Morocco, the old families in St. Roque hand down from one generation to another the keys of the houses which their forefathers brought with them on quitting Gibraltar. To whatever extent the jealous feelings of the Spanish may now be excited in prejudice to the English power, it is very gratifying to observe the friendly intercourse which at

present exists between the English residents of Gibraltar and the Spaniards in the neighbourhood; many English families, chiefly of the mercantile classes, reside in St. Roque during the summer months, and a few even make it their permanent residence. Officers from our garrison are daily seen in St. Roque, partaking of the good fare which Mr. M'Crae (landlord of the English hotel) provides for appetites made keen by a delightful ride, or after a long day's tally-ho! across the wild mountain plains in the Corkwood. However refreshing the air of St. Roque may be to invalids, it is necessary to be cautious not to venture too far in the too tempting fields, which are sometimes fraught with dead malaria. Those who go to St. Roque for change of air are frequently brought into Gibraltar the victims of ague and remittent fever; the botanist must, however, take his chance of both, for where the choicest flowers grow, there also, in most instances, do diseases find a suitable bed; he must, if possible, choose his night's lodgings, which very often is impracticable; but the safest plan would be to make St. Roque or Algesiras his head-quarters. The towns of Gaucin, Los Barrios, &c. will also afford him a safe shelter from pestiferous vapours; but he must make up his mind to suffer heroically from "small disquietudes and *insect stings*."

A pathway leads from the Alameda of St. Roque to the Corkwood, which, passing through cultivated fields, goes over loftier hills, covered with red, white, and yellow blossoms of various species of Cistus, of

Ononis, and Genista. The road for a great way is lined with Rubus fruticosus, Vinca media, Lavatera trimestris, and Fumaria capreolata; the botanist will also find a very rich field of interesting plants in the immediate neighbourhood of St. Roque. The slope of the hill on which the country-house called Almandral is situated, is covered with the white blossoms of the Clematis cirrhosa; two species of Saponaria, and the Carduus giganteus are also common on this hill, and likewise the Erythrea major, E. centaurium, Cirsium syriacum, Lychnis cæli-rosa, and in lower parts Hypericum perfoliatum and Nigella hispanica are brought into view. The plains are covered with Salvia bœtica, Hedysarum fontanesii, and a variety of plants common to Gibraltar, with a few rare ones, among which I found the Lythrum salicaria, var. *tomentosa*. On the banks of a tributary stream to the Guaderenque are found in great abundance Nasturtium hispanicum and Equisetum hyemale, and occasionally the beautiful Trachelium cæruleum. On sandy parts the grasses are very numerous; among these are the Carex marina, Briza minor, several species of Bromus and Cyperus. The swampy lands between the two rivers are covered with Bellis annua, Asphodelus ramosus, Narcissus niveus, Alisma ranunculoides, and several species of Ranunculus and Juncus, as also a yellow Iris. On the sides of the road leading to the Corkwood, by the first Venta, are seen in great abundance the Allium triquetrum and Fœdia cornucopiæ, the latter a very common plant in Gibraltar, and all over this part of Andalusia.

The ride through the Corkwood from the second Venta is delightful; the entrance to this almost virgin forest puts one in mind of scenery in England, the cork-trees representing the old oaks seen in many an entrance to a country mansion; but here these noble trees, instead of being surrounded by marks of civilization, grow in wild mountainous regions. In the so-called Corkwood, the trees are principally of two species of Quercus, viz. Q. suber and Q. lusitanica, var. *bœtica;* their old weather-beaten trunks and branches are of various shades of brown and green, formed by the numerous lichens which grow upon them. Mr. Willkomm, a young German botanist, whose acquaintance I had the pleasure of making in Malaga, enumerates, among several species, Usnea barbata and Sticta pulmonacea. On these fine trees the Davallia canariensis and the Polypodium vulgare also grow in great profusion, finding a matronly shelter from the thick foliage, under the shade of which grow also the Erica arborea, E. umbellata, Oxalis corniculata, Helianthemum tuberarium, Hypericum ciliatum, Trichonema bulbocodium, and Sedum acre. On the more level parts the ground is covered with Pteris aquilina, several species of Genista and Sarothamnus bœticus. The plants here have a freshness even in summer, when the unsheltered parts near St. Roque are parched up; and many attain an unusually large size. Near this noble forest is the farm which once belonged to the late Duke of Kent, and adjoining it is a thickly set copse of pines, under whose shade grow Genista tridenta and Linum radiola,

with many other plants. The botanist can scarcely find in any part of Andalusia a more extensive or a more varied field for his perambulations, nor can the lover of forest scenery picture to himself more perfect sylvan groves than are to be found in this wood, where the busy hum of men will never disturb his transports of pleasure. Nearly the whole of this great forest belongs to a member of the ancient house of Medina Sidonia, the founder of which once disputed the possession of the rock of Gibraltar with the monarch of Spain, and who for many years reigned over the territory of Gibraltar. Even at the present time this forest and a few scattered villages yield an annual rental of 35,000 dollars, which sum may be doubled by a little care being taken of the property, and other use made of the wide domain than cutting the trees on it for charcoal, and stripping the bark off the cork-trees. At one time the limits of the city of Gibraltar extended to these woods; for, according to Ayala, the territory of what was called the city of Gibraltar extended "five leagues from east to west, and three from north to south, comprising a circuit of twenty-five leagues;" and "the population of San Roque, Algesiras, and Los Barrios, with their territories and boundaries united, formed the entire city of Gibraltar." It would also appear from this writer's account, that the country which is now lying almost waste, and covered with so many objects pleasing to the botanist's taste, was in former times extensively cultivated, and that the olive and vine

were as plentiful here as in other parts of the south of Spain.

An old convent, celebrated for the miracles which its patron saint has worked in former ages, is situated in a district of the Corkwood called Almorama; its only inmates at present are an aged priest and a few half-starved attendants, supported more by the generosity of British visitants than by the pious offerings of pilgrims. The long galleries surrounding the time-worn cloisters frequently shake with the merriment of the pic-nic parties from Gibraltar, who, attracted by the seclusiveness of the spot, and the beauty of the surrounding scenery, resort here frequently during the spring and early part of summer, to shake off the ennui consequent on a residence in so dull a place as the rock. A little beyond the convent of Almorama is a dilapidated pile of buildings, called the Long Stables, and here the botanist will find a path leading to the rocky eminence on which stands Castellar, famed in Spanish history for the remarkable sieges it sustained during the Moorish wars. The castle is now almost a heap of ruins, and the houses within are mouldering to dust, with the exception of the one occasionally occupied by the lord of this extensive district. Curiosity once led me into the interior of this building, and among other antiques there is in the drawing-room one of Broadwood's oldest Pianos, which was considered a great acquisition by the inhabitants of this old-fashioned place, although scarcely a note could be extracted from it.

A small gratuity to the fat old lady in charge of this antiquated mansion, will procure the tourist admission to the turret, which commands a very extensive view of the sierras of Spain. Notwithstanding the present dilapidated condition of this castle, a handful of troops and a few cannons would be quite sufficient to defend it against almost any besieging army, the ascent to it is so difficult, and the height nearly 2,000 feet. Tired and exhausted, the writer, in company with a few friends, arrived within the castle walls, where nothing else was to be obtained in the shape of refreshment than *vino-blanco* and a crust of bread, which to the hungry was as acceptable as any dish prepared by a Spanish cook. It was a hot summer's day, and the plants we gathered were unfit for drying; but a hasty survey of the vegetation of this neighbourhood gave a very favourable idea of its richness. In the ravines below, the crimson flowers of the Nerium oleander enliven the masses of green formed by a hundred other plants, among which are found Arbutus Unedo, Viburnum Tinus, Laurus nobilis, and occasionally Rhododendron ponticum, a plant more frequently met with nearer Algesiras, and supposed to have been introduced by the Moors. On the heights above these interesting species of plants, Phylleria media, P. augustifolia, Olea europea, Rhamnus oleoides, R. lycioides, Myrtus communis, and Chamærops humilis occur in great abundance; among these are scattered a number of orchideous plants, the most common forms being Ophrys lutea, O. apifera, Peristylus cordatus, and Serapias lingua.

Mr. Willkomm found here the Polygala microphylla and a Fritillaria. After a close examination of this interesting locality, the botanist may find it agreeable to enter a pathway leading to a romantic part called *Boca del Leon;* having arrived there, he will find himself in a situation which, if ever brigand chose a spot to commit deeds of blood, it would be this. One expects in this glen to behold some wild animal, or even a more dangerous foe—a robber, at every rustling of the plants disturbing the quietness which reigns here. The smell of the sweet blossoms around, and the cooing of the wild pigeon, enchant him, but as he stoops to gather the wild flowers, which grow here in great abundance, he expects some concealed murderer to start upon him from one of the bushes: these fears are, however, unnecessary, as Spain is not now that inhuman place which history has painted her; the Spanish peasant or muleteer is a pleasant companion to meet with on the road; he is accustomed to see strangers, and officers from Gibraltar are great favourites with these classes, and if only civilly treated, without the supercilious air of inexperienced travellers, the stranger will meet with a good reception, and the botanist will find some of them very useful in his excursions. Various roads go through the Corkwood, some to Gaucin, Ximena, and Ronda; others to Los Barrios and Algesiras; but as the present work has already exceeded the contemplated limits, this short sketch of a very interesting botanical locality must be concluded, and a few notices briefly made of other places in the neighbourhood.

From the Corkwood the botanist may retrace his steps to the second Venta, from whence he will find it practicable to go to the small town called Los Barrios, famed for still possessing the statue of San Joseph, which had been clandestinely removed from Gibraltar by some pious catholics on leaving that fortress, when it fell into the hands of its present possessors. The country through which the botanist will now chiefly pass is low and marshy, and after leaving Los Barrios and crossing the river Palmones, the littoral plains may be reached by a short cut; but perhaps it will be preferable to keep more inland, and enter into the woods behind Algesiras, where a great number of plants not hitherto met with may be seen growing luxuriantly. Among these occur frequently Vitex Agnus-castus, Phlomis Herba-venti, Scilla maritima, and Arenaria spathulata. Mr. Willkomm, in his botanical notices of Spain, mentions that in this neighbourhood he met with the splendid Drosophyllum lusitanicum, for the first time, and that he found it to cover the whole northern acclivity of the mountain named Cerro Comodore. The town of Algesiras is situated almost opposite to Gibraltar. The history of this place is nearly contemporaneous with that of the Rock; it was originally a Moorish town, but rebuilt in 1760 by Charles the Third. The walls of many houses are almost entirely composed of stones recovered from the ruins of Carteia; the antiquarian has cause to regret that the sides with inscriptions on them are generally built inwards, so that he will have some difficulty in tracing more of the history of so renowned a

place as Carteia on the walls of modern Algesiras, which has risen from being only a fishing village to a commercial port of considerable importance, and was a source of much annoyance to the British during the wars. The celebrated floating batteries which were destined to destroy the English fortress were made within the harbour of Algesiras. The Spaniards still keep here a large force, where the general commanding the district resides. This place is also frequented by English residents of Gibraltar, chiefly to see the small waterfall within an hour's ride of the town; the elegant aqueduct also attracts the stranger's attention. The botanist making Algesiras one of his head-quarters, will find miles of surrounding country to supply him with rare and beautiful plants. Circumstances which a medical officer of the garrison of Gibraltar cannot always obviate, prevented the writer taking more than a few hours' walk in this part of Andalusia; Mr. Willkomm, however, examined this locality, as well as many miles beyond it, and the reader will be able to judge, from the lucid descriptions of this accurate observer,* what an interesting field there is here for the botanist. According to Mr. Willkomm, the vegetation of the hills in the neighbourhood of Couil differs little from that observed on the hills near Algesiras, though the number of species between Couil, Cape Trafalgar, and Veger was not so great. In the neighbourhood of the Cape, large tracts were covered

* See 'Annals of Natural History,' for a translation of Mr. Willkomm's papers.

with Leucojum tricophyllum, *Brot.*, a plant which grows in great profusion on the Spanish race-course, near Gibraltar. Mr. W. also found in the marshes near the Cape, among other plants common to the whole of this district, Ranunculus paludosus, *Desf.*, growing plentifully, as also the Ranunculus flabellatus, which is a more common plant. Mr. Willkomm, after describing the vegetation of hills near St. Roque, observes of the hilly land near Algesiras, that it is almost "exclusively covered with Calycotome villosa (Spartium villosum) and a Genista; patches of Chamærops humilis are also frequently seen, and, more seldom a Sarothamnus. On somewhat moist places, and under bushes, grow everywhere Allium triquetrum, *L.*, and also Bellis sylvestris, *Cyr.*, B. annua, *L.*, Ranunculus flabellatus, Rumex bucephalophorus, a small blue-flowered Linum,* especially in the scattered copses of Pinus picea, also Hedysarum coronarium, *L.*, Ophrys apifera, *Huds.*, more rarely, and only on limestone, Ophrys lutea, *Cav.*, several Carices and grasses, Salvia Verbenaca, Anthyllis tetraphylla, Calendula arvensis, Alyssum maritimum, Cerastium glomeratum, Cerinthe major, Corrigiola littoralis, &c. Large patches were covered with Pteris aquilina, especially along the foot of the mountains; whilst in the moist lowlands and marshes grew Juncus acutus, Heleocharis palustris and Carices in abundance, and, rarely, Alisma ranunculoides." This list may be considerably increased by any botanist who can spare more

* Linum angustifolium, *Huds.*

time than Mr. Willkomm had for an examination of these hills and lowlands, in various months of the year.

Leaving Algesiras on returning to Gibraltar, the walk along the bay-side is very interesting, though perhaps not to the botanist, the sandy soil giving little opportunity for vegetation to spring up; but the tourist having to cross two rivers of considerable importance in ancient history, finds an interest which the sandy and almost blank hills along the shore would not otherwise possess. The Palmones and Guadarenque, rising in the heights of the Sierra de Gazales, and winding their way through fertile valleys and plains, empty their contents into the northern part of the Gibraltar bay. The space between the mouths of the two rivers is scarcely two miles; both rivers are crossed by ferry-boats. On the eastern side of the Guadarenque (the river nearest Gibraltar) lie the *buried ruins of Carteia.* Few casual visitors to Gibraltar are aware that within five miles of that fortress is the site of so great a Roman city, or that on the waters of the Guadarenque were once moored hundreds of Roman galleys, and that it was here that Pompey took refuge after the fatal battle of Monda, and that history records the important part which the citizens of Carteia took in Cæsar's wars, or that it was from Carteia that Sextus Pompeius, after the death of Cæsar, marched at the head of six legions. Those who are curious to know the early history of this part of Spain will find Carter's account of his journey to Malaga a very entertaining and useful companion. This author states, that one Don Macaio Farinas

surveyed Carteia about 400 years ago, and that the mole was then entire, and "that it had illustrious ruins of superb edifices standing." At present there are but few vestiges of this great city; some eight or ten pillars of its theatre still remain on the side of a hill now overgrown with species of Daucus and Centaurea. Coins and fragments of temples, &c. are occasionally brought up by the plough; most of the stones obtained here have been used in the buildings of St. Roque and Algesiras, and lately the stones found in the ruin described in an early part of this book have been used for the same purpose, chiefly by Mr. Francia, in erecting his villa on the Spanish race-course. We shall not stop here to inquire whether Carteia, Tartessus, and Heraclea were one and the same city; but few can go over the ground where once stood a rich and flourishing city, without exclaiming with Carter, when he saw these ruins, "O, Carteia! thou once famous and renowned city, whose beauty and loveliness captivated the merchants, drawing all nations of the earth to thy port, can I contemplate without compassion thy present desolate state? Behold, thy noble theatre is destroyed, thy populous streets are ploughed up and sown, thy walls are taken away, thy sacred temples are beat down, and thy beauteous head, once crowned with turrets, is now levelled with the dust! Where are thy senators, thy purpled quatuor-viri, thy ædiles, thy streets swarming with people? Thy port is destroyed, no fleets are to be seen in it, nor the shout of mariners any more heard; thy fields for want of culture are turned

to morasses; the very air over thee is become heavy and unwholesome, and the chilling ague drives man from thine habitation:—in thy latter end, as in thy prosperity, one common fate attends thee with the mighty Babylon." Such was the strain in which a writer in the eighteenth century spoke; and the admirer of Roman glory will have now even still greater cause for lament,—scarcely an unbroken Roman stone is now left on the banks of the Guadarenque. The modern farm house called El Roccido will denote the spot, when other traces of it are lost. The neighbouring hills are comparatively barren, scarcely a tree is to be found on them. Among smaller plants found here are various species of Daucus, Centaurea acaulis, Kentrophyllum arborescens, Cynara horrida, Scolymus hispanicus, Pulicaria dysenterica, P. arabica, Thymus hirtus, and T. vulgaris.

Although it cannot be expected that the writer should have exhausted the botanical riches of the neighbourhood of Gibraltar, it is to be hoped he has given as faithful an account of it as opportunities have permitted him. After examining the Carteian hills, the traveller, on his return to Gibraltar, will pass through a small village called the Orange-grove, though there are now but few orange trees, and vegetation of all kinds is scanty and impoverished, from neglect, and the natural disadvantages of a sandy soil. Leaving the Orange-grove, a few miles of sandy mounds are passed, till the Spanish lines are again entered; here the tourist will have an opportunity of seeing the ruins of Fort St. Philip, which was blown

up, with Fort St. Barbara, on the opposite side of the lines, as a precautionary measure, during the late revolutionary war, when Spain was overrun by a French army.

Having now completed the circuit marked out at the commencement of this work, little else is left for the writer, than to wish that the future explorer of this region may find more opportunities than the author has had for extending his inquiries, and a hope that he has given at least a fair insight into the Flora of Gibraltar and its neighbourhood, though it may not be deemed a perfect account.

In addition to nearly two-thirds of the plants enumerated in the foregoing 'Synopsis,' the following are found growing within twenty miles of Gibraltar, in the district of Spain called Andalusia.*

DICOTYLEDONES.

Alisma Ranunculoides, *L.*
Ranunculus aquatilis, *L.*
——— gramineus, *L.*
——— paludosus, *Desf.*
——— arvensis, *L.*
——— parviflorus, *L.*
Nigella hispanica, *L.*
Fumaria hygrometrica, *Huds.*
Nasturtium officinale, *R. Br.*
Malcomia lacera, *De C.?*
Cakile maritima, *Scop.*
Cistus populifolius, *L.*
——— crispus, *L.*
——— salvifolius, *L.*
Helianthemum Libanotis, *Willd.*
——— tuberaria, *L.*
——— lævipes, *Willd.?*
Polygala monspeliaca, *L.*

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* In this list are included all plants found by the author within fifteen miles of Gibraltar, and also those observed by Boissier, Webb, and Willkomm, at Estepona and Marabella, on the road to Malaga.

Polygala nicæensis, *Riss.*
——— microphylla, *L.*
Silene gallica, *L.*
——— hirsuta, *Lag.*
Lychnis cœli-rosa, *Desv.*
Arenaria spathulata, *Desf.*
Linum Radiola, *L.*
Lavatera triloba, *L.*
Gossypium herbaceum, *L.*
Viburnum Tinus, *L.*
Rhododendron ponticum, *L.*
Hypericum tomentosum, *L.*
——— perforatum, *L.*
——— pubescens, *Boiss.*
——— ciliatum, *Lam.*
Erodium Botrys, *Bertol.*
Oxalis corniculata, *L.*
Ruta angustifolia, *Pers.*
Arbutus Unedo, *L.*
Trachelium cæruleum, *L.*
Ulex bœticus, *Boiss.*
Sarothamnus affinis, *Boiss.*
——— arboreus, *Webb.*
Genista Hænseleri, *Boiss.*
——— Gibraltarica, *De C.*
——— hirsuta, *Wahl.*
Lupinus hirsutus, *L.*
——— luteus, *L.*
Ononis Picardi, *Boiss.*
——— monophylla, *Desf.*
Anthyllis hamosa, *Desf.*
Dorycnopsis Gerardi, *Boiss.*
Medicago minima, *Willd.*
Melilotus intermedia, *Boiss.*
Trifolium arvense, *L.*
——— lappaceum, *L.*
——— scabrum, *L.*
——— ochroleucum, *L.*
——— hirtum, *All.*
Trifolium cherleri, *L.*
——— glomeratum, *L.*
——— resupinatum, *L.*
Dorycnicum rectum, *Ser.*
Lotus angustissimus, *L.*
——— creticus, *L.*
Galega officinalis, *L.*
Glycyrrhiza glabra, *L.*
Astragalus pentaglottis, *L.*, *Mant.*
Astrolobium ebracteatum, *De C.*
Hippocrepis unisiliquosa, *L.*
——— ciliata, *Willd.*
Hedysarum Fontanesii, *Boiss.*
Onobrychis horrida, *Desv.*
Vicia vestita, *Boiss.*
Lathyrus latifolius, *L.*
——— annuus, *L.*
Potentilla reptans, *L.*
Poterium Agrimonifolium, *Cav.*
Rosa sempervirens, *L.*
——— canina, *L.*
Cratægus Oxyacantha, *L.*, *Koch.*
Epilobium montanum, *L.*
——— hirsutum, *L.*
Lythrum Salicaria, *L.*
Var. *tomentosum*, De C.
——— flexuosum, *Lag.*
Cucumis Colocynthis, *L.*
Herniaria cinerea, *De C.*
Paronychia echinata, *Lam.*
——— nivea, *Boiss.*
Sedum acre, *L.*
——— amplexicaule, *De C.*
Eryngium maritimum, *C. B.*
——— aquifolium, *Cav.*
——— tricuspidatum, *L.*
Amni Visnaga, *L.*
Bupleurum protractum, *Link.*
Œnanthe apiifolia, *Brot.*

Thapsia garganica, *L.*
——— villosa, *L.*
Daucus brachylobus, *Boiss.*
——— marinus, *Desf.*
Viscum cruciatum, *Sieb.*
Asperula hirsuta, *Desf.*
Rubia angustifolia, *Linn.*
Galium glomeratum, *Desf.*
Cephalaria syriaca, *Schr.*
Pterocephalus Broussonetii, *Boiss.*
Anacyclus clavatus, *Pers.*
Diotis candidissima, *Desf.*
Carlina sulphurea, *Desf.*
Centaurea sempervirens, *L.*
——— melitensis, *L.*
Kentrophyllum lanatum, *De C.*
Carduncellus cæruleus, *De C.*
Carduus myriacanthus, *Salz.*
——— giganteus, *Desf.*
Cirsium syriacum, *L.*
Tolpis barbata, *Gærtn.*
Hypochæris Salzmanniana, *De C.*
Seriola æthnensis, *L.*
Podospermum calcitrapifolium, *De C.*
Helminthia comosa, *Boiss.*
Crepis virens, *Vill.*
Andryala tenuifolia.
Var. γ. *arenaria*, De C.
Pulicaria dysenterica, *Gærtn.*
——— arabica, *Cass.*
Lobelia urens, *L.*
Campanula Rapunculus, *L.*
Phillyrea angustifolia, *L.*
Calluna vulgaris, *Sal.*
Erica australis, *L.*
——— umbellata, *L.*
——— scoparia, *L.*
Nerium Oleander, *L.*
Erythræa major, *L.* et *Hoffm.*
Gentiana maritima, *L.*
Convolvulus Mæonanthus, *Link.*
Batatas edulis, *Chois.* (cultiv.)
Cressa cretica, *L.*
Cuscuta Epithymum, *L.*
Echium gaditanum, *Boiss.*
Anchusa calcarea, *Boiss.*
Myosotis sylvatica, *Hoffm.*
——— intermedia, *Link.*
Atropa frutescens, *L.*
Mandragora officinarum, *L.*
Scrophularia Scorodonia, *L.*
——— auriculata, *L.*
Linaria viscosa, *De Cours.*
Veronica saxatalis, *Jacq.*
Euphrasia minima, *Schleich.*
Orobanche cruenta, *S.*
Lavandula Spica, *De C.*
Mentha aquatica, *L.*
Salvia viridis, *L.*
——— bœtica, *Boiss.*
——— Verbenaca, *L.*
Origanum compactum, *Benth.*
Thymus vulgaris, *L.*
——— capitatus, *Link.*
Cleonia lusitanica, *L.*
Stachys cretica, *Sibth.*
——— arvensis, *L.*
——— hirta, *L.*
Marrubium hispanicum, *Desf.*
Phlomis Herba-venti, *L.*
Teucrium spinosum, *L.*
Ajuga Iva, *L.*
——— pseudo-Iva, *De C.*
Vitex Agnus-castus, *L.*
Anagallis linifolia, *L.*
——— tenella, *L. Mant.*
Statice ferulacea, *L.*
Plumbago europæa, *L.*
Plantago serraria, *L.*

Amaranthus albus, *L.*
Rumex acetosella, *L.*
Polygonum serrulatum, *Lag.*
Passerina canescens, *Boiss.*
Aristolochia bœtica, *L.*
Euphorbia provincialis, *W.*
Euphorbia trinervia, *Boiss.*
Quercus lusitanica, *Lam.*
Var. *β. bœtica*, Webb.
——— Suber, *L.*
——— Ilex, *L.*
Populus nigra, L.

MONOCOTYLEDONES.

Potamogeton natans, *L.*
Phucagrostis major, *Carol.*
Orchis saccata, *Ten.*
——— coriophora, *Lin.*
Satyrium densiflorum, *Brot.*
Peristylus cordatus, *Lindl.*
Serapias lingua, *L.*
Gladiolus illyricus, *Koch. Syn.*
Iris pseudacorus, *L.*
Leucojum tricophyllum, *Brot.*
Tulipa celsiana, *De C.*
Narcissus viridiflorus, *Schomb.*
Ornithogalum narbonense, *L.*
——— unifolium, *L.*
Scilla campanulata, *Ait.*
——— maritima, *L.*
——— verna, *Huds.*
——— pumila, *Brot.*
Allium nigrum, *L.*
——— paniculatum, *Desf.*
Hyacinthus racemosus, *L.* (?)
Aloe vulgaris, *Lam.*
Asparagus horridus.
Merendera bulbocodium, *Rum.*
Juncus glaucus, *Ehrh.*
——— lamprocarpus, *Ehrh.*
Cyperus hirsutus, *Salzm.*
Carex marina, *Scop.*
——— extensa, *Good.*
Anthoxanthum odoratum, *L.*
——— ovatum, *Lag.*
Stipa tortilis, *Desf.*
Aristida cærulescens, *Desf.*
Agrostis Renteri, *Boiss.*
Chæturus fasciculatus, *Link.*
Phragmites communis, *Trin.*
Echinaria capitata, *Desf.*
Aira caryophyllea, *L.*
——— capillaris, *M. K.*
Gaudinia fragilis, *Pal.*
Melica pyramidalis, *Bertol.*
Vulpia geniculata, *Link.*
Bromus macrostachys, *Desf.*
——— maximus, *Desf.*
Brachypodium phœnicoides, *Ret. Sch.*

APPENDIX.

APPENDIX.

A.

Edmund Boissier's Account of Gibraltar. Translated from his 'Voyage Botanique dans le Midi de l'Espagne, pendant l'année, 1837.'

In the morning, on leaving St. Roque, we had the imposing view of the rock of Gibraltar, which rose before us like a black mass. The weather was stormy, and the summit of the rock was hidden by a band of clouds,* which I have frequently observed there. Its formation is explained by the situation of this mountain, in the midst of waters, and in a strait often agitated by tempestuous winds. The sea, being enclosed by the rock and by the African mountains, enlarging into a great gulf between Gibraltar and Algeciras, appears like a lake. I remarked by the side of the road a monument erected to a chief of

* The easterly winds, in their course over the waters of the Mediterranean, become saturated with a considerable quantity of moisture, which is precipitated on coming within the influence of the rock; hence masses of cloud come rolling down the rock, on the setting-in of an easterly wind, and, in a short time, a dense sheet of cloud is formed along nearly the upper half of the rock, which sometimes remains for days.—*Trans.*

those Spanish partisans who, during the war of independence, remained under the shelter of the cannons of Gibraltar, and from thence made sorties against the French. The road is tolerably good to the beach, but there all road ceases, and you must follow moving downs, the sterility of which is only interrupted by the rampant stems of the Centaurea sphærocephala and the thorny tufts of the Cachrys pterochlæna. The lines, or camp of St. Roque, consists of a number of wretched houses, situated at the entrance of the neck of land which joins Gibraltar to the coast, and which is enclosed by a line of towers; these are occupied by persons who are employed in the custom-house or the health-office; and there every thing entering or leaving the place is submitted to a strict examination. It is a kind of revenge which the Spanish government exercises against the English usurpation of Gibraltar and the contraband goods which leave this town. I was obliged to take out a license, which cost me forty francs, a shameful imposition, because it is only required when travelling overland, and never on leaving Malaga, or any other Spanish port.

No comparison can be drawn between the appearance of the soldiers, almost in rags,* mounting guard on the Spanish lines, and that of the Scotch soldiers, perfectly equipped, who are seen a few minutes after at the entrance of the English territory. There a commissary demanded my passports, and asked me several questions relative to the motives of my visit to Gibraltar, the time I thought of remaining, the friends I had, and the introductions I might have brought, &c. I was then directed to a second bureau, where I was obliged to wait until I had sent to the town for some one to answer for me. This form would be very inconvenient for those who do not happen

* The Spanish soldier has lately been better clad.—*Trans.*

to know any one in Gibraltar, if there were not fortunately persons who make it their interest to answer for travellers, carry their passports to the police-office, and obtain for them permission to pass twenty-four hours within the fortress, a permission which they do not refuse to extend. All these difficulties which prevent the admission of foreigners, are not so much from military precautions, as from the fear which the English have of augmenting a population already too large for such a small place as Gibraltar.

This town offers so many advantages on account of its free port and the active contraband commerce carried on there with Spain, that unless some obstacles were placed, it would soon be overpopulated. Nothing is more difficult than to obtain permission to establish yourself there, and even the governor himself has not the right to grant it under some circumstances. All the officials with whom I came in contact were extremely polite; everywhere an anxiety was shown for the traveller to lose as little of his time as possible; there was nothing of that tone or manner of acting which is too often seen in similar officials in other European countries. This is a trait of civilization of which England may well be proud.

I contemplated the picturesque appearance of the rock, near which I had arrived, and which rises from the bed of sand that unites it to terra firma, almost perpendicularly, to the height of 1500 feet. At its western base, the narrow passage by which you reach the town is defended by an inundation supplied by the sea, which reaches the rock, and after having crossed it by a drawbridge, you find yourself opposite a double front of masonry. From this side then the assailant has not any chance of success. I was struck on entering the streets with their animated appearance, and the variety of costumes and physiognomies. Sailors and merchants of all European nations meet there; and even the Moors of the opposite coast, with

Jews and Armenians; military are to be met with in various uniforms; then the contrabandistas, with their brilliant costumes, and the women of Gibraltar in their scarlet cloaks with black borders. Everything here bears the stamp of order and neatness which characterises the English. The streets are taken care of and well lighted; the promenades are well gravelled and planted with trees; the small houses (of a single story) seem, from their situation and furniture, to have been transported from the banks of the Thames. It was necessary to make some effort to persuade myself that I was not the dupe of an illusion, and that only a few steps separated me from that Spain to which Gibraltar bears so slight a resemblance. The town is not large; the rock confines it so, that there are but two streets, the rest being only lanes on the declivity of the mountain. The sea-shore is defended by parapets and numerous batteries, which command the whole bay. San Roque, in the distance, crowns a barren eminence; opposite are seen the white houses of Algeciras; and at the entrance of the straits are distinguished the rocks of La Punta del Carnero, which a rough sea always seems to move. Impatient to see the whole extent of this little English colony, I went through the south-port gate, and soon arrived at a well-gravelled space (the Alameda), which serves also for exercising the troops. All around are walks planted with exotic trees, of which the most common is the Phytolacca dioica. The masses of green were formed by a number of Pelargoniums, which grow here as luxuriantly as at the Cape of Good Hope, and among which are found several shrubs of the country. From thence I bent my steps to Europa-point, by a road shaded nearly the whole way, and winding beneath overhanging rocks. I passed by charming country-houses, situated in the shades of orange and fig-trees, surrounded by flower-gardens, and where English industry had found

means of even cultivating turf. These delightful retreats are occupied by the officers of the garrison and their families: every moment I met the latter either riding, or in elegant equipages, going to the races on the neutral-ground. This western side of the rock is the only one by which it would be possible to attack the fortress;* but the fleet that should attempt such a thing would have very little chance of success, on account of the batteries which defend the coast, and the facility with which an united force could be brought to the point attacked. After half-an-hour's walk of gradual ascent, I arrived at the level space called Europa-point, which terminates the southern part of the peninsula. This point is very important; it is defended by several works. Here are also built large barracks,† for which a better situation could not have been selected, the air being so pure; but the want of spring-water is here much felt, as indeed it is all over the rock. From this point you see the African coast very distinctly, which is only four or five leagues off: the point of land on which the Spanish town of Ceuta is built is also easily distinguished. I intended returning by the eastern side of the rock, but the natural declivities prevented it; besides, all the facilities by which you might otherwise have passed have been removed. The only interesting plant I gathered in this walk was the Prasium majus, which grows in great abundance on the rock at Europa-point. Of the rest of the natural vegetation of Gibraltar I could not form an idea, as you meet with cultivated grounds only, or private properties enclosed by walls. The letters of introduction that I brought, procured me a reception in Gibraltar, the cordiality and hospitality of which I shall always remem-

* And this has also been lately strengthened by extensive fortifications.—*Trans.*

† Officers' quarters, mess-room, &c.—*Trans.*

ber with gratitude. I found all requisite facilities for my excursions, and I soon obtained a pass, permitting me to go over any part of the rock, of which I first took advantage by visiting the excavations and fortifications to the north. Accompanied by a serjeant of artillery, who served as my cicerone, I ascended by those cleverly cut roads which wind along the western face of the rock, and along which cannon can be conveyed. After having passed the last houses in the city, we met sentinels to whom I showed my permit, without which no one is allowed to go on the rock. I remarked by the side of each of these posts a large pole, supporting a square mat, which at first I imagined was destined for a signal, but the use of which I found was to shelter the sentry (in summer from the rays of the sun), who can move it, by means of a rope, whichever way he likes. This is one of those details of the admirable system by which the English, notwithstanding the insalubrity of some of the colonies to which their troops are sent, preserve them in better health than any other nation. A little above an old Moorish castle, whose solid masonry has resisted both time and weather, we entered the galleries; and as we reached those that are above the landport-gate, I had the good fortune to meet with the apes, a rare occurrence, as they generally roam about the inaccessible acclivities on the eastern side of the rock, and only leave those parts when the cold wind blows on that side. Of these apes I saw more than twenty; they remained on the rocks twenty feet above us, busy in the midst of the bushes searching for roots and fruits. As they are never hunted, they are not very wild, and the noise we made by clapping our hands scarcely made them run away. The denial from the Academy of Sciences of a fact so well attested as that of the presence of apes in Gibraltar, is almost as absurd as the assertion of a Spaniard, with whom I travelled from Seville to Madrid, that

these animals occupied the rock entirely, and were so numerous that no ship could dare approach land without running the risk of being sunk. As for knowing whether the apes have always existed there, or whether they have become naturalized, it must be difficult to determine; but I think the first supposition the most probable, since these animals are seen on the African mountains, and they might as well have also inhabited a country so near it, and with the same climate.

Nothing can be so admirable as the English works on this part of the mountain; the rock being cut into large subterranean passages, lighted occasionally by small openings (port-holes). The requisite ammunition is all placed here; the cannons are varnished over, that they may the better resist the humidity which prevails in these vaults. The different heights are connected by steps and ladders, and often the galleries enlarge into a spacious room, such as that called St. George's Hall, in which the governor sometimes gives fêtes.* The roof is then ornamented with foliage and drapery, the galleries every where illuminated, permitting the brilliant society of the town to arrive either in carriages or on horseback.† The real utility of these splendid works has been much contested; some have maintained that the firing of the pieces would produce a dreadful crash, and that the smoke of the powder would be very inconvenient to the gunners. I doubt its being so; but in all cases the effect of these batteries, and particularly of the most elevated, would be but little dreaded by an enemy near the foot of the mountain; it is true they may be more effectually employed against a more distant point, and that they would destroy, with the greatest facility, the camp of San Roque (the Spanish lines).

* Not lately.—*Trans.*

† Not all the way.—*Trans.*

I observed on the road a number of interesting plants, particularly in the places enclosed by the fortifications, and thus protected from the teeth of the goats. Here grow the Phlomis tuberosa, Rumex thrysoides, Malva hispanica, and Kundmannia sicula. At the opening of the embrasures I gathered also Stachys circinata, Calendula marginata, Helichrysum rupestre, and several other plants partial to the shade, which I could only with difficulty have procured on the inaccessible heights where they are generally met with. Without following the windings of the paths that traverse it, I climbed over the stones and the bushes of the Chamærops, the wild olive, the Genista linifolia, and the Daphne gnidium. I there met with plants of the hot regions already known, and several others new to me, such as the Thymus hirtus, the beautiful Scilla hemisphærica, with umbels of blue flowers, its bulb sometimes attaining an enormous size; the Cerastium Gibraltaricum, with its white corolla elegantly folded, and a remarkable variety of the Saxifraga globulifera. Botanizing, I arrived at the top, and at the highest point, which is exactly at the northern extremity, there is a platform, on which is placed a mortar, that one might suppose had descended from the clouds on this seemingly inaccessible summit. On leaving this spot, a very narrow path runs from north to south, almost insensibly descending; it is so steep and rugged, that it should not be attempted unless you have the sure and light foot of the goats that feed there. The calcareous beds of the mountain are inclined towards the town in a rapid but accessible declivity, whilst to the east they terminate abruptly in precipices, at the base of which successive upheavals have formed semiconical declivities reaching to the sea-shore. On this eastern side it is absolutely impossible to climb the rock, and nature alone has the charge of defending it. There were formerly some points

where a skilful mountaineer might have climbed, by clinging to the projecting parts of the rock, but portions of a wall, already of an ancient date, now prevent all attempts of this kind. The rocks of this part are full of hollows and crevices, owing either to the geological revolution which raised them, or the incessant action of storms and wet winds to which they are constantly exposed. Rain falls or a fog prevails here when the weather is dry and fine at St. Roque, or even at the lines. Favoured by the climate, a great number of plants grow in the hollows, and under the shelter of stones; amongst others, I remarked Ruscus hypophyllum, Clematis cirrhosa, Vinca media, Smyrnium olusatrum, and Acanthus mollis. I also found some land-shells, whilst they are very rare on the mountains of Andalusia, on account of the aridity; the Helix marmorata and H. signata were particularly abundant. I will not attempt to describe the charming view which I enjoyed from this isolated summit, over a considerable extent of sea, and the varied surfaces of two continents. I arrived at the signal-station, situated about halfway along the rock, from whence is noticed the arrival and departure of vessels. After having rested a few moments with the director, I descended to the town by a rocky and uninteresting declivity, visiting, in passing, some caverns, of which the roofs were covered with the Umbilicus pendulinus, and the Acrostichum lanuginosum.

The following day I passed through the land-port gate to explore the eastern side of the mountain, where I had not been previously. That portion of the tongue of land which forms a part of the English territory, is covered with gardens, which are fertile, notwithstanding the natural aridity of the soil, and are watered by means of deep wells where the sea-water becomes purified. The base of the rock was carpeted by a crowd of beautiful plants, amongst which I discovered large tufts of the

Statice emarginata, just beginning to flower, but unfortunately growing beyond my reach; I could, however, gather a few specimens, by climbing twenty feet, to the great alarm of a sentry, who ran, supposing I was going to take the fortress by storm, and was only satisfied as to my intentions by seeing my pass. Further on I only found a narrow path at the foot of the sandy bank, against which the sea was dashing much more furiously than on the side next the gulf. This part of Gibraltar being completely isolated from the other by natural escarpments, is not included in the line of fortifications; and it would be sufficient to roll stones from the top of the mountain to drive away any assailants. There is here a very small hamlet, inhabited by fishermen; and a sentry is placed to prevent any one from disembarking. This side is certainly the most interesting on a botanical account, and I regretted being able to make only one excursion, which the difficulties of the ground rendered very insufficient. On the sandy declivities I found particularly the Ononis Gibraltarica, a new species, which was very abundant there, the yellow flowers of which perfumed the air, the Brassica papularia, Linaria longipedunculata and multipunctata, Caucalis maritima, and several kinds of Daucus. Vegetation on the whole rock is very interesting; but the greatest number of plants grow at so great a height, on narrow niches, that it is dangerous to attempt getting them. Amongst others I could only procure a single specimen of the Silene Gibraltarica, large tufts of which I saw above my head; I found again Calendula marginata, Stachys circinata, Helichrysum rupestre, with the Ephedra altissima, Achyranthes argentea, Succowa balearica, and the elegant Iberis Gibraltarica, whose flowers were already over. By the richness of the harvest, which I collected in a few minutes, I could judge of the interest which exploring Gibraltar could afford, and particularly on this

side, visiting it at different periods. I am astonished that such a work has not already been undertaken by some of the officers of the garrison.

The customs of the place are adhered to with great precision. At first gun-fire, one hour before sunset, the land-port gate is closed, not to be again opened till morning; soon afterwards, the gate on the road to Europa-point is closed. On going out at night* no one can walk about the streets without being the bearer of a pass and of a lantern, by which the sentinel can read. I was ignorant of this rule, and coming away very late from a ball given by the governor, I was stopped by a sentinel, who would not give credit to my explanations, and I found myself on the point of passing the night in a guard-room, when the words "foreign officer" occurred to me, and, by using this expression, I fortunately got out of the scrape.

When one reflects on the enormous expense which Gibraltar causes the English, one naturally asks, what are the advantages which compensate for this enormous expenditure? It is not the contraband commerce, although that is of some importance, and as a shelter for the fleet this point offers still fewer resources; there is only one safe anchorage, and even in that, vessels of large size are in great danger from the gusts of wind which blow from the straits; but as a military post Gibraltar is of a very high utility, and will be even more so now that the great political interests seem to be concentrated in the basin of the Mediterranean. It is one of the links of that chain which England tries to fasten between herself and her establishments in India, and by means of which she has already created a vast system of communication.

* After twelve o'clock.—*Trans.*

B.

Description of new Species of Plants found in Gibraltar.

Brassica papillaris. Radice perenni, foliis omnibus radicalibus pinnatifidis, lobis dentatis, ad nervos et marginem præcipuè papillis albis subspinosis basi dilatatis scaberrimis, caule jam à basi ramoso, iisdem papillis retrorsis subremotis hirto, floribus flavis, sepalis subclausis, siliquis erecto-patulis pedicellum hirtum paulò superantibus glaberrimis compressis subtorulosis rostro conico 1-spermo duplò longioribus, valvularum nervo medio valido. *Br. cheiranthiflora, De C.*, habet folia lyrata, flores duplò majores, siliquas teretes rostro brevi munitas. *Br. Tournefortii, G.*, habet folia lyrato-pinnatifida, flores albo-violaceos duplò minores, pedunculos siliquis latis longissimisque quadruplò breviores. *Br. Valentina, De C.*, siliquis teretibus rostro crasso brevi obtuso munitis: et *Br. lævigata, Lag.*, siliquis longioribus, caulibus glabris, foliisque multò magis divisis differunt. Planta insuper ab omnibus scabritie distinctissima.—*Boiss.*

Hab. in declivibus arenosis maritimis Gibraltariæ, orientem versùs.

Silene Gibraltarica. Rhizomate suffruticoso, foliis radicalibus ovato-spathulatis in petiolum attenuatis apice obtusissimis mucronulatis, pubescentiâ brevissimâ densâ velutinis subcarnosis violaceo-viridibus, caulinis paucis sublinearibus, caulibus 6—7 pollicaribus parte superiore glabris, paniculâ 7—8 florâ abbreviatâ, calycibus longissimis cylindricis sub fine antheseos clavatis purpurascentibus 10. Nerviis velutinis, apice brevitèr 5-dentatis, dentibus margine scariosis, petalorum limbo ad tertiam partem bifido ecoronato, pallidè violaceo-griseo. E sectione

S. fruticosæ, L., et velutinæ, Pourr. Crescit in præruptis rupium Gibraltariæ orientem versùs cum *S. velutinâ.—Boiss.*

Cerastium Gibraltaricum. Caudiculis prostratris elongatis basi nudis, caulibus ascendentibus foliisque brevitêr hirto-glandulosis, foliis lineari-lanceolatis pollicaribus et ultra subrecurvis acinaciformibus viridibus, bracteis minimis parte superiore scariosis, pedicellis viscidis semper erectis, sepalis oblongis obtusiusculis margine et apice scariosis, petalis magnis usque ad tertiam partem bifidis eximie plicato-striatis, capsulis calyce duplò longioribus, dentibus brevibus obtusis rectis margine subrevolutis. Viscositate, foliis multò longioribus glabrescentibus subrecurvis, sepalis ovatioribus, petalis magnis plicatis, ab omnibus varietatibus *C. repentis* mihi videtur distinctum. —*Boiss.*

Hab. in rupibus Gibraltariæ ubi Junio florentem legi.

Obs.—Grenier makes this species only a variety of the C. glomeratum.

Ononis Gibraltarica. Suffruticulosa, caulibus hirtulis erectis ramosis, foliis glabrescentibus viscosis trifoliatis, foliolis lineari-lanceolatis acutè serratis, stipulâ ad medium usque bifidâ dentibus subulatis, pedicellis unifloris flore duplò longioribus viscosis paulò infra florem aristâ obtusâ bilineari munitis, floribus ferè magnitudine *On. natricis*, luteis venosis glabris, vexillo rotundo subemarginato carinam superante, leguminibus pendulis rectis hirtulis subpollicaribus. Species *On. longifoliæ, W.*, Canariensi, cujus mala specimina vidi affinis ab eâ mihi differre videtur foliis brevioribus argutius serratis, stipulis brevioribus, floribus ferè duplò majoribus, vexillo rotundo emarginato nec ovali acutiusculo.—*Boiss.*

Hab. in arenis maritimis Gibraltariæ orientem versús. Flores odorem suavissimum spirant.

Thymus Willdenowii. Th. hirtus, Willd. En. Ber.? nec aliorum. Procumbens, ramis floriferis adscendentibus hirtis, foliis subsessilibus, inferioribus lineari-lanceolatis subrevolutis, floralibus majoribus ovatis, omnibus acutis utrinquè hirtis margine ciliatis, capitulis cylindricis approximatis, calycibus albo-ciliatis, labii superioris dentibus ovato-lanceolatis acutis, inferioris subulatis, corollâ roseâ glabrâ. Ex descriptione brevi Willdenowiana hùc meam plantam retuli. Omninò distincta est a *Th. striato, Benth. Zygi. Sibth.* planta majore robustiore quæ folia habet rigida subspathulata eximiè nervosa basi ciliata, floralia angustiora, dentesque calycinos superiores latiores, omnes rigidos subspinosos.—*Boiss.*

Iris filifolia, Boiss. (tab. clxx.). *I.* radice bulbosa, foliis canaliculatis setaceo-filiformibus flexuosis scapum unirariùs biflorum æquantibus, spathis amplis concavis striatis acuminatis margine membranaceis perigonii violacea-purpurei tubo limbum dimidium æquante, laciniis exterioribus ad medium angustatis apice subspathulatis intùs vittâ luteâ notatis interioribus brevitèr bidentatis, capsulâ obtusâ acutè trigonâ.

Bulbus magnitudine nucis parvæ vaginis numerosis rufescentibus è fibris parallelis constantibus tectus. Caulis pedalis aut bipedalis foliosus teres. Folia glabra pallidè virentia basi in vaginam striatam dilatata dein filiformia canaliculato-convoluta flexuosa sæpè bipedalia aut etiam longiora caulem æquantia aut superantia. Folia superiora reducta ad spathas concavas oblongo-lanceolatas acutissimas longitudinalitèr plicato-striatas membranâ angustâ albâ integerrimâ marginatas virescenti-albidas. Flos tubo semipollicem aut pollicem longo anguloso perigonio circitèr dimidio breviori stipitatus. Perigonii segmenta subæqualia exteriora basi attenuata, suprà mediam paululùm angustata, apice reflexa spathulato-rotundata, intensè pur-

pureo-violescentia et tenuissimè striata intùs vittâ latâ lutescente ad apicem usquè non productâ notata. Segmenta interiora erecta lanceolata basi attenuata acuta, brevitèr bidentata margine crenulata, omninò purpureo-violacea. Stigmata profundè biloba, lobis subincurvis lanceolatis acutiusculis crenulatis, purpurea, parte inferiori lineâ mediâ flavescenti notatâ. Antheræ filamentis paulò longiores. Capsula intrà spatham stipitata linearis acutè trigona obtusa, pollicaris aut sesquipollicaris. Tubus perigonii supra capsulam articulatus marcescens deciduus.—*Boiss.*

" Ce bel Iris est voisin de l'espèce précédente et de l'I. Lusitanica, *Ker.*—Bot. Mag., tab. 679. L'I. Xiphium s'en distingue par ses fleurs bleues, ses pétales extérieurs bien plus atténués à la base, le second par sa fleur jaune ; tous deux par le tube de leur périgone entièrement nu dans le second et quatre fois plus large. L'I. juncea, *Desf.*, Atl., tab. 4, ressemble aussi à notre espèce, mais le tube de son perigone est bien plus allongé et surpasse en longueur le limite qui est entirèrement jaune, et dont les lames sont plus larges et plus arrondées au sommet, rétrécies tout d'un coup en onglet à la base ; ses feuilles sont aussi moins étroites."—*Boiss.*

Poterium mauritanicum, Boiss. P. foliolis foliorum inferiorum ovatis superiorum ovato-lanceolatis, omnibus profundè serratis dentibus acutis, spicis ovato-cylindricis fructibus ovatis acutis quadricostatis, costis parùm elevatis, inter costas verrucosæ papillosis.—*Boiss.*

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