

About 12,000 mithkals are annually imported to Ghadamis, valued at 6000*l.*

The following is the average rate of carriage per load in Tunisian piastres, and the average duration of the march of caravans, exclusive of stoppages, from Ghadamis to

	Piastres.	Days.
The Jebel Mountains	14	7
Tripoli	22	12
Ghat	30	20
Kano	250	110
Tuat	63	22
Timbuctoo	300	60
Souf	28	18

The caravans from Souf carry dates and woollen blankets, both of a superior quality.

In connexion with the commerce of Ghadamis, I must not omit mentioning the slave-trade, which was there actively carried on in former years. During my residence at Ghadamis the average number imported during the year was 500, principally females. The average price of a male was 60 mahboobs (10*l.*); that of a female 80 mahboobs (14*l.*) Of the number exported to the Levant two-thirds generally perished from pulmonary affections, caused no doubt by the hardships of desert travelling, as well as by the change of climate.

I am happy to state, in conclusion, that a decree from his Imperial Majesty Sultan Abd-ul-Mejid abolishes for ever this nefarious traffic. The new law was promulgated in the pashalic of Tripoli in 1856, and although it met with considerable opposition from the natives at first, it is now, I believe, faithfully observed.

XXII.—*Notes to accompany the Map of St. Helena.*—By Major EDMUND PALMER, R.A., F.R.G.S.

Read, June 27, 1859.

THE map of St. Helena, now before the Fellows of the Royal Geographical Society, was executed during a residence of nearly six years on that island. It is shortly to be published on the reduced scale of $\frac{1}{27,000}$ by the Topographical Department of the War Office; and the author trusts that it may be instrumental in throwing some light upon the geology of one of the most interesting spots in the Atlantic.

The island of St. Helena, so well known to many a homeward-bound voyager, is situated in lat. 15° 56' s., long. 5° 45' w., at a distance of 1000 miles from the African coast, and 1700 from the coast of South America: it is of an oblong form, lying from

south-west to north-east, being 12 miles in length and 7 in breadth, with an area of about 50 square miles, or nearly one-third the size of the Isle of Wight.

The island is said to have been discovered by Juan de Nova Castella, a Portuguese navigator, on the festival of St. Helena, A.D. 1502, 3rd May; but it appears, on reference to a collection of voyages by Battisto Ramusius, that an island answering to the description of St. Helena was discovered in July, 1503, by a Portuguese ship returning from India, and the circumstance chronicled by Thomas Lopez, the captain's secretary, who states that, after passing the Cape of Good Hope, they ran down the trade wind for 12 days, and sailing 600 leagues saw an island, thickly wooded with a low vegetation, but without large trees.

However this may be, the Portuguese being once aware of the position of the island, and perceiving the great advantages to be derived from it as a place of refreshment for their weather-beaten ships and sickly crews, established a small settlement in James Valley, and, in 1571, a chapel was built and two friars appointed to perform the religious duties and to look after the resources of the place, the materials of the chapel being furnished from the timbers of the wreck of a Portuguese caravel. Tradition asserts that the island was also inhabited about this time by a disgraced nobleman, named Fernan Lopez.

Purchas's Pilgrims.—The next mention of the island is in the voyage of one Lopez, who put in there on his voyage to Congo in 1588, in the good ship *St. Anthony*; a marginal reference informing us that the place was covered with "Eben wood." The same year, however, the distinguished navigator Cavendish sighted the island, and being the first Englishman who landed on its shores, some extracts from his narrative may prove interesting:—

"The same day, about two or three o'clock in the afternoon, we went on shore, where we found an exceeding fair and pleasant valley, wherein divers handsome buildings and houses were set up, and one particularly, which was a church, was tiled and whitened on the outside very fair, and made with a porch; and within the church, at the upper end, was set an altar, whereon stood a very large table set in a frame, having on it the picture of our Saviour Christ upon the cross, and the image of our Lady praying, with divers other histories painted curiously on the same. The sides of the church were hung round with stained cloths, having many devices drawn on them.

"The valley is the fairest and largest low plot in all the island, and is exceedingly sweet and pleasant, and planted in every place either with fruit or with herbs.

"There are in this island thousands of goats, which the Spaniards

call cabritos, which are very wild ; you shall see one or two hundred of them together, and sometimes you may see them go in flocks almost a mile long ; some of them (whether it be the nature of the breed of them or the country, I know not) are as big as an ass, with a mane like a horse, and a beard hanging down to the very ground : they will climb up the cliffs, which are so steep that a man would think it impossible any living creature could go there. We took and killed many of them for all their swiftness, for there are thousands of them upon the mountains."

Hakluyt.—In 1593 Sir James Lancaster called at the island, and relates finding a Suffolk man, named John Segar, who had been left there for misconduct by some other ship ; it appears the poor fellow was so filled with joy at the sight of his countrymen, and at hearing the sound of his native tongue, that he lost his senses, and eventually died.

St. Helena now appears to have been frequented by English, Dutch, and Portuguese ships until 1650, when it was appropriated by Holland, but abandoned shortly afterwards for the more promising settlement of the Cape of Good Hope.

The English succeeded the Dutch, and in 1658 a fort was built in James Valley, on the site of the present castle. The Dutch, however, were not disposed to give up the place so easily, and, in 1672, aided by the treachery of one Bennett, a planter, they effected a landing at Swanley Valley, to the north-west, and, marching up the country, defeated the garrison and turned the defences of the town. Fortunately, however, the Governor and a portion of the troops escaped to sea, and were enabled to detach a cruiser to warn off all English ships.

In 1673 Captain Munden's squadron was sent to recapture the island, and happily fell in with the cruiser, on board of which was one Black Oliver, a slave who had been born on the island ; he piloted the ships to Prosperous Bay, on the windward coast, where a body of 200 men were landed under Captain Kedgwin, who succeeded in scaling the almost inaccessible cliffs overhanging the bay—an exploit still commemorated by a precipitous rock called "Hold Fast Tom," from a caution given to the gallant blue jacket who first ascended to fix a rope for his comrades. Whilst this party were thus advancing through the island Munden sailed round to James Valley, and opened a cannonade on the unsuspecting Dutchmen, a simultaneous attack being carried on from the heights. Tradition asserts that the men were landed from the yard-arms of the ships ; but at all events the Dutch surrendered, and Munden was knighted for his gallantry, and his name handed down to posterity by the erection of a fine work on the cliffs to the eastward of the anchorage, now Munden's Battery.

In 1673 a charter was granted to the East India Company, giving them a sovereign right over the island, and a kind of feudal service was adopted for its defence.

Dampier visited St. Helena in 1691.

Slavery appears to have been exercised with great cruelty about this period, and the island seems to have been in a very unsatisfactory state, several mutinies taking place, one of which deserves to be recorded, as the Governor was shot and the mutineers escaped to sea with all the Colonial treasure.

Notwithstanding these disorders, the East India Company exerted themselves most laudably for the improvement of the cultivation and resources of the island: numerous exotics were introduced, and the visitors to St. Helena in the present day cannot but be agreeably surprised at the variety of beautiful trees and plants in the Government gardens and the private dwellings of the planters.

Dr. Halley visited St. Helena in 1761 to observe the transit of Venus, but, unfortunately, without success; the phenomenon being obscured by clouds at his place of observation (Halley's Mount), although distinctly visible from the lower elevation of James Town.

Napoleon Bonaparte arrived here in H.M.S. *Northumberland* on the 15th October, 1815, and died at Longwood House on the 5th May, 1821. The circumstances of his captivity are too well known to demand repetition. His body was interred in Sane Valley, beneath a group of willows—his favourite haunt during his lifetime. The exhumation took place on the 15th October, 1840; when the remains appeared almost untouched by the hand of time, and it is stated that the features recalled to mind Napoleon in his palmy days, so different appeared their expression from that of the last few years of his life.

The Longwood estate and tomb have lately been purchased by the French Government, and a French officer appointed as guardian. A model of the equestrian statue at Cherbourg is to be sent to the island.

St. Helena was transferred from the East India Company to the Crown in 1836, for 100,000*l.*

The island has lately been erected into a bishop's see, to include Tristan d'Acunha, and the English establishments on the coast of the Brazils.

St. Helena, from its position in the South Atlantic Ocean, lies in the strength of the south-east trade wind, and is usually sighted by ships at a distance of 20 leagues, rising like a huge fortress from the bosom of the ocean. It is surrounded by a wall of precipitous cliffs from 1000 to 1800 feet in height, intersected by chasms serving as an outlet for the watercourses of the island, and

terminating in small coves more or less exposed to the fury of the waves. There are no less than twenty-three of these openings around the coast; but landing is almost impracticable, except on the north-western or leeward side, and at Prosperous and Sandy Bays to windward, and even then only in favourable weather.

The most singular phenomenon connected with this part of the ocean is the setting in of very heavy continuous swells, called "rollers," from the north-north-west, particularly during the month of February, when the waves burst on the leeward shore with astonishing grandeur and impetuosity. During their continuance landing is extremely dangerous, and can only be effected by watching the intervals between the swells. In February, 1846, thirteen vessels, moored at half a mile from the shore, were totally wrecked, and the wharves and batteries suffered considerable damage. No satisfactory solution appears to be given for this phenomenon, and a suggestion that simultaneous observations should be carried on during the period of "rollers" at Ascension, Tristan d'Acunha, and St. Helena, appears to offer the most practical method of arriving at anything like an explanation of the cause.

The island is divided into two unequal parts by a lofty ridge of mountains from 2000 to 2700 feet above the sea level, extending in a semicircular sweep from S.W. Point to Stone Top Point at the S.E. The principal eminences on this range are—High Peak, 2635 feet; Diana's Peak, 2704 feet; Actæon's Mount, 2700 feet; Little Stone Top, 2380 feet. Numerous spurs branch off from this ridge: those to the N. and N.E. decreasing in altitude, but increasing in extent, as they approach the sea, where they terminate in precipitous cliffs, and form the boundaries of the deep valleys debouching on the coast. The spurs from the S.W. of the ridge are suddenly broken about one mile and a half from their commencement, the land which they originally supported having subsided, leaving but a wreck of the original formation, with here and there towering fragments of basalt, like the buttresses of a gigantic ruin. The appearance of this part of the island is magnificent in the extreme; and to a spectator on the ridge above presents a variety of form and richness of colour baffling description. Every attention has been directed to the proper delineation of this district in the map, and to resolve the apparent chaos into a system of unity.

The island appears to have suffered at different periods from the effect of volcanoes and earthquakes. General Beatson supposes that it is the shattered remains of an ancient continent, connected in former ages with the other rocks of the Southern Atlantic. The district of flat country, comprising the plains of Longwood and Deadwood to the E. of the island, would seem to support this theory, particularly as an indigenous tree (*Conyza gummifera*)

which grows here is also found on Tristan d'Acunha. The remains of a vast crater are (*vide* Seale's Geognosy) to be traced between Flagstaff Hill and the Barn Rock, N.E. of Longwood; but I did not observe any other formation in the island to answer the description of a crater.

Limestone is found in different parts of the island, viz., Rupert's Bay, Sugar-Loaf Point, and Potato Bay, that from the last-named place being of excellent quality.

Gypsum is found near Prosperous Bay.

Carnelian in Turk's Cap Bay.

The honey-combed (amygdaloidal) basalt and red tufa afford excellent building material.

A layer of fossil shells (univalves) have been discovered near Flagstaff Hill, 2000 feet above the sea.

The botany of *St. Helena* is interesting, affording nearly sixty species of indigenous plants, the most remarkable of which are—*the Island Ebony* (*Dombeya melanoxyton*), now nearly extinct, but found in the shape of gnarled and broken trunks on the hills to the s.; *the Red Wood* (*Dombeya erythroxyton*) is also almost extinct; *String Wood* (*Acalypha rubra*); *the St. Helena Tea* (*Beatsonia portulacifolia*) is only found on the summit of Sandy Bay Barn and the flanks of High Knoll; also ferns of great beauty. Trees and shrubs from all parts of the world have been collected in the gardens of Plantation House, where the oak, bamboo, aloe, pine, &c., flourish together.

The main ridge of the island is covered with a luxuriant vegetation of tree ferns and cabbage wood (*Solidago cuneifolia*), nourished by a constant moisture.

Upon descending from this elevation we find the hillsides clothed with the richest grass, and the watercourses overhung with bramble and fuchsia; lower down, woods of Scotch-fir, larch, oak, and the Port Jackson willow. On approaching the sea vegetation gradually disappears, the summits of the hills within 1½ mile of the coast being almost barren, with a scanty growth of samphire (*Salsola salsa*). In the valleys, however, where water can be procured, the gardens produce abundance of fruit and vegetables, especially pumpkins and bananas. The island appears favourable to the growth of coffee and cotton, particularly in the valleys to the south of the main ridge, which are well irrigated and extremely fertile.

A considerable quantity of rock orchella was exported in 1851, but of inferior quality to that found in the Cape Verde Islands.

The flocks of wild goats which existed in the island at the period of the visit of Cavendish have dwindled down to a very small number, a few being shot from time to time on the heights near Sandy Bay. Sea-fowl and guinea-fowl are also extinct, but

the ravines are the resort of numerous coveys of the red-legged partridge, and the pheasant frequents the thick cover on the higher ridges. An indigenous bird, resembling the sandlark, with long legs and grey body and wings, called by the islanders the "wire bird," is found here. Doves, Java sparrows, amaduvades, and canaries inhabit the gardens, the last-mentioned being remarkable for the richness of their tone.

The rocky islets round the coast swarm with sea-birds, particularly the beautiful white bird (*Procellaria nivosa*); and the man-of-war-bird and tropic-bird are to be seen wheeling their flight high above the lofty pinnacles of the island.

The shores abound with mackerel and albacore, the principal food of the poorer inhabitants. Sharks of great size and voracity are now and then captured; and during the month of August schools of whales (black fish) are frequently seen, affording many an animated chase to the boats of the American whale-ships.

Cattle are constantly imported from the Cape of Good Hope, although the island is capable of supporting a large number, the stock in 1857 amounting to 1625 horned cattle and 4230 sheep. The quantity of pasturage is 7652 acres.

No snakes or reptiles, except a few centipedes and scorpions, are found on the island. Rats, however, are a terrible plague, and nothing is safe from their depredations.

CLIMATE.—The temperature varies according to the altitude and exposure of the different places in the island: at High Knoll, 1900 feet above the sea, from 65° to 70° Fahrenheit; Ladder Hill, 600 feet above the sea, 70° to 80°; and in James Town about 5° higher. The trade, however, is a constant ventilator, and keeps down the temperature to reasonable limits.

A great deal of rain falls on the higher parts of the island, the wettest months being June, July, August, and September. The annual rainfall is about 27 inches.

The magnetic variation is now 25° w., varying about 5' annually. Observations were carried on from 1840–1850 by the officers of the Royal Artillery at the Observatory at Longwood, the results of which have been since published.

STATISTICS—1857.

Acreage.—30,300; of which—uncultivated, 22,166; pasture, 7652; crops, 482.

Live Stock.—Cattle, 1625; sheep, 4230; horses, 230; goats, 670.

Inhabitants.—Males, 2973; females, 2517: total, 5490.

Garrison.—Artillery, 78; infantry, 382; militia, 322.

Finance.—Revenue, 19,837*l.*; expenditure, 19,079*l.*