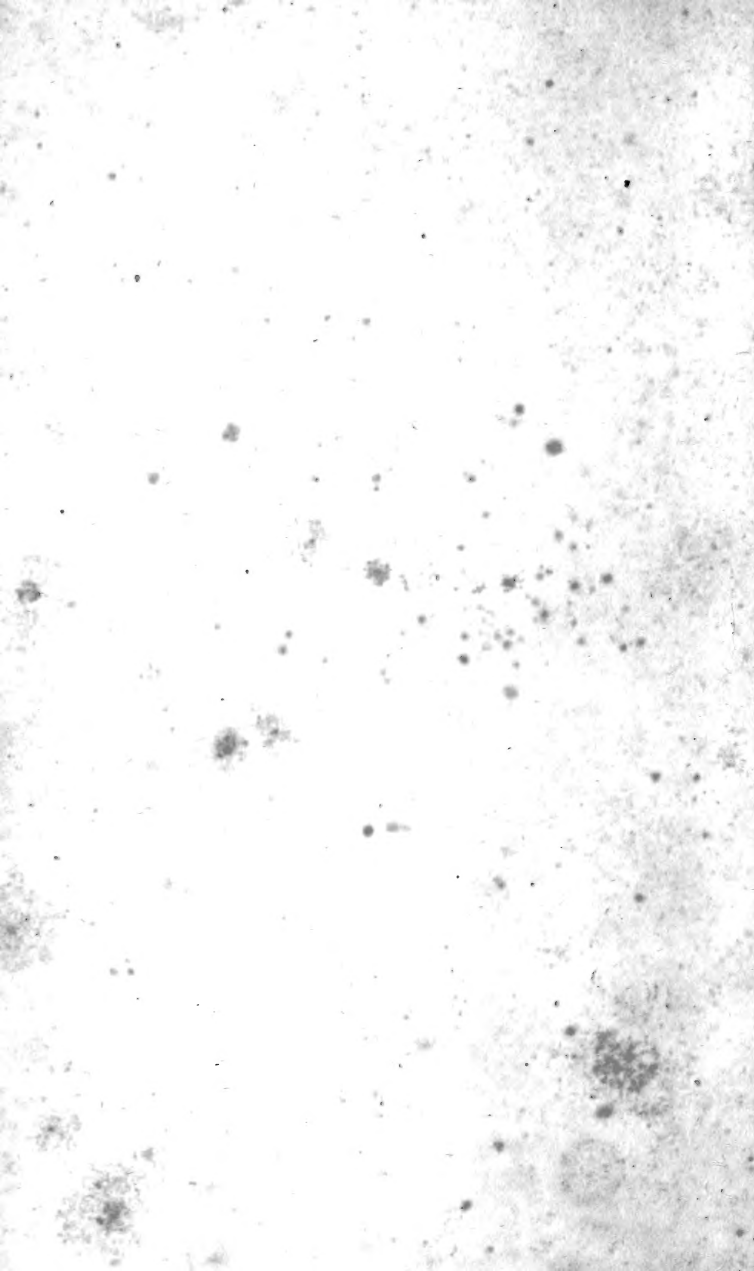
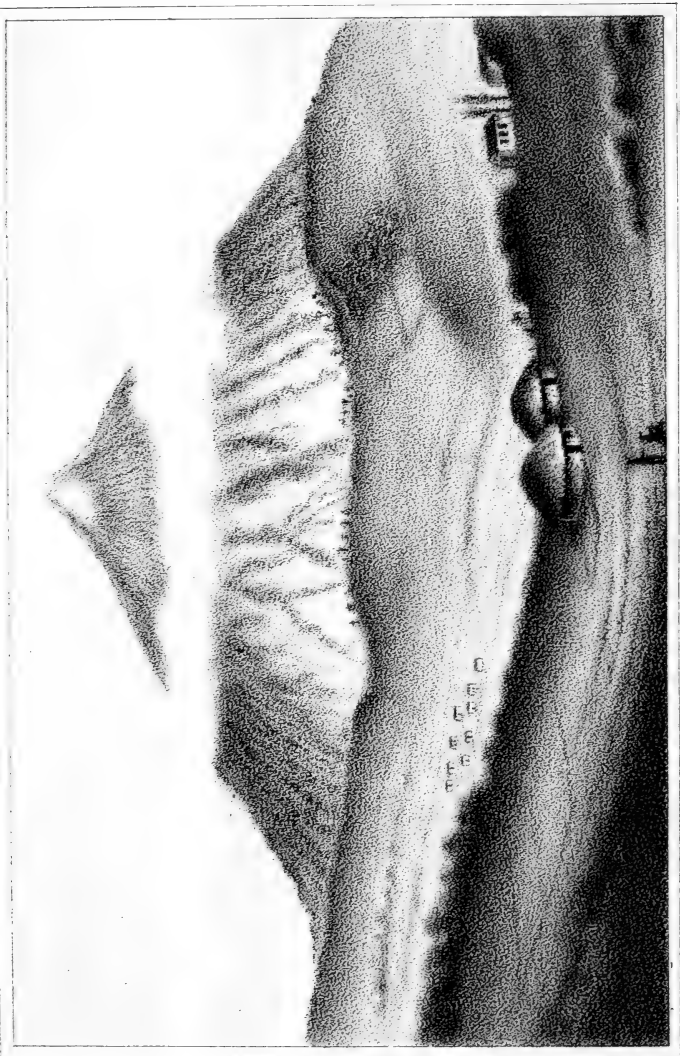


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Brown from a sketch

PEAK OF TENERIFFE FROM YCOD DEL ALTO .

Place of observation 3000 ft. above the level of the Ocean.

Pendleton's Letter, Boston.

Letters

FROM THE

CANARY ISLANDS.

BY

D. J. Browne.

“ Wilt thou fly
With laughing Autumn to the Atlantic isles,
And range with him the Hesperian fields, and see
Where'er his fingers touch the fruitful grove,
The branches shoot with gold ; where'er his step
Marks the glad soil, the tender clusters grow
With purple ripeness, and invest each hill
As with the blushes of an evening sky ? ”

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LETTER I.

Introduction.

TO Hon. THOMAS H. PERKINS, John Parker, Hon. John Davis, Samuel Appleton, Hon. Benjamin W. Crowningshield, Ebenezer Francis, Hon. Nathaniel Bowditch, Henry Codman, Abbott Lawrence, Hon. Francis C. Gray, Amos Lawrence, Dr. John C. Warren, Lucius M. Sargent, Hon. Stephen White, Dr. William Ingalls, John Parker, Jr., Dr. Benjamin D. Greene, Dr. John Ware, David Sears, Dr. Edward Warren, Epes S. Dixwell, Dr. Jerome V. C. Smith, Gustavus Tuckerman, Dr. Winslow Lewis, Jr., Demming Jarves, Dr. Josiah F. Flagg, Marcus Whiting, Dr. Martin Gay, Israel Thorndike, George W. Pratt, Thomas C. Smith, William W. Stone, Charles H. Parker, George W. Bond, Hon. John Lowell, Salem East India Marine Society, Charles G. Page, Dr. William T. Harris, Dr. Paul Swift, William Cooper, Dr. John C. Jay.

Gentlemen :

As it was the request of several of the individuals under whose auspices I have had the honor to act, that I should draw up a popular account of the principal occurrences of my late voyage, I have availed myself of the favor of bringing it before the public under the protection of all your names. I have preferred uniting them in a connected series, by making a faithful abstract of my Journal, which was invariably written on the spot, at the close of each day, taking advantage to introduce such remarks or observations as might be illustrative or entertaining. I am sensible that many imperfections will be found, both as regards style and arrangement; but as they claim no great degree of merit, it is hoped that they will escape the severity of unsought, though, perhaps, deserved criticism.

APR 22 1930

Before entering into the career of my narrative, it may be interesting to take a rapid survey of the regions which I am about to describe, in relation to the state in which they came from the hands of nature. Although situated within five degrees of longitude, they exhibit the most striking and the most opposite contrasts; and, from their natural features and their proximity to Africa, they appear to be strongly allied to that continent. Considered in relation to their place on the globe, they possess an extraordinary degree of natural beauty, and even of considerable commercial and political value; while, at the same time, they offer incalculable advantages to the painter, the antiquary, the naturalist, and above all, to the invalid.

The Canary Islands are particularly distinguished, from the fact that they are situated nearly on the verge of the torrid zone, and from the numerous volcanic eruptions to which they have been exposed. On these circumstances chiefly depend their physical peculiarities. Their inhabitants, at least one half of the year, experience the intense and almost perpendicular rays of the sun, which glares on them with oppressive and often malignant beam; and when the periodical rains neglect to fall, he blasts the whole face of nature, and overspreads her with sterility and desolation. Then that same orb which cheers and enlightens the more temperate regions of the earth, here becomes the most deadly bane, and the inhabitants are reduced to the most desperate famine, and often have to resort to the most unnatural food. But what is still more dreadful, are those internal conflagrations which so often burst forth, and threaten the poor wretches below with impending ruin. The traces of these awful events are conspicuous in every portion of these islands. Indeed, "this part of the earth seems already to have undergone the sentence pronounced upon the whole of it; but, like the phoenix, has risen again from its own ashes in much greater beauty and splendor than before it was consumed." Thus nature employs the same agent to create, as to destroy; and what has been regarded here as the deadliest consumer, has proved in the end, to be the highest blessing.

In order to counteract the baneful influence of the torrid sun, kind nature has devised suitable reparation, by

fanning the earth with refreshing breezes, and by setting apart an appropriate season for rain. Then, amid the roar of winds, the glare of lightnings, and the crash of thunders that seem to rend the skies, heaven opens all her windows and pours down an unbroken flood, and deluges the earth. The dry beds of the ravines and of the rivulets are now converted into torrents which tumultuously rush down the stupendous precipices, and lay the lower regions in complete inundation. To this cause may be imputed, in a measure, the amazing fertility which so particularly characterizes these regions. Another fruitful source of irrigation, or at least, of affording artificial inundation, are the lofty mountains, which give birth to numerous springs. Their Alpine pinnacles are perforated by deep fissures, constantly filled with perennial snows, which, on melting, gush forth and run down their declivities, producing the most luxuriant fertility. Their porous sides, too, are often dashed with vapors, and imbibe large quantities of moisture, which, flowing together, issues in the form of springs, and has the same fertilizing influence. Hence it is, that vegetation attains that luxuriant growth which so remarkably distinguishes these regions.

From the variety of soil and climate with which these islands are favored, they produce, or rather are susceptible of producing, almost every species of vegetable that ever has been useful to man. In truth, the cultivated regions may be compared to an earthly paradise. They have often been painted in colors that pertain not to the imperfect abodes of the earth; as the "Elysian Fields," or as "islands destined to be the future mansions of the blessed." It is here that we have an agreeable mixture of the olive and the vine, the fig and the banana, the cocoa and the orange, the apple and the pear, the peach and the almond, the coffee-tree and the sugar-cane, the strawberry and the bread-fruit, and a variety of other fruits, rising up promiscuously amidst countless herbs and flowers, tinted with the most brilliant and delicate hues. It is here, too, that the great dragon-tree displays its gigantic forms, and the majestic date sends its summit into the sky. As we continue to ascend, we behold the stately chesnut and the lofty pine, surrounded by small elegant trees and flowering

shrubs, which embellish the way ; and at last, we reach the more elevated tracts destined to perpetual sterility, the borders of which, are not destitute of interest, nor of beauty. As we approach the confines of these wastes, numerous oases of arborescent heaths spring up in wild and spontaneous profusion, and assume a truly pleasing and smiling aspect.

Nor is the animal world destitute of interest here. Notwithstanding the detached situation, and the narrow limits of these islands, they formerly contained large bands of wild beasts, most of the species of which, have either been extirpated or reclaimed ; but they were not of such vast numbers, nor of that savage character as those which pervade almost every tract of the adjacent continent. They were for the most part creatures innocent, gentle, and beautiful. Large packs of wild dogs of a ferocious character appear to have been found here ; but it is not allowed that they constituted the true species in a state of nature, but that they descended from dogs once domesticated, which have relapsed into a state resembling that of primitive wildness.

Although the limited range, the arid aspect, and the fiery summits which these islands present, would cause one to suppose that they are unfavorable to the existence and propagation of the feathered tribes, yet many a cliff, many a tree, and many a verdant spot, afford appropriate recesses for this fairy race. To these islands we are indebted for some of our sweetest songsters.

In descending into the briny regions, we find them peopled, also, with immense tribes of the finny race, which furnish an abundant supply of food. And all about the shores are found myriads of crustaceæ, madrepores, shells, and other products that ornament the deep. But happily, the reptiles of these islands are very limited in their species, and none of them are of a poisonous nature, and consequently are regarded as harmless.

Nor is the insect race here less numerous or less pleasing than the vegetable world ; yet some of them are possessed with many singular and even formidable characteristics. Sometimes legions of locusts migrate from the continent to these islands, where their havoc is almost incredi-

ble. They issue in clouds so dense that they darken the air. In vain do the forlorn inhabitants ring their bells, throw water, and devise other means to obstruct their course ; but the irresistible mass moves forward, and eludes every attempt to check their depredations. Whole fields and vineyards enlivened with verdure, or laden with harvest, are ravaged by them without suffering to remain a leaf or even a blade of grass. Sometimes in attempting to cross the ocean, they are driven upon its surface by tempestuous winds, and inconceivable numbers are driven upon the shores dead, and the putrid exhalations arising from them, have been regarded as noxious to health.

In conclusion, we come to man as he existed here at the time of the arrival of the Spaniards at these islands. At that period, the people here were known by the name of Guanches. In general, they inhabited natural caverns and caves or huts, built of gross and unhewn materials, constructed without the aid of mortar. They led, in many respects, a truly savage life, and hardly possessed a knowledge of the earliest rudiments of art. Although the cereal grasses were known to them, agriculture was in its rudest and most uncultivated state, and they subsisted chiefly on parched barley flour and goats' milk, and fed in common with dogs. They deposited their dead in caverns for the purpose of inhumation, and even possessed the art of embalming, which tend to prove that they descended, or had some knowledge of the Caucasian tribes. But a profound silence reigns with regard to their origin, in which the world probably must remain forever in darkness.

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LETTER II.

Voyage from New-York to Teneriffe.

AFTER making due preparations for a long voyage, we weighed anchor and set sail from New-York at sunrise on Tuesday the 9th instant, for the island of Teneriffe. The morning was rainy, and the wind in an unfavorable quarter. We worked our way, however, with little difficulty through the Narrows, and about mid-day found ourselves just launching into the broad and interminable ocean. About this time the wind came round to the north-west; the clouds dispersed, and the sun burst forth with fervid brightness. A gentle breeze filled our sails, and we directed our course east-by-south, passing by the United States frigate Brandywine, which was proudly riding at anchor, and waving her stars and stripes. As we advanced, the adjacent shores and high lands were fast receding from our view, and at four o'clock they gravely sunk behind the waves, and were seen no more.

It is difficult to describe the sensations which crowd upon one as he is bidding adieu to his home and native land, though but for a limited period of time; still more difficult is it to pourtray the painful emotions that burst upon one as he is taking the last glimpse of his native shores, leaving behind him all his friends, his kindred, and his country, and this, for an indefinite period—and perhaps, forever. Of the first of these feelings I have had many to contend with; of the latter, none before the present.

During the last fifteen years of my life, my pursuits have led me over a considerable portion of our country, as well as other parts of America. I have travelled by land and by sea; have been separated from home, from relatives,

from friends, and have often been impressed with emotions that weighed heavily on my heart. But then I was still to remain in a land, and mingle with a people, whom I could boast as my own; a land far-famed in greatness; "a nation whom I was taught to regard as no less free than brave, no less intelligent than virtuous, and no less high-minded than powerful." But whither now? To regions fair and delightful on the one hand, decked with ancient monuments of genius and of art, renowned for modern works of grandeur, and possessed by people, free, enlightened, and intelligent. On the other hand, to regions overshadowed with despotism and superstition; to nations imbued with frightful prejudices, degraded and demoralized to the last degree, and totally inaccessible to persuasion or to civilization.*

The breeze continued to heighten, and at night we were swiftly ploughing our way through the pitchy deep, marking out a furrow of liquid fire, which, at one moment, was brilliant and dazzling—at another, tranquil and pearly. These moveable lights were grouped in endless varieties. Here, myriads of luminous points like little stars appeared floating upon the surface, and then flowing together, forming one vast sheet of light. Then the scene became more tumultuous; the refulgent waves hove up and broke in shining foam. At other times, appeared large sparkling bodies, resembling the forms of fishes pursuing each other, alternately disappearing and bursting anew.

The explanation of this phenomenon has long attracted the attention of philosophers. Valisneri, Rigaud, and Dicquemare, have shown, that on several occasions, this light was produced by a little animal called the glow-worm of the sea. It has a body extremely thin and transparent, is possessed with astonishing activity, and emits a dazzling and vivid light. All the zoophytes and mollusca seem to be phosphorescent in a greater or a less degree. The observations of Peron, and of Langsdorff confirm this ex-

* It may be here remarked, that after passing a number of weeks at Teneriffe, I touched on the west coast of Africa, and afterwards visited several parts of Spain, France, Sicily and the Belearic Islands, and intended travelling to Italy, Greece, Turkey and Egypt; but on reaching Sicily, imperative circumstances compelled a speedy return.

planation of luminous phenomena in the sea, and it seems to be the only one that can be admitted as general. It appears that this emission of phosphorus arises from the excited state of the vital spirits in these animals, and that it is chiefly at the moment of amorous enjoyment that they cast forth so brilliant a light.

Fougeroux, Canton, Forster and other accurate observers, while they agree with respect to the existence of glow-worms, think that the light of the sea, when it is tranquil, and as it were united with the water, originates from the decomposition of vegetable and animal substances collected together into it, and which, in putrifying, emit their phosphorus. Light, of this description, is chiefly observed in long calms, and after great heat. The spawn of fish, also, possesses the power of emitting a certain light. This marine phosphoric light has been observed to be the most powerful during a storm, which has given rise to the belief that the phenomenon was produced by the friction of the marine currents. Upon this topic I will conclude in quoting a reflection from Newton. "Do not all solids," says this philosopher, "when they are heated beyond a certain degree, emit a portion of light, and is not this emission produced by the vibratory motion of their particles? And do not all the bodies which abound in earthy and particularly sulphureous particles, throw forth light as often as these particles are sufficiently agitated? May not this agitation proceed from heat, friction, putrefaction, from vital motion, or from some other cause? It is thus that the sea-water in a stormy tempest becomes luminous."

At sea, on board of the Panope, }
Thursday, July 11, 1833. }



LETTER III.

Voyage to Teneriffe Continued.

DURING the week past we have been sailing under the most propitious circumstances. We have made 20° of longitude, and are now in the Gulf Stream, receiving its utmost benefits. We entered it on the 11th instant, at four o'clock in the afternoon, which was obvious from an increase of temperature of the water. A thermometer being immersed, indicated 72° F.,* two degrees higher than at noon of the same day. Yesterday the temperature of the atmosphere at noon, in latitude $40^{\circ} 4'$ N., and longitude $57^{\circ} 41'$ W. was 82° , and that of the ocean at the surface 80° , which is 15° higher than it was near Sandy Hook, at noon on the day of our departure.

This great current may be explained as follows:—“Between the tropics, especially from the coast of Senegal to the Caribbean Sea, there is a stream that always flows from east to west, and which is named the Equinoctial Current. Its mean rapidity may be estimated at ten or eleven miles in twenty-four hours. This movement of the waters, which is also observed in the Pacific Ocean, having a direction contrary to that of the earth's rotation, is supposed to be connected with the latter only in so far as it changes into trade-winds those aerial currents from the poles, which, in the lower regions of the atmosphere, carry the cold air of the high latitudes towards the equator; and it is to the general impulse which these winds give to the surface of

*It will be understood that the variations of temperature expressed in this work, are noted after Fahrenheit's scale, except otherwise specified.

the ocean that the phenomenon in question is to be attributed.

“ This current carries the waters of the Atlantic towards the Mosquito and Honduras coasts, from which they move northward, and passing into the Gulf of Mexico, follow the bendings of the shore from Vera Cruz to the mouth of the Rio del Norte, and from thence to the mouths of the Mississippi and the shoals at the southern extremity of Florida. After performing this circuit, it again directs itself northward, rushing with great impetuosity through the Straits of Bahama. At the end of these narrows, in the parallel of Cape Canaveral, the flow, which rushes onward like a torrent, sometimes at the rate of five miles an hour, runs to the north-east. Its velocity diminishes and its breadth enlarges as it proceeds northward. Between Cape Biscayo and the Bank of Bahama, the width is only 52 miles, while in 28.5° of lat. it is 59; and in the parallel of Charleston, opposite Cape Henlopen, it is from 138 to 173 miles, the rapidity being from three to five miles an hour where the stream is narrow, and only one mile as it advances towards the north. To the east of Boston and in the meridian of Halifax the current is nearly 276 miles broad. Here it suddenly turns towards the east; its western margin touching the extremity of the great bank of Newfoundland. From this to the Azores it continues to flow to the E. and E.S.E., still retaining part of the impulse which it had received nearly 1150 miles distant in the Straits of Florida. In the meridian of the Isles of Corvo and Flores, the most western of the Azores, it is not less than 552 miles in breadth. From the Azores it directs itself towards the Straits of Gibraltar, the island of Madeira, and the Canary Isles. To the south of Madeira we can distinctly follow its motion to the S.E. and S.S.E., bearing on the shores of Africa, between Capes Cantin and Bojador. Cape Blanco, which, next to Cape Verd, farther to the south, is the most prominent part of that coast, seems again to influence the direction of the stream; and in this parallel it mixes with the great equinoctial current as already described.

“In this manner, the waters of the Atlantic, between the parallels of 11° and 43° , are carried round in a continual whirlpool, which Humboldt calculates must take two years and ten months to perform its circuit of 13,118 miles. This great current is named the Gulf Stream. Off the coast of Newfoundland a branch separates from it, and runs from S.W. to N.E. towards the coasts of Europe.”

This current is of great utility to the navigator, who may judge, with a degree of certainty, of his situation, and of the proximity of his approach towards the coast of the United States. When he enters the borders of it, the increased temperature of the water, its strong saltness, its intense azure color, and the large quantities of sea-weed (*Fucus*) which floats along its surface, as well as the elevated heat of the surrounding atmosphere, all indicate, even in winter, that he has reached this noble Gulf.

On the 11th instant, in latitude $39^{\circ} 54'$, and in longitude $69^{\circ} 41'$, I observed some fragments of fucus, a kind of sea-weed which grows on submarine rocks, as well as three species of medusæ, floating in a south-westerly direction, propelled by the counter current near the western edge of the gulf.

The medusæ are animals consisting of a tender gelatinous mass of different fibres, supplied with arms or tentacular processes proceeding from their lower surface. They are marked with various colors, which, by the reflection of the sun's rays, create a beautiful contrast with the azure tint of the ocean. The larger species when touched by the hand, cause a slight stinging and redness; hence they are commonly called sea-nettles. By gently agitating them in the dark, they will emit light. “When a very irritable individual is placed on a tin plate, and the latter is struck with a piece of metal, the vibrations of the tin are sufficient to make the animal shine. Sometimes, on galvanizing medusæ, the phosphorescence appears at the moment when the chain closes, although the exciters are not in direct contact with the body of the subject. The fingers, after touching it, remain luminous for two or three minutes. Wood, on being rubbed with medusæ, becomes luminous, and after the phosphorescence has ceased, it may be

rekindled by passing the dry hand over it; but when the light is a second time extinguished it cannot be reproduced."* These animals are supposed to constitute the chief food of cetaceous fish.

I observed another beautiful class of animals floating down the Gulf, called by seamen, the Portuguese man-of-war (*Physalia plogica*. LAM.) They resemble an oblong bladder, elevated superiorly into an oblique and wrinkled crest, and furnished beneath, near one of the extremities, with a variety of cylindrical, fleshy productions, terminated at different lengths, which unite with the body. They float at will, upon the surface of the water, most frequently when it is calm, employing the crest for a sail; and when quietly gliding along, the rays of the sun drop upon them, and produce a beautiful iridescent appearance. By touching these animals with the hand, they discharge, as a means of defence, a gaseous fluid, which stings and burns like the sea-nettle. They are found in all tropical seas.

On the morning of the 14th instant, thousands of flying-fish (*Exocetus volitans*. LIN.) were seen darting through the air in a direct line opposite to the waves. These fish seem to lead the most miserable existence. In their own element, they are incessantly pursued by dolphins and other fish of prey. If they endeavor to avoid them by having recourse to the air, they either meet their fate from gulls or other predatory birds, or are forced down the mouths of the inhabitants of the deep, which keep pace below with their aerial excursions. The head of this fish is scaly, their body whitish, and their belly angular. Their pectoral fins are very large, which enable them to raise themselves from the water, and fly to a considerable distance, till their fins become dry, and then they descend into the water. They are sometimes found in northern seas, but are the most common between the tropics. When taken, they serve for excellent food.

In calm weather, I have constantly seen the pilot-fish (*Gasterosteus ductor*. LIN.) at our stern. These fish

* Humboldt.

derive their name from the fact that they follow vessels to seize upon whatever may drop from them; and as a similar habit is observed in the shark, it has been said that these small fishes serve as a guide to it. They are of a bluish color, having broad bands running transversely across their sides, of a much deeper hue, and are seldom found more than ten or twelve inches in length. They are considered by some as excellent food.

Tuesday, July 16th, 1833,

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LETTER IV.

Voyage to Teneriffe Continued.

WE progress in our voyage with every success that could be anticipated. The weather has been fine and agreeable, except in the night of the 21st instant, when we were visited, at midnight, by a torrent of rain. The lightning gleamed with awful and vivid flashes, and the thunder rolled in quick successive peals from clouds immediately over our heads. The morning following, the clouds had passed away, and pleasant gales, as usual, continued to waft us along.

The flying-fish are still seen skipping over the dark-blue waves, and occasionally I catch a glimpse of the parrot-fish, commonly, but improperly called the dolphin, which is quite another sort of fish, (*Delphinus delphis*. LIN.) and belongs to the whale family. The parrot-fish (*Coryphæna cærulea*. LIN.) has a head of an odd structure, resembling that of the spermaceti whale. The mouth is small, and each mandible is armed with a single row of even teeth, so that they appear to be entire bones. Its irides are of a bright red; on the back is a long fin indented on the edge; behind the gills are two more fins; also one under the abdomen, and another near the extreme end. The tail is forked, and the color of the whole fish, when alive, is entirely blue. It is taken in great abundance on the coast of the Bahama Islands, and is found in most of the seas between the tropics. It is considered by some, as delicate food.

Scarcely any other beings endowed with life, have come under notice, except petrels and sternæ, or sea-swallows. The last appellation takes its name from their excessively long and pointed wings, and from their forked

tail, which renders their flight and carriage analogous to those of swallows. Their bills are pointed, compressed, and straight, without curve or projection; their nostrils, situated near the base of the bill, are oblong and pierced quite through; the membranes that unite their toes, are deeply emarginate, in consequence of which, they swim but seldom. They fly over the waves in every direction with great velocity, uttering, at the same time, shrill cries, and skilfully dipping from the water mollusca and small fishes upon which they feed.

The petrels are particularly designated by sailors under the name of Mother Carey's Chickens. They are also sometimes called Storm Finches, Stormy Petrels, and Devil's Birds. The most common species on the Atlantic is the *Thalassidroma wilsonii* of Bonapart. It is about the size of a common swallow, and has the general appearance of that bird. Its color is brown, except the rump, which is white, and a white line on the end of the great wing-coverts. At all seasons they keep far out at sea, and often skip along the hollows of the waves with incredible swiftness, and sometimes light upon their summits, braving the utmost fury of the tempests. As they appear to run on the surface of the water, which they effect by the aid of their wings, they are called petrels, from the allusion of Peter's walking on the water.

“These petrels are said to breed in great numbers on the rocky shores of the Bahama and the Bermuda Islands, and along some parts of East Florida and Cuba. Mr. Audubon informs me* that they also breed in large flocks on the mud and sand islands off Cape Sable, in Nova Scotia, burrowing downward from the surface to the depth of a foot or more. They also employ the holes and cavities of rocks near the sea for this purpose. The eggs, according to Mr. Audubon, are three, white and translucent. After the period of incubation, they return to feed their young only during the night, with the oily food which they raise from their stomachs. At these times they are heard through most part of the night, making a continued

cluttering sound like frogs. In June and July, or about the time that they breed, they are still seen out at sea for scores of leagues from the land, the swiftness of their flight allowing them daily to make their vast excursions in quest of their ordinary prey ; and hence, besides their suspicious appearance in braving storms, as if aided by the dark Ruler of the air, they breed, according to the vulgar opinion of sailors, like no other honest bird, for, taking no time for the purpose on land, they merely hatch their egg under their wings, as they sit on the water.

“ The food of this species, according to Wilson, appears to consist, as he says, of the gelatinous spora of the Gulf-weed (*Fucus natans*. LIN.) as well as small fish, barnacles, and probably many small mollusca. Their flesh is rank, oily, and unpleasant to the taste. Their food is even converted into oil by the digestive process, and they abound with it to such a degree, that according to Brunnick, the inhabitants of the Fero Isles make their carcasses to serve the purpose of a candle, by drawing a wick through the mouth and rump, which being lighted, the flame is for a considerable time supported by the fat and oil of the body.”

In passing over the vast and watery deep, it is wondered why its inhabitants do not more frequently exhibit themselves ; for often whole days pass by without observing anything possessed with life, and even weeks, except now and then a shoal of porpoises, making their “uncouth gambols” around the bow of our vessel, and the grampus slowly throwing his unwieldy form above the water, or the voracious shark, darting like a spectre just below its surface. But when we reflect on the immensity of the ocean, of its immeasurable depths, which probably extend as far below its surface as the highest of our mountains are elevated above it, and when we consider that its bottom is diversified with mountains, valleys and plains, how vast are the spaces susceptible of affording adaptation and sustenance to countless tribes of beings. And when we look around us, we see every mountain and marsh, every wilderness and wood, teeming with myriads of living creatures, all adapted to their respective situations, and pos-

sessed with their proper instincts and enjoyments. And if we admit that

“Full many a gem of purest ray serene
The dark unfathomed caves of ocean bear,”

we must allow from the analogy of reason, that innumerable classes of animals inhabit this vast abyss, thousands of which, never have appeared to the eye of man. And yet, who is there that can doubt the existence of an *outré* monster of the deep, when deduced from creditable authority? Who is there that has ever descended these briny floods, and rambled about the “mermaid’s cells,” the “triton’s halls,” and the “sea-nymph’s coral bowers,” to explore and enrol the wonders of the mighty deep? According to Kircher, the celebrated diver, Pescecola, whom the emperor Frederic II. employed to descend into the Straits of Messina, saw there with horror, enormous polypi attached to the rocks, the arms of which, being several yards long, were sufficient to strangle a man. If this can be credited, we have as much reason to believe in the present existence of the sea-serpent, of the great leviathan, or of the behemoth.

Tuesday, July 23, 1833.

LETTER V.

Voyage to Teneriffe Continued.

At length, wafted by propitious gales, we begin to approach our destined haven. Since my last date, the weather has been incomparably delightful, and each day closed by evenings of tranquil beauty. The vivid colors which gild the setting sun, the fantastic forms that mark the golden clouds, and the sublimities of a starlight evening at sea, inspire emotions sufficient to compensate the most reluctant voyager for all the endurances of an Atlantic passage.

On the morning of the 5th instant, we observed the Isle of Madeira eight or ten leagues to the south of us, the summit of which, was distinctly seen above the clouds that were hanging about its sides; and low in the south-east were to be seen the peaked tops of Porto Santo just peeping above the horizon. We slowly glided along during the day, and the next morning were in sight of the Desertas, which lay a few leagues to the southward. At our left hand was Porto Santo displaying its ragged summits, and near by, at our right, Madeira, which exhibited to us a friendly look, and seemed once more to reconnect us with our mother earth. It wore a truly pleasing and picturesque appearance as we passed by. The top of the mountain was incessantly enveloped in light cumulous clouds; its sides, peculiarly broken and rugged, consisted of dark arid ridges, destitute of verdure, alternated by deep fertile valleys. At the bottom of the descent was the city of Funchal, in the vicinity of which, were innumerable sloping vineyards, interspersed with gentlemens' seats, and the more humble huts of the vine-dressers, whose whitened walls conspicuously diversified the face of nature.

For some evenings past, I have observed an immense number of shooting stars, leaving behind them a sparkling train. As we advanced southward, they appeared to increase in brilliancy and in numbers. The same fact was observed by Humboldt, who remarks that these meteors are more common and more luminous in certain regions of the earth than in others. He has nowhere seen them more frequent, than in the vicinity of the volcanoes of Quito and in that part of the South Sea which washes the shores of Guatimala. Between the tropics, and in fact all warm climates, they generally leave a train behind them, which sometimes remains luminous for ten or twelve seconds. At other times, they seem to explode and discharge thousands of brilliant sparks. They are much lower here than in high latitudes, and are very seldom seen beneath a cloud. They are most frequently observed in clear, serene weather, and move in the direction which the wind blows; but this is not always the case, for I have noticed them when the sky was totally overcast, and to move in various directions about the same time, and in one instance I observed one in the day-time, which passed between me and a dark-blue cloud.

Although these shooting or falling stars are a common phenomenon, their great distance and transient nature have hitherto frustrated every attempt to ascertain their cause. However, the connection of these meteors with an active state of the atmospheric electricity, is certain from observation; and we have more reason to consider them as electric sparks, than as solid or fluid matter in the act of combustion.

During most of the time this week back, we have been visited by light baffling winds, and often by perfect calms, which afforded me at times, no small share of amusement. Every body who has been at sea, has heard sailors whistle during a calm, in order to "raise the wind," which many of them attribute to the agency of some unknown power; but some of our modern theorists impute it to a certain sympathy existing between the air and the sound resembling that of the whistling of the wind.

It is a well known fact in acoustics, that harmonic sounds may be effected by a sympathetic action conveyed

by the air ; for example—" a body of singers with great power of voice, are able to break into pieces a large tumbler glass, by singing close to it its proper fundamental note ; and it is from the same sympathetic communication of vibrations, that two pendulum clocks fixed to the same wall, or two watches lying upon the same table, will take the same rate of going, though they would not agree with one another, if placed in separate apartments. Mr. Elliott even observed, that the pendulum of the one clock will stop that of the other ; and that the stopped pendulum will, after a certain time, resume its vibrations, and in its turn, stop the vibrations of the other pendulum." * To a similar cause they will say, may be attributed an increase of wind from the sympathy existing between the air and the whistling sound resembling that of the wind.

Thursday, August 8, 1833.

* Dr. Brewster.

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THE
HISTORY
OF
THE
CITY
OF
NEW
YORK
FROM
1624
TO
1898
BY
JOHN
BURNETT
AND
JAMES
MORSE
NEW
YORK
1898

LETTER VI.

Arrival at Orotava.

EARLY on the morning of the 10th instant, we had approached the island of Teneriffe, sufficiently near to discern trees, houses and vineyards, and the Peak of Teyde, illuminated by the earliest rays of the sun, was seen just over our heads. Before we had come within a league's distance of the port, we were hailed by the custom-house authorities, who, after making the usual inquiries, and receiving our passports, pronounced upon us a quarantine of eight days, and ordered us to anchor a mile from the shore, with the privilege of landing at the lazaretto as often as might be necessary. Here we remain anchored in 40 fathoms of water, enjoying a cool sea-breeze of 75° , while on shore the thermometer indicates a temperature of 86° in the shade, and from 100° to 120° in the sun.

On first descriing the features of a new country, one cannot express the emotions with which he is inspired. His eyes are wont to glance with eagerness upon the many objects that are brought to view, and amidst his agitation, everything, although regarded as common before, now wears the aspect of something new; but after he becomes more familiar with them, they assume their true character, and he can hardly conceive them to be the same.

On first reaching the shore, I was particularly struck with the singular appearance of the *Euphorbia canariensis* of Linnæus. It is an herbaceous perennial shrub, sending forth slender succulent stalks from ten to twelve feet in length, and having from four to five sides, armed with sharp prickles. It puts forth quadrupetalous flowers of a whiteish or yellow color, and its light green stalks form an

agreeable contrast with the dark stones and earth upon which it usually grows.

All the shores and ravines in this vicinity are lined with basalts and other igneous rocks, in which may be found crystals of hornblende, and in some instances, olivine and transparent pyroxene, the latter occurring generally, in six-sided prisms, and of an olive-green tint. I observed, also, large quantities of volcanic sand along the shore, containing minute fragments of the same materials as the neighboring rocks are composed. From the reverberation of this sand, and the black, arid rocks with which the shores of this island are formed, may be imputed the intense heat to which they are exposed. This sand, in the middle of a hot day, is insupportable to the hands or bare feet for any length of time.

From the hazy state of the atmosphere, we did not discern the Peak before the 9th instant, at mid-day, which was then at sixty miles' distance. When it first came under our observation, the horizon below it, as far as the eye could reach, exhibited only a wide expanse of water, so that the summit appeared like a thin blue vapor, till its stationary position fixed our attention. It was soon concealed from view, and was seen no more until half past three in the afternoon, when its conical head was towering far above the clouds. I now availed myself of making a trigonometrical measurement of its height, which I did by throwing the log, and noting the velocity of the vessel, and the time it sailed between two stations, to determine a base; and employed two vertical angles of the summit of the Peak, one at each station. By my calculation I found it to be elevated 12,352 feet above the ocean, which is considerably more than the average measurements that have been made by different observers, showing at once the uncertainty of this mode of measurement of mountains.

For want of other matters of interest, I may here take a glance of the physical observations since my departure, relating to the air and the ocean, with some remarks from other sources.

TEMPERATURE OF THE AIR.—The great basin of the Northern Atlantic Ocean, between Europe, Africa, and

America, exhibits very different degrees of temperature, but very slow in its changes. In passing from Sandy Hook to this place the increase of temperature has been only $3\cdot5^{\circ}$. The maximum observed during the voyage was 82° , the minimum 73° , with a mean of $76\cdot1^{\circ}$. Humboldt, in travelling from Spain to South America, in July, 1799, observed a gradual increase from 50° to 77° , the maximum being only $79\cdot9^{\circ}$. In comparing the observations of several navigators, I find that the thermometer has not been known to rise, in the open air at sea, above 93° in any place between the tropics of either hemisphere; while in corresponding latitudes of the continents of Asia, Africa and America, it attains a temperature of 120° , 130° , and even 140° .

The gradual increase of temperature during a voyage from the temperate to the torrid zone, is highly conducive to the health of voyagers, as it prepares them, by degrees, for the intense heat which they have to encounter. This change is attributed, in a measure, to the evaporation of the water, increased by the wind and the waves, together with the property possessed by transparent liquids of absorbing very little light at their surface.

TEMPERATURE OF THE SEA.—From New York to this place, the temperature of the ocean has been, in general, uniform in its increase, although inequalities have occurred, caused by the Gulf Stream. The mean temperature has been $74\cdot4^{\circ}$; maximum 80° , and minimum $66\cdot5^{\circ}$. In the inter-tropical seas, there is everywhere a great uniformity in the maximum of heat, which varies, according to Humboldt, from 82° to $84\cdot5^{\circ}$. This proves that the ocean is in general warmer than the atmosphere in direct contact with it, the mean temperature of which, near the equator, is from $78\cdot8^{\circ}$ to $80\cdot6^{\circ}$. As sea-water is a bad conductor of heat, its temperature changes less suddenly and less easily than that of the atmosphere; hence the cause of its uniformity. Besides, the visible solar rays cannot heat the bottom of the sea, as they penetrate only to the depth of about 700 feet. Beyond that limit, the sea receives no more light. The temperature of the depth of the ocean would appear, then, to follow that of the tempe-

perature of the interior of the globe in different latitudes. But it has been proved by experiments, that the temperature of the sea, at great depths, diminishes in a constant progression; from which fact, some philosophers have maintained that the bottom of the ocean is actually a bed of ice. But, unfortunately for them, Count Rumford has shown by experiment, that ice is always formed at the surface of the water, and that, except to a certain extent within the polar regions, it cannot exist at the bottom of the ocean.

INTENSITY OF THE COLOR OF THE SKY.—In travelling from the higher latitudes to the torrid zone, I have repeatedly observed an increase of the azure tint of the sky, and in the same parallel, fainter at sea than when on land. The latter circumstance is owing to the quantity of aqueous vapor which is constantly rising from the ocean to the upper regions of the atmosphere. Hence, in all latitudes, the intensity of the color of the sky diminishes from the zenith to the horizon, and this nearly in arithmetical progression.

COLOR OF THE SEA.—The color of the sea varies very much in appearance, but it is generally of a deep, bluish-green, which becomes less intense as we approach the coasts. This apparent color of the sea may be attributed to the same causes that impart the blue shade to the distant mountains, and to the sky its azure hue. The other shades in the color of the sea, depend on causes which are local, and sometimes illusory. It is said that the Mediterranean, in its upper part, sometimes assumes a purple tint. In the Gulf of Guinea, the sea has a whitish appearance, and around the Maldivé Islands, it is black. The Vermeille, or Vermillion Sea, near California, has received its name from the red color which it bears. I have observed a phenomenon similar to the latter about the coast of Florida.

Humboldt observes, in his travels from Spain to South America, that in fine calm weather, the color of the sea was found to be equal to 33° , 38° , and sometimes 44° of Saussure's cyanometer, although the sky was very pale,

and scarcely attained 14° or 15° . "When, instead of directing the apparatus to a great extent of open sea, the observer fixes his eyes on a small part of its surface viewed through a narrow aperture, the water appears of a rich ultra-marine color. Towards evening, again, when the edge of the waves, as the sun shines upon them, is of an emerald green, the surface of the shaded side reflects a purple hue. Nothing is more striking than the changes which the color of the sea undergoes under a clear sky, in the midst of the ocean and in deep water, when it may be seen passing from indigo-blue to the deepest green, and from this to slate-gray. The blue is almost independent of the reflection of the atmosphere. The inter-tropical seas are, in general, of a deeper and purer tint than those of high latitudes, and the ocean often remains blue, when in fine weather, more than four-fifths of the sky are covered with light and scattered clouds of a white color."

At anchor in Quarantine, Port Orotava, }
Thursday, August 15, 1833. }



LETTER VII.

Excursion to Santa Cruz.

HAVING just obtained my emancipation, I am happy once more to enjoy the sweets of freedom. On the 18th instant, at mid-day, I was released from quarantine, and conducted by some soldiers directly to the Governor of this port, who ordered me to present myself, immediately, before the Governor General, at Santa Cruz which is situated about thirty miles from here. It being impracticable to reach that place on that evening, my journey was postponed until the next day. Early the ensuing morning I set off on horseback, and just after leaving this town, ascended a steep hill, in a winding direction; and all of a sudden there burst upon me a most charming view of the Valley of Orotava. The scene before me was so enchanting, that a description of it, to bear even a faint resemblance, would appear like romance. It consists of an elevated slope, containing about four square leagues, and is abruptly hemmed on three sides by a range of lofty mountains which intersect the island. The other side is bounded by the ocean, the shores of which are bold and precipitous at all points, and are constantly dashed by the snow-white surf. Numerous rivulets and springs gush forth from the foot of the mountains, and after rushing down the ravines and forming beautiful cascades, are employed in irrigating and fertilizing the soil, and in turning mills.

This broad champaign is interspersed with compact villas and detached dwellings, which are encompassed by vineyards and corn-fields, that yield at once the choicest and the most varied fruits. In short, "it is a vast garden, decked out in aromatic groves, which realize the *beau ideal* of Paradise." There can be but few spots on the

globe that present a spectacle more beautifully romantic and wildly picturesque than the Valley of Orotava.

After an hour's ride over a fertile plain, I commenced ascending the mountain in a zig-zag manner, and continued my way to Laguna over a rough, narrow road, which, in many places, was almost impassible. The only settlements between this place and Laguna, are the hamlets of Santa Ursula, Vittoria, and Matanzas, the two latter names, (victory and slaughter,) notorious in occurring together in most Spanish provinces, create an unpleasant contrast with the peace and quietude which these colonies usually inspire. In pursuing my route, I observed on the left, along the sea-shore, numerous date-trees, (*Phoenix dactylifera*. LIN.) and farther up, groups of the orange and the banana. The more precipitous parts of the descent were covered with vines and peach-trees, richly laden with fruit, while the more level portions were planted with grain and other vegetables. The fields were frequently separated by hedges of the prickly pear, (*Cactus opuntia*. LIN.) and the American aloes, (*Agave americana*. LIN.) The latter, when vigorous, sometimes rises to the height of sixty feet, and branches out on every side, so as to form a kind of pyramid of greenish yellow flowers, which stand erect, and come out at every joint. As a hedge, its hardy lance-like leaves render it totally impenetrable to man and beast. When pressed, the light blue leaves yield a thick juice, which, with lye-ashes, is formed into balls and used as soap. The peasantry of these islands soak them in water, and beat them with mallets, as flax or hemp, and afterwards spin the lignum into coarse thread, suitable for making lines and small cordage of a very strong and durable quality.

In travelling from Laguna to Santa Cruz, the only plants that I observed were the *Euphorbia canariensis*, the *Cacalia kleinia*, and the *Cactus opuntia*. The road was steep and difficult, in many places, and appeared to be formed of the débris of an ancient current of lava from the Peak. My horse moved with a snail-like pace, and slipped at every rod. At length, after a considerable fatigue, I reached a small plain near a beautiful stone bridge, thrown across a deep ravine, and shortly after arrived at the place

of my destination. The evening being too far advanced to prosecute the object of my journey, it was deferred. The next morning I presented myself to the Governor General, who, after passing a few civilities, gave me permission to examine the whole island, and kindly offered me assistance whenever required. I passed the remainder of the day in viewing the town, and in examining the cliffs in its vicinity.

Santa Cruz is a pleasant town of considerable extent, containing, according to the last census, 6,400 inhabitants. It has less appearance of poverty than this place, although I was constantly assailed by the most importunate beggars. A friend pointed out to me the exact spot where Nelson experienced the only failure of his glorious career. No one who has ever read of this memorable conflict could gaze upon this spot without being possessed with feelings of peculiar interest.

After a comfortable night's rest, I set off yesterday morning about eight o'clock, under a burning sun, from Santa Cruz for this place. On my road to Laguna, I met a drove of white camels, (*Camelus dromedarius*. LIN.) employed in conveying produce to the town. The monotonous tinkling of their bells, their slowly-measured pace and lethargic countenances, all of which were exactly in unison with the listless heat, and the sun-scorched hills, bearing now and then a cluster of succulent plants, which receive their nourishment from the air rather than the soil, strongly impressed me that the aspect of these islands belongs to Africa, and to the most arid part of it.

I pursued my way on horse-back as far as Matanzas, and performed the remainder of my journey on foot, in order to examine the geology of the rout more minutely. In descending the ravines to the sea-side, I observed that the lowermost stratum consisted of huge masses of yellowish-brown columnar basaltes, somewhat irregular in their forms. Directly above them were strata of breccia, resembling volcanic tufa. They contained fragments of the same basaltes that they covered, and often recent terrestrial shells; and it is asserted, that the remains of marine productions are observed in them. Next in succession above, was a stratum of ferruginous earth, overlaid

with a dark argillaceous soil, containing crystals of pyroxene, and fragments of compact lava.

I arrived here late last evening, lame and worn out with fatigue; and to-day have taken up my residence during my stay in this place with Mr. Alfred Diston, an English merchant, a gentleman no less distinguished for general information than for the friendly services which he has rendered scientific men who have visited these regions.

Port Orotava, Wednesday, }
August 22, 1833. }

LETTER VIII.

First Ascent of the Peak.

AFTER arranging the necessary preliminaries, I set off for the Peak on the 29th instant, before the break of day, accompanied by ten persons, principally professional and mercantile men of this island, each of us attended by a guide, or rather such as professed to be our guides. Although born within two leagues of the mountain, most of them had never been induced by the excitement of curiosity to ascend from their native valley to the "regions of barren grandeur above them."

We pursued our course along the sea-shore for a league or more, till we reached Realejo de Abaxo, shortly after which, we commenced ascending the lofty mountain of Tygayga passing by the stragglng hamlet of Ycod del Alto; and after attaining the height of about 4000 feet, we halted a few moments in order to view the surrounding scenery. We were situated on the brink of a precipice where we could look down more than 2000 feet nearly perpendicularly, which, at first sight, would make a person of ordinary nerves, shudder. The cold had sensibly increased, the mercury having sunk to 57° , and the vegetation and general aspect of things had totally changed, bearing quite another character from those in the valley below. We continued to ascend over regions distinguished by their peculiar vegetation until eight o'clock, when we reached Las Cañadas, or Los Llanos de Retama, which are remarkable for bearing a profusion of broom, (*Spartium nubigenum*. LIN.) called by the natives, *la retama*. It is a woody shrub, ramifying close to the earth, and sends forth numerous tufted branches to the height of nine or ten feet. It is an ever-green, varying from light-blue to pale-

green, forming a beautiful contrast with its white papilionaceous flowers which emit an agreeable odor, and are very productive in honey. During the season of their bloom, the natives transport their hives of bees to the distance of several leagues, that they may extract the nectary, and likewise to prevent them from puncturing the grape which is in an immature state at this period. The retama grows in the midst of a vast field of ashes and pumice-stones, which encircles the Peak, and which is generally ranked by botanists as its highest zone of vegetation, although there are a few species of gramineous and cryptogamous plants growing amongst it, and even some of the latter are found on the most elevated parts of the mountain.

In passing over a small plain destitute of vegetation, which appeared to have been inundated during the rainy seasons, I observed a flock of wild goats, (*Capra hircus*. LIN.) the species of which, has run wild on the Peak for centuries, and has subsisted on the boughs of the retama. From this place we travelled more than a league over a sterile tract, composed almost entirely of small fragments of pumice-stones and ashes, which were constantly pelting our faces by the cold south-west wind that was blowing directly against us. The latter portion of these llanos became more steep, and bore scarcely any marks of vegetation, and huge masses of feldspathic lava, lay scattered up and down. On leaving Las Cañadas, the way became very rugged and difficult of ascent, so much so, that our mules were scarcely able to sustain their burdens. However, after a great deal of patience and fatigue, we arrived at La Estancia de los Yngleses, at two o'clock in the afternoon, where we pitched our tent for the night. Here the mountain became less steep, and contained some rocks of lava, of an incredible size, which evidently were discharged from the crater at some remote period. They served to break off the winds which blew with biting keenness from the south-west, rendering this the most comfortable resting-place that the mountain affords. After refreshing myself with food and repose, I employed myself the remainder of the evening in making observations.

My principal object in ascending this mountain, was to make an admeasurement of its height, and also of several

other points between its summit and the ocean, in order to ascertain the elevation at which certain species of vegetation can exist in these latitudes. My barometer having become impaired during the ascent, I was obliged to resort to the thermometrical barometer which consists of nothing more than immersing a common thermometer into boiling-hot water, which will cause the mercury to rise in proportion to the specific gravity of the atmosphere. At the level of the ocean, the boiling point of Fahrenheit's scale is 212° ; but as we ascend into the air, it gradually decreases, which depends, in a measure, on the humidity and temperature of the air. In making experiments of this kind, many precautions are necessary. It is important to have the instrument properly constructed, and to make use of pure water. Care should also be observed with regard to communicating the instrument to the water, and to the time after it commences boiling.*

At a quarter past seven in the evening, the thermometer stood at 53° , and on being immersed into boiling-hot water, the mercury indicated a depression of 17.5° below the boiling point at the level of the ocean, which gives an elevation of about 9800 feet above the sea. After enjoying a delicious view of the nocturnal scenery and the rising moon, I retired to the tent in order to pass the night in tranquillity and silence; but our merry guides were seated round an enormous fire revelling over the fragments of a wild goat, and kept up their noisy mirth during the night with so much enthusiasm, that neither threats nor persuasion would induce them to be quiet. I remained in the camp until midnight, trying to catch a moment's repose, but finding my efforts in vain, I was forced to discard all thoughts of sleep, and rose to prepare for the ascent. From the diminution of the weight of the atmosphere, combined with other circumstances, several of us were affected with nausea, vertigo, hemorrhage, and a universal uneasiness. Our pulse "did not beat, but flutter;" and so feeble as to be hardly perceived. Every breath of

*For an account of an improved instrument of this kind constructed by Rev. F. J. H. Wollaston, see the Philosophical Transactions for 1817, p. 183.

air that we inhaled, seemed to pierce the lungs like a stinging instrument.

After haranguing with our guides for two tedious hours, we recommenced our march over a way more steep than ever, so much so that we were obliged to abandon our mules, and perform the remainder of the distance on foot. At half past two, we arrived at Alta Vista, where the thermometer indicated a temperature of 47° , and the wind blew directly from the north. From this place, we commenced the most difficult and the most arduous part of our ascent, climbing over huge, precipitous crags of lava, which were sharp and rasping to the fingers, and to the soles of our shoes. At half past three, we reached La Cueva del Yelo, a subterranean glacier, from which we procured some excellent water. Here the wind blew again from the south-west, and the mercury had risen to 48° . After two hours' climbing over a vast and almost perpendicular tract of lava, attended with much toil and danger, we reached La Rambleta, where there was formerly a small platform surrounding the Piton, or sugar-loaf; but now, the débris thrown from the crater, have almost obliterated its outline. On our way thither, those of our company who had not the precaution to bring with them gloves and a sufficient quantity of clothing, were complaining bitterly of the cold, and of bloody fingers. The wind still continued to blow from the south-west, and the mercury had sunk to 41° . At the rising of the sun, we commenced climbing the sugar-loaf which is covered with loose ashes and pumice, and so steep that it would have been almost impracticable to ascend it, had there not been an old current of lava to aid our footsteps. At half past seven, we attained the summit of this celebrated mountain, where the wind blew a tremendous hurricane from the south-west, and disabled us to stand without supporting ourselves by a lance, or clinging to the walls of the crater. Most of the lower regions were intercepted by a stratum of white clouds exactly resembling the ocean, foaming with its utmost agitation. The sulphureous stench and suffocating vapors impelled most of my companions to descend immediately after reaching the brink

of the crater. We immediately prepared for observation, and with some difficulty, struck up a fire on the leeward side near the top of the highest pinnacle.

OBSERVATIONS.—Temperature of the atmosphere on the top of the Peak, 72° ; at six feet above, 39° ; temperature of boiling hot-water, 190° . On thrusting a lance into the crater to the depth of a foot, and introducing the thermometer, the mercury instantaneously rose to 220° , the extent of its graduation. The plate of the instrument accumulated, from the vapor which issued from the aperture, some drops of liquid that had a powerful corroding effect. It is highly probable that these vapors contain muriatic or sulphuric acid; or the corrosion of the plate of the instrument was caused by sulphuretted hydrogen coming in contact with it. Sound was greatly diminished when made with the same efforts as below; the compass was not at all agitated. From the disagreeable and nauseous effect of the sulphureous exhalations of the volcano, and the difficulty of breathing, we were under the necessity of suspending further observation, and descended, as soon as practicable, to La Cueva del Yelo, where we stopped and refreshed ourselves, took its dimensions, and the temperature of the water which it contained. It is entered by an irregular aperture of about eight feet in diameter, and is fifteen feet deep, twenty-five wide, and as far as penetrated, two hundred feet in length. Its bottom is a solid bed of ice covered with pure crystalline water about a foot deep, having a temperature of 41° . During winter, this cavern is filled with ice and snow; and as the rays of the sun do not penetrate beyond its mouth, the heats of summer are insufficient to empty the reservoir. There is a tradition amongst the natives here, that the water in this cave was formerly unfathomable, and that it ebbed and flowed with the sea.

At mid-day, we returned to La Estancia, where we overtook our other companions. Overpowered with fatigue, and affected with an unaccountable perturbation of mind, I was unable to proceed any further without relief. The cause of my illness was soon discovered, and after being removed, we continued our descent over Las Cañadas, and

called El Portillo, and partook of an excellent dinner in a grove of chesnuts situated in the higher regions of the Valley of Orotava, and at six o'clock last evening, we reached this place, where the freshness of the air, with the melody of a hundred songsters that were perched among the creeping plants, whose flowers diffused an aromatic odor, formed the most delightful contrast with the desolate and inhospitable regions from which we had returned.

Port Orotava, Saturday, }
August 31, 1833. }

LETTER IX.

Second Ascent of the Peak.

AFTER having a day's rest, I again set off for the Peak, in order to accomplish my intended observations. The weather was clear and serene, and I commenced my journey under every auspicious omen. I proceeded to Realejo de Abaxo, and shortly after, ascended the mountain of Tygayga, where the botany was exceedingly interesting. Towards evening, I crossed Las Cañadas, and with little difficulty, reached La Estancia de los Yngleses at six o'clock, where I met M. Despreau, of Paris, and his attendants, who was ascending the Peak in order to make some astronomical observations. Here we passed the night in the open air near a large fire which our guides constructed with branches of the retama. Though in a torrid country, and under the brilliant sky of Africa, we suffered extremely from the cold during the night. At the break of day, we mounted our mules and proceeded with some difficulty as far as Alta Vista, where I learned that M. Despreau had met with a fall and disenabled himself so much, that he was unable to ascend, and had returned to La Estancia. Being excessively fatigued, and affected with nausea, I found it prudent to return also, and defer my journey. At La Estancia, I lay down upon the dry earth, throwing my cloak over me, and enjoyed two or three hours' undisturbed repose, which greatly relieved me from my illness and fatigue.

OBSERVATIONS.—The upper regions of the sky were perfectly clear; no wind; the moon and stars very brilliant. Mercury and Venus, in particular, appeared

brighter than I ever saw them before. Below my feet, over Las Cañadas, there was a sea of white clouds apparently rolling against the mountain. The tops of the lesser hills were jutting out of the clouds resembling small islands. Temperature of the atmosphere at three o'clock in the morning, 48°.

At nine o'clock, I took my leave of M. Despreau and descended to the mountain of Tygayga where I was enveloped in a thick stratum of clouds so dense, that I could scarcely distinguish one object from another. The retama and other shrubs were shedding water so profusely, that it run down the mountain in continued rills. This may lead us to inquire whether the marvellous "fountain tree" of Hierro did not derive its moisture from a similar cause? I cannot learn, only by tradition, that such a tree ever existed there; although there is no doubt, that in the early part of the last century, a tree was blown down and destroyed there, from the branches of which, a small degree of moisture used to trickle, but so far from being an inherent property of the tree, that the same effect would have been produced by any other like tree, if placed at the mouth of a ravine where a succession of clouds and mists are constantly rushing. The tree in question undoubtedly, was placed in a similar situation, and by the attraction of cohesion, accumulated drops of water which it shed, and gave rise to the story of the "vegetable spring," so zealously perused and repeated by the marvellous.

In passing through the clouds, I observed a phenomenon which has often been remarked on high mountains. "Small currents of air chased trains of clouds with unequal velocity, and in opposite directions, and bore the appearance of streamlets of water in rapid motion, in all directions, amidst a great mass of stagnant waters. The causes of this partial motion of the clouds, are probably very various; we may suppose it to rise from some impulsion at a great distance; from the slight inequalities of the soil, which reflect in a greater or less degree, the radiant heat; from a difference of temperature kept up by some chemical action, or perhaps from a strong electric charge of the vesicular vapors."*

* Humboldt.

Although the body of the mountain is often wrapped in clouds, and the Peak seen above them quite clear, sometimes the reverse of this happens; the whole body of the mountain is distinctly seen, while its summit is covered with a thick, white cloud, as with a cap. This is often observed in the finest weather; and the Spaniards on this occasion say, *El Pico tiene su sombrero puesto*—"The peak has put his little hat on," and look out for rain.

Towards evening, I descended below the clouds, and continued my way down the mountain quite to the sea-shore near San Juan de la Rambla, and at the break of the mountain, entered a ravine of a frightful aspect, which served as an issue to one of the sepulchral caverns of the Guanches. I ascended a perpendicular rock nearly one hundred feet, where a yawning cave presented itself containing an immense quantity of the bones of the aborigines of this island; but they were too much decomposed to be examined to advantage. They appeared, however, to be generally of a larger size than the bones of the Europeans, which coincides with the history of the Guanche race. From thence I returned to this place comparatively satisfied with my excursion, although I had not accomplished its intended object.

Port Orotava, Friday, }
September 6, 1833. }



LETTER X.

Third Ascent of the Peak.

ON the morning of the 9th, at eight o'clock, I set off for the third time, to ascend the Peak, with a resolution not to return, if possible, until I had perfected my purposed objects. I pursued my route as usual, up the mountain of Tygayga, and at ten o'clock, entered a dense body of clouds, "dark as night," through which, I wandered for two hours without knowing whether the next moment I should be thrown headlong down the neighboring precipice, or should find some more favorable issue, till all of a sudden, the sun burst upon me, and I found myself just entering Las Cañadas. Soon after I came to the small llano at the foot of the mountain, where I stopped and refreshed myself, and made some observations on temperature, and a rude trigonometrical measurement of the Peak, according to which, its elevation above this plain is 5467 feet.

From this small plain, I passed through a narrow defile hollowed very anciently by the torrents, and about five o'clock, I passed into the shadow of the Peak. The atmosphere was remarkably serene during the afternoon, and the sun shone with its utmost brilliancy, the light of which, created a painful sensation in my eyes. Shortly after entering the shadow of the mountain, I observed a phenomenon which, in former times, would have struck the beholder with terror, and would have been regarded as the direct agency of supernatural power; but fortunately for myself, science had reduced it to the level of other natural phenomena, and I watched it with intense interest and admiration. In casting my eye towards the eastern horizon, I observed, suspended in the air, nearly on a level

with myself, a perfect image of the Peak itself, diminished in size as if reflected in a convex mirror, having all the distinctness and apparent solidity of reality; not only were the light and dark tracts of lava plainly defined, but even the very vapors which issue from the crater were rising from its summit.



It remained visible about fifteen minutes, and gradually disappeared as the sun went down. At the time of the illusion, there was scarcely a breath of wind, and the lower regions of the atmosphere over the Valley of Orotava, were charged with a horizontal sheet of dense vapors. The next day on my return, I learned that the inhabitants below had been visited by an extraordinary fall of rain.

The foregoing phenomenon derived its origin from nothing more than the image of the Peak projected on the humid atmosphere over the ocean, which acted as a convex mirror, and by well-known laws of refraction and reflection, produced the effect above described. The elevated position of the image may be accounted for by the passing of the light from a rarer medium to a denser one; which, to an observer in the rare medium, appears to elevate objects that are at the bottom of the dense one, as is familiarly explained with a piece of money and a bason of water.

From a similar cause, rose the story of the "enchanted island of San Borondon," which formerly excited so much wonder and terror. According to the reveries of pilots and certain legends, it was situated in the west, in some unknown part of the ocean, buried, as was supposed, when invisible, in eternal fogs. "This land, represented to have been governed by an archbishop and six bishops,

and which Father Feijoo believed to be the image of the isle of Hierro, reflected on a fog bank, was ceded in the 16th century, by the King of Portugal, to Luis Perdigon, at the time the latter was preparing to make a conquest of it.* It is supposed to have been caused by a peculiar humid wind from the W.S.W., which produces an astonishing effect of mirage in these latitudes.

At half past six, I reached La Estancia, where I passed the night in the open air and suffered intolerably from the cold. But a more glorious evening there never was beheld. The sky was not, as seen from the lower regions, "an ebon concave gemmed with brilliants," but one calm expanse of the darkest blue,

"So cloudless, pure, and beautiful,
That God alone was to be seen in heaven."

The stars shone with peculiar brilliancy, and were increased in numbers and in size. The galaxy appeared a flame of pure white, and in some parts, was composed of clusters of minute stars; in others, nebulæ of the richest pearl, gradually blending with the deep-blue sky; while in another part, appeared a delightful vista which seemed to lead through the common firmament to regions more ethereal and more pure. At first, I was astonished at these scenes, but when I came to reflect that I had passed through ten thousand feet of dense atmosphere, charged with vapors, which have a tendency to blunt and confuse every ray before it reaches the earth, I was at once convinced of the cause.

Ere the dawn of day, I was again on the march, and at twilight, arrived at Alta Vista. Here my attention was arrested with some curious flashes of light, shooting up from the east, resembling small rockets. But soon, however, I found them to be nothing but the images of the stars, magnified and refracted by the vapors which were at that time spread along the horizon. Sometimes these lights remained stationary, while at others, they rose perpendicularly, and then descended laterally to their former position.

* Humboldt.

I next proceeded to La Cueva del Yelo, where I beheld the beautiful and sublime spectacle of the rising sun. After refreshing myself and making some observations on temperature, I continued to ascend by degrees, having repeated turns of resting, and at ten o'clock, once more gained the "grand summit," where the sublimity of the scene was at first almost overwhelming. Far removed from every human habitation, and elevated at an immense height from the face of the earth, drawn as it were to a single point without any intermediate objects, save the clouds, for the senses or the imagination to rest upon, and recover from their astonishment in their way down to the world, it was not until some time that I was capable of discriminating and judging of the things that were about me. Then to reflect that the very pinnacle upon which I was placed, was raised over a bottomless gulf, old as the world itself, and often had discharged rivers of liquid fire, and flaming rocks, attended with the most dreadful consequences, I was struck with awe and with horror. Soon, however, I collected myself and commenced the object of my ascent, and accomplished its full intention.

At twelve o'clock, I bade adieu to this awful spot, inspired with feelings both of pleasure and of pain. I descended to La Estancia, making several observations on the way, and at two o'clock in the afternoon pursued my journey homeward.

OBSERVATIONS.—During the two hours which I passed on the Peak, the face of the sky was intensely serene, and of a hue approaching to black.* The rays of the sun fell upon me with such potency, that they could be hardly endured. The wind was but just perceptible from the north-east, and a stratum of white, fleecy clouds was spread out, concealing all the lower regions, presenting an appearance exactly resembling an extensive plain covered with snow. From the rarified state of the atmosphere, there was great difficulty in breathing. Although a deep silence prevailed around me, the voices of my guides ceased

* Humboldt remarks, that the cyanometer indicated an intensity of the sky, of 41°, at the time he was on the Peak.

to be heard at the distance of a few hundred feet, and efforts that would produce sounds of ordinary intensity in the regions of common life, made but feeble impressions. Notwithstanding these disquietudes, I was not out of the range of other beings than myself. About mid-day, several swallows, (*Hirundo apus*. LIN.) were seen darting across the crater with great celerity, and a number of wild bees were collecting spoils from the soft mud that covers the summit.

The following table shows the temperature of the atmosphere, and of boiling-hot water at different points of elevation indicated by Fahrenheit's scale.

	Temp. of the Air.	Of Hot Water.
At the small llano at the base of the Peak, Sept. 9,	76°	200°
La Estancia de los Yngloeses, Sept. 10,	74	194.5
Alta Vista,	70	192.75
La Cueva del Yelo,	43	192
La Rambleta,	77	190.9
Summit of the Peak,	72	190
At six feet above the summit,	55	
Aqueous vapors in the small hole of the crater,	160	

The Peak of Teneriffe, called by the natives, *El Pico de Teyde*,* consists of a pyramidal mass of more than twenty miles in circumference at the base, and is elevated nearly 12,200 feet above the level of the ocean. Nearly one half of its surface is thinly scattered with the retama, the remaining portion being sterile and very sparingly producing a small violet, (*Viola cheiranthifolia*. LIN.) which is of a flaming hue. Also a few species of grasses are found a considerable distance up the sides, and some species of cryptogamous plants vegetate quite on the verge, and even in the crater. A great portion of the surface of the mountain consists of rugged tracts of lava, having a base of pitch-stone, or obsidian of a blackish-brown, or deep-green color, and in most instances, contains crystals of feldspar. Several varieties of obsidian are found here, as well as pumice, the latter being generally of a whitish color. On the borders of Las Cañadas are also to be found immense

* Corrupted from the Guanche word *Echeyde*, hell; from the belief of the aborigines, that the infernal regions existed on the highest summit of this mountain, in consequence of their having seen it discharge fire and sulphur at the time of eruptions.

blocks of feldspathic lava with a base of pyroxene, and contains crystals of feldspar ; and in some instances are found fragments of granitic lava.

The present crater of this volcano, called by the Spaniards, *la caldera*, is of an elliptical form, surrounded by a wall of lithoidal lava, shelving down on each side, and forms a hollow like a vast amphitheatre. It inclines to the S.S.E. at an angle of about 15° , having a tranverse diameter of 420 feet, a conjugate diameter of 350, and a depth of 103 feet. There is continually rising from the small crevices, an aqueous vapor which issues with such force, as to create a peculiar buzzing noise. It condenses against the neighboring walls, and distils in drops of sulphuric, or muriatic acid, while the residue adheres to the rocks, and forms an incrustation of fine crystals of sulphur. It also acts on the scattered fragments of lava about the crater, and forms certain portions of it into a soft, whitish paste, in which, are found crystals of sulphate of alumine.

This volcano may be compared to a grand laboratory for manufacturing sulphuric acid. There probably exists an extensive bed of ignited sulphur, deep in the earth, and by large quantities of nitre, or some other substance, it is supplied with oxygen to maintain its combustion. And as the mountain is constantly absorbing moisture from the rain, clouds and snows, which prevent the escape of the volatile matter, by imbibing the sulphureous vapors, it gradually becomes more and more acid, till it exudes in the manner above described.

An expedition to the summit of this mountain is particularly interesting, on account of the multiplicity of phenomena, which are objects of scientific investigation, and still it has great attractions from its picturesque beauties ; but I never could recommend a person to subject himself to all the toils and fatigues in accomplishing it, on account of the latter, for he will surely return, like almost every one, dissatisfied.

Port Orotava, Friday,)
September 13, 1833. }

LETTER XI.

Excursion to Chasna.

ON the 16th instant, I set off from Port Orotava, in order to make a grand excursion round the Peak. I pursued my course during the entire day along the sea-shore, travelling through a country widely diversified in its aspect, as well as its productions. That portion of the rout between Realejo de Abaxo and San Juan de la Rambla, is one of the most interesting parts of the island, both as regards its fertility and its picturesqueness. Here the lofty mountain of Tygayga abruptly breaks above your head and may be seen

“Mirror'd in the ocean vast,
A thousand fathoms down.”

Here you enter a lovely glen traversed by babbling streamlets, which are overhung with the “golden orange,” the “blushing peach,” and the “generous vine.” Here, too, you may gaze at myriads of golden insects and glittering lizards basking in the sun; and there, countless warblers

“Gracefully riding through the sky.”

I continued my way to Ycod de los Vinos, passing through San Juan de la Rambla; where near the latter place, I observed an irregular basaltic rock, the columns of which were six-sided, and were connected with each other at the ends by oblique angles. The country between these two villas affords scarcely any vegetation, except the Cactus opuntia, and a few stunted fig-trees, and is truly called by the natives *la mal pais*, (the bad coun-

try), which signifies, in all Spanish provinces, a ground destitute of vegetable mould, and covered with fragments of lavas.

About mid-day, I left Ycod, where I had a most magnificent view of the Peak, and travelled about a league through a succession of fertile vineyards to Garachico, the port of which was destroyed in 1706, by an enormous lateral eruption of the Peak. Before that event, this place had the best harbor in the province, and was extensively engaged in foreign commerce; consequently, from that circumstance, it was deprived of its opulence, and now is inhabited principally by vine-dressers and fishermen, having only 1861 inhabitants.

At six o'clock in the evening, I arrived at Los Silos, where I passed the night on the estate of Mr. John Cologan, of Orotava. Here I enjoyed one of the most inviting scenes in existence, where

“The clusters clear,
Half through the foliage seen, or ardent flame,
Or shine transparent; while perfection breathes
White o'er the turgent film the living dew,
As thus they brighten with exalted juice,
Touch'd into flavor by the mingling ray;
The rural youth and virgins o'er the field,
Each fond for each to cull the autumnal prime,
Exulting rove, and speak the vintage nigh.”

The following morning I resumed my march and pursued my rout over a small fertile plain, and at nine o'clock, reached Buena Vista, a compact village, situated near the western extremity of the island, and contained, according to the last census, 1228 inhabitants. I soon commenced ascending a lofty range of mountains which encircle the Peak, and after climbing over a remarkably steep and rocky path for more than two hours, I entered a dense forest of cedars, resembling the Scottish fir, where the rain began to pour down in torrents. I quickened my pace, and about mid-day, came to an opening where I took shelter in a wretched hovel constructed of loose stones and straw, and contained neither windows, floor, or chimney, nor furniture, except a few stones and earthen-pots. Here I found a poor woman clothed in rags, and four small children in an entire state of nudity. Shortly

after my arrival, a fire of pine torches was constructed in one corner of the hut, from which we were soon enveloped in fumes. Occasionally the light of the torches would cast a glimmer on the puny imps, who were encircled in smoke and darkness, and gave them the appearance of so many little demons.

The storm having become less violent, I again continued my journey. But I had not progressed far, before the rain began to fall more furious than ever, and the wind blew with great violence. I soon reached the summit of the mountain, when, all of a sudden, the rain ceased, and the sun broke through the clouds, and presented beneath me, a gulf truly frightful, a sight of which, would cause the strongest nerves to shudder. I could look down 3000 feet almost perpendicularly towards La Punta de Teno over numerous strata of sand and rocks of lava of a singular appearance, an inspection of which, could not be made, from the threatening aspect of the clouds. No sooner had I begun to descend, than the sun concealed itself, and the rain recommenced falling with increased vehemence, and the wind, sweeping over the mountain, blew a tremendous hurricane, awfully grand and appalling. With extreme difficulty, I advanced struggling against the fury of the wind, which incessantly dashed large piercing drops of rain against my face and limbs. The path became so precipitous, that my mule was scarcely able to descend. The poor beast would have to poise itself for some time on its fore legs with its heels upwards, in order to gain its equilibrium, that it might securely light upon some place below. In the mean time, the rain had caused a frightful torrent to rush down the ravine with astonishing tumult over the huge masses of rock that obstructed its course. However, at two o'clock the rain had ceased, and I reached El Valle de Santiago, from which I immediately ascended the mountain, on its eastern side, where a most charming prospect was laid before me. The wind blew with great violence, but the storm had ceased, and the sun shone with its usual brightness. Far and deep down, was seen the beautiful valley below, and high aloft hung huge columns of basalt, seemingly ready to fall upon my head. Here I began to grow forgetful of my

danger and of my fatigue, for I had discovered a deep stratum of yellowish earth, which contained millions of crystals of pyroxene, distinct in their forms, of a large size, and easily procured. From the danger of being swept off the precipice by the fury of the wind, I was soon obliged to descend to the south side of the mountain, where I found the weather fair and calm, and the lofty Teyde, just peeping over the intermediate mountain, was crowned with a brilliant rainbow, a spectacle, perhaps, as rare as it was sublime.

The remaining part of the day, I travelled over a barren country, having scarcely any vegetation to diversify its monotonous cliffs, except the prickly pear and a few fig-trees. I observed large heaps of the fruit of the former preparing for the winter store of the natives; this and *gofio** being their chief sustenance during the year.

About dusk, I arrived at Guia, a straggling village, containing 1571 inhabitants, chiefly fishermen, where, with some difficulty, my guides procured me lodgings for the night. Early the next morning, I set off again and travelled more than three leagues over an excessively barren tract intersected by numerous ravines, some of them being of such terrific depth, that the mind of the descending traveller is impressed with involuntary agitation. On reaching their bottom, the voices of my guides were increased to an astonishing loudness, and echoed against their walls with repeated reverberations.

About noon, I arrived at Adexe, a pleasant village situated in a fertile valley, which contains 1048 inhabitants. It stands on a stratum of breccia, which is very easily cut into blocks, that are used for building. Here I observed several dark-complexioned people, having straight black hair, resembling the Moors of the continent. Towards evening, I reached a small plain situated on a hill, called

* This substance is usually made of maize, or barley, and at times, as a dainty, of wheat. The grain is first parched over the fire, and then ground into coarse flour between two small portable mill-stones, moved by the hand; and this powder is the *gofio*, which they eat without any other kind of food. Sometimes, however, they put a quantity of it with water, or, as a luxury, with goats' or asses' milk, into a *zurron*, or small leather sack, and after working it well upon their knees, they knead it into small pellets, which they throw into their mouths by handfulls, and devour them with greediness.

Las Colonias, which commands El Valle de las Calderas, (the valley of craters), where there were to be seen, at the same time, more than twenty conical hills with extinct craters. About sunset, I came into the borders of San Miguel, and passed the night with a family of Guancho descent, who still retain similar habits and modes of life, as those of their ancestors. I was quite amused with many of their movements, particularly their mode of preparing and eating the *gofio*.

Early this morning, I bade adieu to my Guancho friends, and pursued my journey over a somewhat fertile country, producing an abundance of fig-trees, from which I made a delicious breakfast of their ripe, purple fruit. About ten o'clock, I reached this place, shortly after which, I procured a comfortable room, and after refreshing myself, made an excursion about a league and a half at the northward, to some mineral springs. The first two that I came to, were situated about eight feet apart, and both issued from a bed of talcky slate. One of them, called by the natives, La Agua Agria, (sour water), was about a foot in diameter, and six inches deep, discharging a small quantity of acidulous water highly charged with carbonic acid gas, with a temperature of 62° . The other spring was about the same size, with a temperature of 63° , and is called La Agua Dulce, (sweet water), having no other sensible properties, but those of common water. From these two springs, I travelled over a steep mountain at the distance of about half of a league to the northward, where I found another spring, situated on the eastern side of El Valle de Ucanca. It discharged a considerable quantity of saline water, having a very disagreeable acrid taste, with a temperature of 54° . It issued from a stratum of whitish sand, overlaid with large blocks of feldspathic lava, and is called by the natives, La Agua Agria de Ucanca.

Many of the natives of these islands have great faith in the medicinal virtues of this spring, and assemble here at certain seasons of the year, and pass several days together. The drinking of the water is sometimes attended with the most serious consequences, producing immediate death.

On my return to this place, I passed through a forest of pines, (*Pinus canariensis*. LIN.) many of which were

twenty or thirty feet in circumference. The wood of this tree contains an abundance of resin, and serves for excellent timber and fuel.

The hamlet of Chasna is situated in a fertile valley in the heart of the mountains, and is elevated about 4500 feet above the level of the ocean. It has a greater resemblance to a New-England village than any other place on the island that I have visited. It is encompassed by extensive orchards of peach, pear, and almond trees, and some well cultivated fields and gardens. The neighboring hills and mountains are crowned by forests of majestic pines, or are interspersed with large flocks of sheep, each attended by a shepherd during the entire day and night. A population of 574 souls inhabit this Alpine recess, all animated with the most friendly spirit, and live in simple beauty.

From the elevated situation of this place, the mean annual temperature is much less than that of the lower regions, and often in winter, the snow falls to the depth of more than a foot, and remains for several weeks together. The inhabitants are a hardy people, generally of a dark complexion, and are so primitive in their diet, that few of them seldom, if ever, taste animal food, living entirely on fruit and gofio. This appears to be a wholesome regimen, for they are healthy, strong, and athletic, and are susceptible of great fatigue. When they go abroad, they usually carry with them a long staff, or pole, pointed with iron, with which they bound from rock to rock, with an agility that would baffle all European pursuit. The parish register of this place exhibits two very extraordinary instances of longevity; one who died in 1819, at the age of 110 years, and the other in 1825, of 121 years.

Villa Flor de la Chasna, Thursday, }
 September 19, 1833. }

LETTER XII.

Return to Orotava.

AFTER completing my inquiries at Chasna, I set off early in the morning of the 20th instant for this place. I pursued my rout about half of a mile to the south-eastward from the village to a spring called by the natives, La Agua Blanca, (white water). It consisted of a small pool of a whitish appearance, probably caused by stagnation, and contained millions of the larvæ of mosquitoes. In tasting the water, I found nothing uncommon in its properties. From thence, I proceeded to El Valle de Ucanca, when about nine o'clock, the sky became overcast, and indicated an approaching storm. I immediately commenced ascending the girdle of mountains that surrounds the Peak, which were so steep, that I was under the necessity of dismounting, and with some difficulty, reached its summit, where the wind blew most violently, dashing me with thick mists and clouds. I descended the northern side of the mountain at the depth of about 2000 feet to an extensive plain, destitute of vegetation, and apparently the bed of a lake during the rainy seasons. Near this plain, it is said that there is another spring which either possesses the quality of incrustation, or of petrification, and that by placing objects within its influence, they soon become incrustated with a calcareous, or a silicious covering. In some of the ravines near the southern extremity of this plain, there are immense quantities of argillaceous tufa, called by the natives, *el azulejo*, which has a beautiful, soft, cerulean hue.

About ten o'clock I overtook my mule and proceeded to Las Cañadas, over a succession of tracts of scragged rocks and small llanos, passing by a number of conical masses of lava of an immense height, which threateningly leaned over

my head. In the mean time the rain had commenced falling and continued to fall until two o'clock, when it ceased for a time, affording delightful weather. The cold sharp air had created a pretty active appetite which I eagerly satiated near a limpid spring. Shortly after I resumed my march and proceeded to a plain more than a mile in length, and before I had travelled half of its length the rain recommenced falling with increased fury. As I was plodding along I observed a high precipitous rock with a perpendicular face, some parts of which were decomposed, leaving small apertures where the swallows sometimes brood their young. One of these holes exactly represented a human profile, having a fine Grecian nose, a high forehead and regular chin, each possessing its due proportions.

About four o'clock I passed through El Portillo to El Llano de Gaspas, which is elevated about 5000 feet above the level of the ocean, and bears a profusion of the *Genista canariensis*, a beautiful arborescent heath. Near its borders I observed a great number of impressions of ferns in basaltes. (?) I continued my descent and reached this port about dark.

Yesterday I made a botanical excursion over the mountain of Tygayga from Ycod del Alto to El Llano de Gaspas, returning through the Valley of Orotava. There can be but few regions on the globe that afford more ample resources to the botanist than this island. It contains in itself several hundred species of plants, besides a great number of exotics both from the torrid and the temperate zones. In ascending from the sea-shores to the top of the mountains, from July to October, one may examine a great portion of the plants which it produces, and in almost every stage of growth.

During some of my more leisure hours I have often taken pleasure in rambling to the Botanic Garden at Durasno, where I saw a great number of foreign plants which grow without the aid of human culture, and have as often experienced emotions of regret when I beheld the neglectful state into which it had fallen. It was first established by the Marquis de Nava who had an idea that these islands would afford a suitable place for naturalizing plants of the East and West Indies, previous to their introduction into

Europe. He accordingly put his project into execution, and continued it with considerable success for several years, but the expenses annually incurred were so heavy, that he was obliged to abandon it. Humboldt made proposals for the Prussian Government to purchase it and continue its object, but as no land belonging to Spain can be owned out of its provinces, the proposition could not be carried into effect. The Marquis, however, very munificently made the king of Spain a present of it, provided he would keep it under cultivation. This generous offer he accepted, but through some neglect or other, it has been suffered to decline, and is now rented for a trifling sum, and little or nothing more is done for it except what nature does, than to plant the open spaces with a few culinary vegetables.

Between this Garden and the ocean there is a delightful country mansion called La Paz, which, together with the surrounding prospect, is the most enchanting and romantic spot on the island. It is built near the brink of a lofty precipice about 300 feet in height, which overhangs the sea. It is encompassed by a beautiful garden tastefully laid out, and is supplied with tanks. From the top of the house one can command the whole Valley of Orotava, and in clear weather the island of Palma. But the most picturesque part of the scene is the precipice. The spectator, standing on the verge of the descent, sees beneath him the vast ocean, which he hears hoarsely bellowing in the caverns beneath his feet. In placing himself on the sea-shore, he can ascend mid-way up the cliff by an avenue, to a deep cavern which was formerly occupied by one of the Guanche kings for a palace.

A few days ago I took an excursion to La Villa de la Orotava, and visited the garden of Mr. Cologan, in which stands the great dragon-tree (*Dracæna draco*. LIN.) mentioned by Humboldt. At the time that he visited these islands it was fifty or sixty feet high, having a circumference, near the roots, of forty-five feet. The trunk was divided into a great number of branches which rose in the form of a candlestick, and were terminated by tufts of leaves radiating similar to the burs of chesnuts. But in *la*

*aluvion** of 1826, the tree severed, one half of which was swept away, leaving the other half which stands at the present day. Every year it bears flowers and fruit, and is regarded, among organized beings, as one of the oldest inhabitants of our globe, which sensibly recalls to mind "that eternal youth of nature," the inexhaustible source of motion and of life. This tree is not found indigenous to any part of the world except the East Indies, which proves, in a degree, that the Guanches had at some remote period, communication with nations originally from Asia. It was revered by them as the ash of Ephesus was by the Greeks; and the more ignorant classes of the natives here at present, have many superstitious notions respecting it.

I have been recently informed of a man in this place who has a profuse flow of milk from his breast. He is of a middle age, a fisherman by occupation, and is strong, healthy and robust. A similar phenomenon is mentioned by Humboldt in Cumana, and another by Benedictus in Syria.

Port Orotava, Tuesday, }
September 24, 1833. }

* In the night of the 7th of November, 1826, these islands were visited by a tremendous tempest of wind and rain, the fury of which was so violent at Teneriffe, that it bore away almost everything that opposed its passage; churches, convents, houses to the number of three hundred and eleven; and drowned two hundred and forty-three people, and one thousand and nine animals, besides doing great injury to fields, vineyards, houses, etc. New ravines were formed in the mountains, and stones and trees were swept from their summits to the ocean.

LETTER XIII.

Excursion to Candelaria.

EARLY in the morning of the 25th instant, I set off on an excursion to the south part of the island. After passing directly through the Valley of Orotava, I entered a beautiful grove of chesnuts, (*Castanea vesca*. LIN.) shortly after which I came to a small hamlet near a famous fountain called La Agua Mansa, (meek water,) from which the Villa of Orotava is supplied with water. Many of the chesnut-trees among which I passed had a circumference of twenty-five or thirty feet, although they were planted within the last century

After making some observations on temperature and mineralogy, I ascended a steep mountain to the height of about 9000 feet above the level of the ocean. On reaching its top, I observed a phenomenon, the like of which I have never seen nor heard of before, although it might often occur in many parts of the globe, if the spectator were placed under similar circumstances. In ascending the mountain I passed through a stratum of dripping clouds, and about noon reached its summit, where the sun shone with intense brilliancy. On turning my face towards the north I beheld the sun's rays refracted in the clouds below my feet, forming a perfect bow which unfolded every hue

“In fair proportion running from the red
To where the violet fades.”

Shortly after I commenced my descent on the southern side of the mountain, and about one o'clock reached El Volcan de Guimar, formed by a lateral eruption of the Peak in El Llano de los Infantes, on the 31st of December, 1704. On the 5th of January following, a sec-

ond opening took place in El Baranco de Almerchiga, a league from Ycore. The lavas were so abundant, that the whole Valley of Fasnía, or Arenza, was filled up. The second mouth ceased vomiting eight days after its commencement. A third opening was formed on the 2d of February of the same year, in La Cañada de Arafo. The lavas divided into three currents, and would have destroyed the village of Guimar, had they not been stopped in El Valle de Melosar, by a chain of rocks, which formed an insuperable obstacle to their passage. The volcano is now extinct, and consists of large conical masses of small fragments of black scorixæ and ashes.

A short distance to the westward of this volcano there is a frightful-looking mountain, rising more than 1000 feet perpendicularly, on the sides of which grows an abundance of orchilla, or archil, (*Lichen rocella*. LIN.) a kind of moss used in dyeing. It is of a grayish color, and yields a purple tincture, fugitive, but very beautiful, which is one of the best chemical tests for acids and alkalies, and is known by the name of tincture of litmus. By the addition of tin it is rendered durable as a dye, and then approaches to scarlet. Archil, however, is most commonly employed to give a bloom to pinks and other colors. It readily gives out its coloring matter to water, or to any kind of spirits.

About three o'clock I had descended below the clouds, and had a fine view of Grand Canary, and most of the towns on the south side of this island. Just before I reached Guimar I came to a deep ravine, from the top of which I attempted to descend to a Guanche cave, but without success, after descending fifteen or twenty feet. In climbing back, a projecting rock gave way and fell upon my head, which caused me to stagger quite to the brink of the precipice. One of my feet slipped off, and fortunately, one of my guides caught me by the arm, and saved me from being dashed to pieces on the rocks below.

Shortly after I passed through Guimar, a pleasant village situated on a fertile plain, and containing 2990 inhabitants, and proceeded about a league over a barren tract to Candelaria, where I passed the night. Most of the inhabitants that I observed at Guimar had very small black eyes and tawny complexions.

Early the next morning I pursued my way nearly a league, at the northward, to El Baranco de Herque, where I visited one of the sepulchral caverns of the Guanches. It is entered by two comparatively small openings of the rocks, leading to a large, dark and gloomy vault, formed by nature, which formerly contained an immense number of mummies.



The history of the antiques of these islands is involved in great obscurity, and their existence is best proved by the remains of their dead; for their posterity is nearly, if not entirely extinct. "The manner of embalming their dead is not explicitly illustrated, but apparently the brain and intestines were completely removed, after which it is said the body was washed with an infusion of pine bark. Next, it was anointed with butter or warm grease, which had been boiled with such penetrating and odoriferous herbs as were peculiar to the islands, and then it was exposed to the sun. Being well dried, the same operations were repeated, and also subsequent drying, until the body was completely impregnated with the aromatic unguent. When reduced to very inconsiderable weight, the process was deemed complete, and the deceased was wrapped in an envelope, consisting of three successive layers of bandages of tanned goat-skin, about three inches broad." Bodies thus embalmed were carried to caves in the mountains, and then placed upright in niches, or laid out on square tables of stone. They appear to have selected for this purpose, the most precipitous and inaccessible places that they

could find, many of which exist on the islands where man dares not enter his foot.

I visited several other caverns in the vicinity of this baranco, which contained immense quantities of bones that had not been embalmed. Many of them were in a fine state of preservation, but they were thrown together in so confused a manner that an entire skeleton could not be obtained. I had an opportunity, however, of comparing the crania with those of the aborigines of the other islands, and found a striking similarity to exist among them, proving in a degree that they all originated from the same race. But we are informed that the natives of some of these islands were unknown to those of others, and that the natives of one island had but very little intercourse with those of another at any rate.

In reviewing the vocabularies of the languages of the antiques of these islands, I find a wide difference to exist among them. However, those of Lanzarote and Fuerteventura very nearly agree, and also that of Hierro nearly coincides with that of Gomera, but the others, with the exception of a few words, have not the least analogy. The word *ganigo*, a kind of earthen ware, signified the same on all the islands but Palma; and the word *gofio* was common to all the islands except Teneriffe, Hierro and Gomera. These two words are used throughout all the islands by the lower classes of the natives at the present day, and have the same signification as formerly.

It was formerly supposed that the languages of the aborigines of these islands had no analogy with the living tongues; but since Africa has been more thoroughly investigated it is found that several words have common roots with words of the Chilha and Gebali dialects. For example I will cite a few words:—

Heaven, (in <i>Palma</i> ,) Tigotan.	(in <i>Berberic</i> ,) Tigot.
Milk, (in <i>Fuerteventura</i> ,) Aho.	“ Aho.
Barley, do. Temesen.	“ Tomzeen.
Basket, (in <i>Canary</i> ,) Carianas.	“ Carian.
Water, (in <i>Hierro</i> ,) Aenum.	“ Anan.

It is doubted whether this analogy is a proof of a common origin; but it indicates the ancient connexion between the Guanches and Berbers, a tribe of mountaineers

with whom the Numidians, the Getuli, and the Garamanti are confounded, and who extend themselves from the eastern extremity of Atlas by Harutsch and Fezzan, as far as the oasis of Siwah and Augela.*

About eight o'clock I returned to Candelaria, which takes its name from the miraculous appearance of *Nuestra Señora de la Candelaria* at this place, in 1392. She was picked up on the beach and placed in the chapel, and was believed, by the natives, to be the real Virgin Mary. They looked upon her with profound veneration, and loaded her shrine with many valuable offerings. She remained in that situation until the 8th of November, 1826, when she, with the chapel, was swept away by an awful hurricane and deluge, and has not yet performed the miracle of returning, though many less feasible ones are attributed to her by her devotees. She consisted of a small, black image bedecked with jewels and other trappings, and in fact was nothing more than the figure-head of a vessel, which washed up in that place.

About nine o'clock I left Candelaria, and pursued my way homeward over the mountain, nearly in the same path through which I passed yesterday.

Port Orotava, Friday, }
September 27, 1833. }

* Vide Adelung und Vater, Mithridates, t. iii. p. 60.

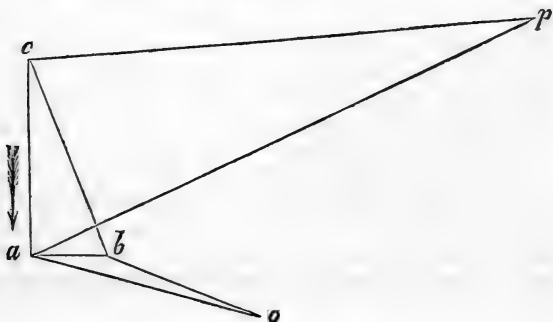


LETTER XIV.

Trigonometrical Measurement of the Peak.

THE measurement of the Peak of Teneriffe has occupied the attention of various individuals at different periods, whose efforts have been attended with the widest results; and the obscure manner in which most of their operations have been brought before the public has prevented us from judging of their error or truth. Consequently, my attention has been occupied for several days past in performing that task trigonometrically, not, however, as an object of mere curiosity, but as being essentially connected with my physical labors.

The ground in the Valley of Orotava being uneven and intersected by ravines, it was impossible to find a base extensive enough to determine the distance of the Peak by a single triangle, consequently I employed two. I measured on the plain between the Botanic Garden and La Paz, my first basis $a b$ of 100 toises, or 639 English feet. See the following figure.



By means of this, I calculated a second ac of 1430.06 toises, and afterwards a third ap of 9953.4 toises, which was the first grand base required. The point c was in Mr. Cologan's garden in La Villa de la Orotava, near the great dragon-tree spoken of in a former letter; and the point p was the summit of the Peak. The base ab was measured by Mr. Hurst of London, and myself, on three occasions, each of the measurements terminating with nearly the same results. The following were the angles of the two triangles taken with minute attention.

Triangle abc .	Triangle acp .
Angle $abc = 86^{\circ} 00'$	Angle $acp = 119^{\circ} 58'$
“ $acb = 4 00$	“ $apc = 7 13$
“ $bac = 90 00$	“ $cap = 52 49$

At the point a , the Peak subtended an angle of $10^{\circ} 35'$, by means of which, I found that its summit is elevated 1859.73 toises above the point a .

My next object was to determine the height of the point a above the ocean. In order to do this, I employed the same basis ab of 100 toises as in the preceding triangle, from which I calculated another ao of 1339.46 toises, which was the second grand base required. The point o was a vessel riding at anchor in the quarantine of this port. The following were the angles of the triangle abo , taken in the same manner as those of the other triangles.

Angle $abo = 137^{\circ} 58'$
“ $ao b = 2 55$
“ $ba o = 39 07$

The angle of depression from the point a to the point o , was $19^{\circ} 49'$, and of course, the angle of elevation from the point o to the point a , was the same. From these data, I ascertained that the point a was elevated 48.26 toises above the ocean. The height of the eye above the point a , in taking the angles of elevation and depression, was 1.5 toises; and the state of the atmosphere at the time that the angles were taken, was perfectly serene, on account of which, I only deducted, for the effect of refraction, 2.34 toises. Hence we may infer from the foregoing operations,

that the absolute height of the Peak of Teneriffe, above the level of the ocean, is 1905·65 toises,* or 12,177 English feet.

From the action of the elements, and the numerous lateral eruptions to which this mountain has been subject these last two centuries, its elevation has been considerably diminished. I am informed that the appearance of its summit was sensibly altered after the deluge of 1826, and to compare the present outline of its summit with the ancient drawings of it, there is but a very faint resemblance.

It has been asserted, that volcanoes always increase in height, until they are extinguished, when they begin to fall, and, by degrees, sink into the caverns below. This, undoubtedly, has been the case in the present instance, the lateral eruptions having exhausted a great quantity of the bowels of the mountain, and the portions above, being too heavy for their hollow foundations, have given way and settled down into the mountain. Some are of an opinion, however, that the crater of this volcano has never been totally extinguished, and that another grand eruption is approaching, from the fact that a hot vapor issues from its nostrils, which is said to have gradually increased in temperature within these last thirty years. This may be the case, but it is a matter of uncertainty; for the first time that I visited this volcano, the vapor had a temperature of more than 220° , and about two weeks afterwards, I found that it had a temperature of only 160° ; but one of the probable causes of this change was, that the summit of the mountain existed under very different circumstances, at one time a tremendous hurricane, and the other, scarcely a breath of wind.

For many evenings past, my attention has been particularly arrested by an extraordinary brilliancy of the zodiacal light, and the sudden departure of the twilight. The former is a beautiful phenomenon, constantly existing at the equator, and presents itself just before sunrise or after

* My first basis was divided into toises of 6·39 English feet each, and of course, all the distances calculated from it, were of the same proportion; but more accurately the French toise contains 6·3957 feet; hence the Peak has an elevation of about 1904 toises.

sunset, under the appearance of a serene whitish clearness, resembling the galaxy. It has the form of a pyramid, with its base turned towards the sun, and its axis in the zodiac. As we approach the poles, it appears towards the end of winter, and in the spring, after sunset; and in autumn, or the beginning of winter, we observe it before sunrise. Many theories have been advanced with regard to its cause, but none of them satisfactory; it must be referred, however, either to the nature of the terrestrial atmosphere, or to the position of the globe with its relation to the sun. The delightful spectacle of the dawn and of twilight, is almost entirely denied to those who live in the regions of the equator, where the sun rises in a direction nearly vertical; the light or darkness comes on very near the time that the sun approaches or recedes from the horizon. It is towards the poles that these reflected splendors are the longest visible. As we pass northward, or southward from the equator, they become brighter and brighter, until they change the whole of the night into a magic day.

Port Orotava, Friday, }
October 4, 1833. }

LETTER XV.

Departure from Orotava.

AFTER a protracted and satisfactory visit at Port Orotava, I took leave of my intelligent and hospitable friend, Mr. Diston, whose kind attentions I gratefully acknowledge, and shall long cherish them in my remembrance. Early in the morning of the 7th instant, I was prevailed upon to visit some of the large wine cellars, connected with the "Salvador House," in London, known under the firm of Pasley, Little & Co. It was extremely gratifying to observe the systematic manner in which they conducted their business. The better classes of their wines are fabricated with the most careful attention, and are shipped to Europe and America under the name of *Teneriffe particular wine*, and are generally drunk for Madeira. A very bad practice exists here in bringing considerable quantities of inferior wines from Palma and other islands, and shipping them for those of Teneriffe, in consequence of which, they have gone into less repute. In truth, there are actually more wines disposed of in Europe alone under the name of Madeira and Teneriffe, than all these islands produce, including every kind.

At eight o'clock, I took my departure on foot, and continued my way as far as Matanzas. The morning was splendidly beautiful; not a wandering vapor tinged the deep-blue sky, nor scarce a breath warped the silver mirror of the sea. Myriads of glittering insects were sporting in the sunbeams, and birds of the most brilliant plumage were gliding through the air, alternately perching on the fig-trees. Among them, I observed that the canary birds, (*Fringilla canaria*. LIN.) held an appropriate rank. They were, in general, of a dingy, greenish-gray, but some of

them had a yellowish tint on their backs. They appeared to be less disposed to sing than the domestic canary, and their note less musical, although it has been remarked, that those which inhabit Grand Canary and Montaña Clara, have a more harmonious song, proving in a degree, that under every zone, among birds of the same species, each flock has its peculiar note. The domestic yellow, or mottled canary, is a variety which has taken birth in Europe, being the offspring of the wild canary and the German siskin, (*Fringilla spinus*. LIN.)

Early yesterday morning I pursued my way to this city, called by the people here, Laguna. It is situated on an elevated plain which unites with the Valley of Tacoronte, of which travellers of all nations speak with rapturous enthusiasm. This delightful country extends from this llano to San Juan de la Rambla, and presents scenes of unrivalled beauty. The plain on which this city stands, was formerly the bed of a lake, and takes its name from the Spanish word, *laguna*, a lake. By the annual increase of the alluvion from the neighboring mountains, it is now converted into richly-cultivated fields and gardens. No longer than eighty years ago, some portions of it were so fenny, that boats remained here during the year; and even at the present day, in the rainy seasons, the water sometimes collects and forms a large pool, or lake, and the inhabitants make use of boats to pass from one place to another.

This city, in 1830, contained 6,600 inhabitants, and is nominally the metropolis of the province. Formerly, Las Palmas in Canary, bore that title, and yet is so much so, that the Audencia, or Supreme Civil Court, is held there. But virtually, Santa Cruz may be regarded as the capital, it having been the residence of the Governor General, who, in virtue of his military office, has been the President of the Audencia, for more than a century. This city has a university, two parish churches, and five convents. It has no trade, being inhabited by many of the nobility of the island.

Cuidad de San Cristobal de la Laguna, }
 Thursday, October 10, 1833. }



210°

15°

35°

Eight Rocks

MADEIRA ISLES

Madeira

Porto Santo

Pt. St. Lorenzo

Desertas

Funchal

30° N.

Salvages

30°

CANARIES

Lanzarote

Montaña Clara

Graciosa

Alegranza

Poca del Este

Fuerte de Naos

Fuerte Ventura

C. Blanco

Falma

Hidalgo Is.

Teneriffe

Santa Cruz

Canary

Las Palmas

Gomera

Hierro

Valverde

S. Sebastian

Ortiz

Garachico

Peak

Canactaria

Puerto Nuevo

Lobos

C. Bojador

AFRICA

210° West from Greenwich

15°

Pendleton's Lithog. Boston

LETTER XVI.

Topography.

ALTHOUGH it is equally remote from my intention, as it is from my power, to give a complete account of these islands, a few succinct remarks on their history and topography may not appear superfluous, premising that I can speak, from my own knowledge, only of a few weeks passed on this island. Whatever relates to the rest is deduced from undoubted authority.

Properly speaking, the number of the Canary Islands is twelve; but Alegranza, Graciosa, Moutaña Clara, Lobos, and Roca del Este, being small uninhabited rocks, affording few topics of description, I shall only speak of the other seven.

<i>Situation, Extent and Population.</i>							
LEAGUES.							
	Lat. N.	Long. W.	Length.	Breadth.	Circumference.	Area.	Pop. in 1830.
Teneriffe, . .	28° 15'	16° 40'	17	9	48	83-805	70,968
Canary, . . .	28 00	15 38	12	11	48	68-361	57,625
Palma,	28 42	18 00	10	9	27	32-136	28,693
Lanzarote, . .	29 00	13 50	10	5	24	34-352	15,404
Fuerteventura,	28 15	14 10	26	7	57	60-394	8,040
Gomera, . . .	28 27	17 20	8	6	22	9-436	9,000
Hierro,	27 15	18 10	7	5	24	6-625	4,336
Total.			90	52	250	295-264	194,066

TENERIFFE, the largest and the most important in wealth and population, is so varied in its soil, its climate,

and its productions, that it will be difficult for me to give even a general description of it. Every variety of soil and surface may be found within its narrow limits; sands as barren and as dreary as those of the deserts of Africa, rocks as precipitous and as magnificent as those of the Alpine regions, and fields and vineyards as fertile and as luxuriant as those of the most favored regions of the earth. Within the space of about sixty miles, every object of this *multum in parvo* must, of necessity, be in small portions, except the Peak, the mighty dome that crowns the edifice of the whole. Its staple commodities are wines, wheat, maize, barley, rye, pulse, potatoes, barilla, and archil. Its chief towns are Santa Cruz, Laguna, and Orotava which comprises two parishes, situated about two miles apart, one called by the natives El Puerto de la Orotava or Puerto de la Cruz, and the other La Villa de la Orotava; the former contains 3,956 inhabitants, and the latter 7,800.

GRAND CANARY, is perhaps, more favored by nature, than any of these islands. It possesses a very productive soil, and an abundance of springs of excellent water, which are made to irrigate the land to great advantage. Its staple products are the same as those of Teneriffe, except barilla. Its produce of grain is proportionably large, and is not subject to the same contingencies as that of the other islands, which merely depends on an abundant fall of rain at the proper season, to insure a plentiful crop. From the same cause, the fruit of this island is generally better than that of the others. Within these few years past, the culture of the olive has been zealously attended to, so that there is made, already, a considerable quantity of oil. The making of wine with the view of exportation, is also of a few years' standing; though not equal to that of Teneriffe, it is of a very fair quality.

The division of these islands in 1826 into two bishoprics, instead of being as formerly, all dependant on the see of Canary, is a great diminution of the wealth and influence of this island. Of the three ports of the province allowed to carry on a foreign import trade, that of Las Palmas, the chief town of this island, is one; and

those of Santa Cruz and Port Orotava in Teneriffe, the others. All other ports of these islands may export in foreign bottoms without difficulty; but to import, the vessel must first come to one of these three ports. Population of Las Palmas, 11,363.

PALMA is almost as varied in its soil and its surface, as Teneriffe, and still more precipitous on all but its western side, where there is an extensive district of llanos in a high state of cultivation. The centre of the island is thickly wooded, and numerous rills of water descend from the high lands, affording constant nourishment to vegetation. The chesnut-tree attains an enormous size, there being one, the trunk of which is partially hollow by decay, that served as a stall for a pair of oxen for several nights in succession. The staple products of this island, are the same as those of Teneriffe, except barilla. Besides a variety of fruit-trees indigenous to these islands, Palma contains an abundance of tamarind-trees, though they rarely give fruit. The sugar-cane flourishes well here, and the sugar produced from it, possesses a certain aromatic flavor, that is nowhere perceived in any other. There are also considerable quantities of silk reared on this island, and manufactured into garters and coarse ribbons. Many of the cocoons are transported to Teneriffe, where they are reeled, and in the raw state, exported to Spain for manufacture. Its chief towns are Santa Cruz, which contains 4,733 inhabitants, and Mazo, which has a population of 4,509.

LANZAROTE and FUERTEVENTURA, the two most eastern inhabited islands of this archipelago, though mountainous, are not worthy of being called high land, when compared with any of the others. They are mentioned together, as they are very similar in the sandy, arid nature of their soil, and in their produce, which is principally wheat, barley, and barilla. These two islands are entirely destitute of forests, or indeed, of any tree of size, except the date-palm, (*Phœnix dactylifera*. LIN.) It is generally believed, that the soil is too loose and shallow to allow trees to take sufficient root to withstand the violent winds that sweep

over them, besides the great want of water in both. To raise a supply of fruit, it is necessary to plant fig and pear-trees in circular holes about four feet deep, where they are sheltered from the winds, and derive most of their moisture in summer from the filtration of dew; so soon as the plant overreaches the top of the surrounding earth, it is stunted by the blast; but the quality of its fruit is excellent. The muscatel grapes and watermelons, are particularly fine on these islands. Lanzarote possesses in El Puerto de Naos, the only safe harbor during all winds, that there is in the province; whereas all the others are open roadsteads, or very indifferent bays. Its chief town is La Villa de Teguisse, which contains 4,424 inhabitants. The chief town on Fuerteventura, is Oliva, having a population of 2,181.

GOMERA and HIERRO may be linked together, being small islands, and of minor importance when compared with the others, though there are different features in the characters of each. The former is thickly covered with wood, and has an abundant supply of water. Its staple commodities are similar to those of Teneriffe, except barilla. The Gomerans are very tenacious of the honor of having given the West Indies the invaluable sugar-cane, from whom Columbus procured that plant, and transported it on his second voyage to America. The chief town of Gomera, is San Sebastian, which contains 1,500 inhabitants. There is also, in this island, a very good bay, which, though small, may be considered the best anchorage in the province with the exception of that of Lanzarote.

Hierro, on the contrary, is a high rock, covered with a thin soil, with only one spot on the circumference of its coast, where a safe landing can be effected, and water is extremely scarce. Its principal products are like those of Gomera, but less abundant. Its chief town is La Villa de Valverde.

Santa Cruz de Teneriffe, Friday, }
 October 11, 1833. }

LETTER XVII.

Natural History.

GEOLOGY.—The whole of this archipelago is particularly characterized by its igneous origin, and according to the conjecture of many geologists, this, together with the Azores, the Madeiras and the Cape de Verds, is the remains of a submerged chain of mountains, probably the ancient isle of Atlantis, which is in no way contradictory to the acknowledged laws of nature. But to verify or refute this conjecture will require more time than is allotted to my task.

The question has often been agitated, whether “the archipelago of the Canary Islands contains any rocks of primitive or secondary formation ; or is there any production observed, that has not been modified by fire ?” To this interesting question, I will reply that there are. On the authority of Broussonet, the island of Gomera contains mountains of granite and mica-slate ; and on a hill above Guimar in Teneriffe, fragments of the latter substance, containing beautiful plates of specular iron, have been found. In passing over Las Cañadas, I repeatedly observed masses of granitic lava which had evidently been thrown from the crater of the Peak. From these facts, it appears that in this archipelago, as well as the Andes of Quito, in Auvergne, Greece, and a greater portion of the globe, the subterranean fires have forced their way through the rocks of primitive formation.

From the information of several well-informed gentlemen of this island, I learn that there are secondary formations in Grand Canary, Lanzarote, Fuerteventura, Graciosa, and Teneriffe. At Lanzarote, there are large quantities of calcareous stone which the natives burn into lime.

On Graciosa, there are beds of marl, containing large quantities of chalk which strongly effervesces with nitric acid, "and even on points where it is found in contact with the basalt."* Near the foot of the mountain of Tagayga between Realejo de Abaxo and San Juan de la Rambla, I am told that there are found a species of marble, and some vegetables, either incrustated with calcareous sand, or are petrified. Teneriffe, also, exhibits among its alluvial deposits, an abundance of clayey calcareous tufa, which alternates with volcanic breccia, and which, according to Mr. Viera,† contains, near San Juan de la Rambla, and Candelaria, plants, impressions of fishes, buccinites, and other fossil marine productions. Just on the borders of El Llano de Gaspar, I observed a great number of the impressions of ferns on some horizontal beds of basaltes, and in a stratum of breccia in a ravine between Santa Ursula and Port Orotava, I observed several recent terrestrial shells, (*Helix*?)

Geology and Mineralogy of Teneriffe. In travelling from the sea-shore to the summit of the mountains, the lowermost stratum that we meet with, is composed of huge masses of yellowish-brown basaltes, generally columnar, and somewhat irregular in their forms, compact and partially decomposed. They contain hornblende, olivine, and translucent pyroxenes, the latter being of a perfectly lamellar fracture, of a tender olive-green tint, and often crystallized in six-sided prisms. The first of these substances is extremely rare on this island, and very seldom occurs in the modern lavas. Directly above these ancient basaltes, there are strata of breccia resembling volcanic tufa, which are found on both sides of the island, situated about 300 or 400 feet above the ocean. They contain fragments of the same basaltes that they cover, and often recent terrestrial shells; and it is asserted by Mr. Viera, that the remains of marine petrifications are found in them. Next in succession above, is a stratum of ferruginous earth, overlaid with a dark argillaceous soil, containing crystals of pyroxene, and fragments of compact lava. Next comes a

* Humboldt.

† Noticias Historicas de las Canarias, l. i. p. 35.

lofty range of mountains which encircle the Peak, and extend themselves towards Laguna, and la Punta de Naga, their highest pinnacle being elevated about 9000 feet above the level of the ocean. They appear to be composed principally of basaltes of more recent origin than those of the lower stratum, but they contain a variety of other substances. Near La Punta de Naga are found zeolites, and a greater portion of their highest pinnacles near La Agua Mansa, is composed of ferruginous sand which appears to have withstood the action of fire. Just on the borders of El Llano de Gaspas, we meet with large masses of very ancient basaltes which contains some distinct impressions of ferns. On the southern side of this range of mountains, in El Valle de Ucanca, there is found an abundance of feldspathic lava, and near by, at La Agua Agria are large beds of talcose slate. And in the same range on the eastern side of El Valle de Santiago, there occurs an abundance of pyroxenic lava containing olivine, and in a deep stratum of yellowish earth resembling tufa, there are found millions of crystals of pyroxene of a very large size, and a variety of forms. But whether these substances found on the southern side of the mountains are the products of the present volcano, it is difficult to determine.

This range of mountains, and the products of the present volcano, are separated by strata of tufa, puzzolana, and other disintegrated lavas. A beautiful variety of the former occurs on the northern side of the mountain near El Valle de Ucanca. The currents of lava that I met with on the slopes of these mountains, were black masses, partially decomposed, and often cellular, having oblong pores. Their basis is wacke, and when porous, they resemble amygdaloid. Their fracture is irregular, and in some instances, conchoidal. They are not divided into regular columns, but occur in very thin layers irregularly inclined. They contain a considerable quantity of olivine, small grains of magnetic iron, and augites, the color of the latter varying from a deep green to an olive tint.

Next in succession above the tufas, etc., comes the great elevated llano of Las Cañadas, which contains about ten square leagues, and is composed principally of small

fragments of pumice-stones, which are often reduced to powder resembling ashes. In examining them with a lens, there may be discovered among them, minute particles of feldspar and pyroxene. This llano separates the dark, basaltic, and earth-like lavas from the vitreous and feldspathic varieties, the bases of the latter being obsidian, pitch-stone, and pyroxene. The feldspathic lavas are destitute of hornblende and mica, and are of a blackish-brown, often varying to the deepest olive-green. They contain large crystals of feldspar which are not fissured, and seldom vitreous. When the basis of the feldspathic lava changes from pitch-stone to obsidian, the color is paler and mixed with gray; in this case, the feldspar passes by imperceptible gradations from the common to the vitreous. Sometimes both varieties are found in the same fragment.

There are three varieties of obsidian met with, on the Peak. The first occurs in large blocks several yards long, which often have a globular figure. It contains a quantity of vitreous feldspar, of a snowy whiteness, and has a most brilliant pearly lustre. It is of a brownish-black, but little translucent at the edges, and has an imperfect conchoidal fracture, and passes into pitch-stone. The second variety is found in much smaller fragments, and is generally of a greenish-black, but sometimes of an obscure gray, and very seldom of a jet black. Its fracture is perfectly conchoidal, and is extremely translucent at the edges. The third variety is the most remarkable of the whole, from its connexion with pumice-stones. It is like the former, of a greenish-black, and sometimes of an obscure gray, but occurs in very thin plates, alternating with layers of pumice-stone. The fibres of the pumice-stone are very seldom parallel to each other, and perpendicular to the strata of obsidian; they are most commonly irregular, and abestoidal, and instead of being disseminated in the obsidian, they are found simply adhering to one of the external surfaces of the substance.*

*Obsidian was called by the Guanches, *tabona*, the splinters of which they fixed to their lances, instead of iron. They carried on a considerable trade in it with such of the neighboring islands, as were accessible to them.

Near the verge of the crater, and often upon its walls, there is a saline efflorescence, called by the natives *el salitron*. They are very eager to procure it for the preparation of matches which they make, by dipping pieces of paper or tow into a solution of it. The matches readily become ignited, and do not sparkle as if dipped into pure nitre. Along the sea-shores of the northern side of this island, there are often found hanging from the cliffs, stalactitic salt, of a very pure quality.

Having examined the exterior structure of the island, and the composition of its volcanic productions from the sea-shore to the top of the mountain, I will now offer a few remarks on its internal structure and its eruptions.

As the Peak appears to rise amidst a system of basaltes and old lava, all of igneous origin, it has been supposed that this colossal pyramid is the effect of a progressive accumulation of lavas, or that it contains in its centre, a nucleus of primitive rocks, covered with lavas which are the same substances modified by fire. To verify or refute this supposition, would cause me to wander too far from the principal object of my task.

In regard to the first eruptions of the Peak, we seek in vain in the writings of the Greek and Roman geographers, which contain no passage that we can reasonably apply to this volcano. Of all the written testimonies, the oldest I have found of the activity of this volcano, dates from the latter part of the fifteenth and the beginning of the sixteenth centuries. In the life of Christopher Columbus, by his Son, it is related that in August, 1492, he saw flames gush out of the Peak in the night; and in the narrative of a voyage by Aloysio Cadamusto, who landed at these islands in 1505, he positively affirms that this mountain burns without interruption, and that the fire has been seen by christians retained in slavery by the Guanches. The Peak, therefore, was not at those times in the state of repose that it exists at present, nor have we any authentic account that fire or even smoke, has been seen to rise from the summit, that was visible at a distance since those dates.

It is supposed that the whole group of these islands is placed, as it were, on a great submarine volcano, and that

the fire sometimes forces its way out of one island, and sometimes out of another. Teneriffe alone contains in its centre an immense pyramid, which discharges lavas from one century to another; whereas the other islands have broken out in various places. The following is a statement of the volcanic eruptions which have occurred since the middle of the sixteenth century.

On the 15th of April, 1558, a volcano burst out in the isle of Palma, near a spring, in El Partido de los Llanos. A mountain rose from the earth and formed a crater at the top, which discharged a current of lava 200 yards in breadth, and more than 5000 in length. The lava flowed to the ocean, raising the temperature of the water at a considerable distance around, and destroyed a great number of fishes.

On the 13th of November, 1646, another volcanic mouth was opened in Palma, near Tugalate, and two other mouths were formed near the sea-shores. In 1677, a third eruption took place. La Montaña de las Cabras threw out scoriæ and ashes through a multitude of small mouths, which were formed in succession.

On the 31st of December, 1704, the Peak of Teneriffe formed a lateral eruption in El Llano de los Infantes above Ycore, near Guimar, which was preceded by a tremendous earthquake.* On the 5th of the January following, a second opening took place in El Baranco de Amerchiga, a league from Ycore. The lavas were so abundant, that El Valle de Fasnía, or Areza, was nearly filled up. This second mouth continued to discharge lavas eight days, and then ceased flowing. A third mouth was formed on the 2d of February, the same year, in La Cañada de Arafo. The lavas divided into three currents, and would have destroyed the town of Guimar, had they not been stopped in El Valle de Melosar by a chain of rocks, which formed an insuperable barrier to their course. During these eruptions, Orotava experienced heavy shocks.

On the 5th of May, 1706, another grand lateral eruption of the Peak took place. The mouth opened at the south

* At Teneriffe, the shocks have hitherto been very inconsiderable, and limited to a small extent of ground.

of the port of Garachico, which was at that time the finest and the most frequented harbor in the island. Two currents of lava rushed down upon the town, and in a few hours, not a building was left standing. This port was so filled up that the lavas formed a promontory in the midst of it. In the vicinity of the town, hills rose in the plain, the springs became dry, and the rocks, shaken by frequent earthquakes, remained naked, without vegetation, and without mould.

On the 1st of September, 1739, an awful catastrophe took place on the island of Lanzarote. A new volcano broke out at Temanfaya, the lavas of which, and the earthquakes that accompanied the eruption, destroyed a considerable number of villages. The shocks continued about six years, and a greater portion of the inhabitants of this island fled to Fuerteventura. During this eruption a column of thick smoke was seen to issue from the sea, and pyramidal rocks rose above its surface, and gradually augmenting, became a part of the island itself.

On the 9th of June, 1798, another lateral eruption of the Peak broke out on the flanks of La Montaña Colorado or Chahorra, which lasted three months and six days. The lavas were discharged by four mouths, placed in a right line. When the lava had gained twenty or thirty feet in height, it advanced three feet every hour, and rocks were ejected from its mouth to the height of more than 3,000 feet.

In the autumn of 1824, a second eruption in the island of Lanzarote occurred on its northern side, and continued intermittantly for nearly three months, and from one of the craters a muddy saline water of boiling heat was ejected to the height of thirty-six feet. Happily, the injury caused by this eruption was very light.

The lateral eruptions of the Peak of Teneriffe is a very remarkable geological phenomenon, which contributes to create mountains that are produced by the principal volcano, and appear to be isolated. I observed that almost all the extinct craters, except the principal one, that the island affords, occur below the girdle of mountains that surround the Peak. On the southern side of the island, in El Valle de las Calderas, there are nearly forty conical

hills, having extinct craters; and in the Valley of Orotava there are two considerable hills which rise in the form of bells. One is called by the natives *La Montañita de la Villa*, and the other *La Montañita del Frayle*, the former being elevated about 800 feet above the ocean, and the latter about 1,000 feet. Humboldt advanced an opinion that these paps owe their origin to the lateral eruptions of the great volcano. They have already emitted lavas, and according to the tradition of the Guanches, the eruption of *La Montañita de la Villa* took place in 1430. The craters of both of these hills are still visible, and some portions of their black, scoriaceous sides are yet unproductive of vegetation.

The following table exhibits the names of the principal points of Teneriffe, with their approximate heights above the level of the ocean, and the temperature of the air and of boiling-hot water, by Fahrenheit's scale.

	Temp. of the Air.	Of Hot Water.	Approximate Height.
El Pico de Teyde,	72°	190°	12,200 feet.
La Rambleta,	77	190·9	11,700 "
La Cueva del Yelo,	43	192	11,100 "
La Alta Vista,	70	192·75	10,600 "
La Estancia de los Yngleses,	74	194·5	9,800 "
La Montaña de Taygayga,	70	199	7,000 "
Las Cañadas,	76	200	6,500 "
La Ermeta de la Chasna,	66	203·5	4,700 "
La Agua Mansa,	64	205	3,700 "
Ycod del Alto,	76	206	3,200 "
El Llano de la Laguna,	75	207·8	2,200 "

The island of Teneriffe is particularly remarkable for the infinite number of caverns which it contains. They are found in almost every declivity that the island affords, and many of them are of surprising extent. In the vicinity of Ycod there is one which has been penetrated more than a quarter of a mile without reaching its extremity; and there is another in the vicinity of Santa Cruz, in which numbers of people have been lost for their temerity in going in too far; consequently its mouth has been closed by a wall. Many of these caverns on the more elevated portions of the mountains serve as reservoirs for ice and snow, and indeed they form the finest ice-houses in the world, preserving it during the hottest summers.

The investigation of caverns has as much relation to the geologist as it has to the antiquary, for it has been as-

certained that in caves in the south of France, human remains have been found along with bones of quadrupeds the species of which are now extinct. The examination of caves and caverns has been particularly recommended to travellers, as not only being intimately connected with the early history of man, and his condition in a low state of civilization, even at the present day, but also with the geological history of our species, and that of several of the more powerful and interesting species of quadrupeds.

Although a considerable quantity of rain falls here at certain seasons, these islands afford comparatively but few springs. This may be accounted for, however, by examining the nature of the rocks. When two formations come together, the lower one dense and compact, and its upper surface above the level of the neighboring country, and the upper formation soft and porous, springs will occur abundantly around the line of junction of the two formations. In this case, the rain filtrates through the porous formation, and progresses downward until it is arrested by the surface of the dense formation, where it accumulates, and either remains stationary, or finds an opening at the surface, and issues in the form of springs. On the contrary, if the porous formation extended below the level of the surrounding country, the percolating water would descend so far that it could not find an issue. This discloses a very important fact relating to the geology of Teneriffe. For I have not observed in any part of the island, where a spring took its first issue from the earth below 3,000 feet above the level of the ocean, which proves that there exists a formation of dense and compact rocks below that height.

Springs of mineral waters occur in many parts of the island, the most important of which I mentioned in a former part of this work.*

BOTANY OF TENERIFFE.—Strictly speaking, the island of Teneriffe, in its present state, exhibits but three zones of vegetation. They occur one above the other, and occupy, on the steep declivity of the Peak, its whole per-

* Vide pp. 57 et 59.

pendicular height. The two lower regions occupy about 3,000 feet each; and the upper one, the remaining portion of the mountain.

The first zone commences at the sea-shore, and comprises nearly all the inhabited parts of the island, and those which are under careful cultivation. It contains nearly all the culinary vegetables and fruits of the temperate and the torrid zones, besides a great number of indigenous plants. In this region, we meet with eight species of arborescent euphorbiæ, two species of mesembryanthema, two of cacaliæ, one of the dracæna, and other plants with naked trunks, succulent leaves, and bluish-green fruit, which exhibit features of African vegetation. It is in this zone, too, that we find the date-tree, the banana, the sugar-cane, the orange, the cocoa, and the bread-fruit, all distinct inhabitants that adorn and increase the majesty of the landscape in regions near the equator.

The second zone commences at an elevation of about 3,000 feet above the ocean, and includes nearly all the sylvan tracts that the island affords. This region, constantly irrigated by clouds and springs, presents a scene of perpetual verdure. Lofty forests of the chesnut, the pine, the laurel, and the oak, crown the hills, intermingled with the visnea, the olea, the myrica, the sideroxylon, the arbutus, the juniperus, and a vast quantity of ferns. It is in this region that we find the golden campanula, the chrysanthema, the hyperica, and a number of aromatic plants.

The third and last zone commences at the height of about 6,000 feet above the level of the ocean, and includes the whole of Las Cañadas, and the vast pyramid of the Peak. It is the most sterile part of the island, where heaps of pumice-stones, obsidian, and tracts of lava, impede the growth of vegetation. Its principal plants are those verdant islets of Alpine broom, (*Spartium nubigenum*. LIN.) a few species of herbaceous plants, and the beautiful *Viola cheiranthifolia* which flourishes amid regions of eternal snows and barren grandeur. Towards the summit of the Peak, the *urceolaria* and other cryptogamous plants appear, and even some are found within the verge of the crater.

The following table exhibits the names of some of the most important species of plants that grow on this island, and the approximate height above the ocean that they vegetate, with the names of their locations. It has reference only to their perfect vegetation, not to their mere existence above the soil, from local or incidental causes. For example, plants flourish in warm valleys on the south side of the island at a greater elevation than on the north side, and many plants appear of a stunted growth far above their natural zone.

<i>Names and localities.</i>	<i>Approximate elevation above the ocean.</i>
* <i>Pinus canariensis</i> , vicinity of Chasna,	5,400 feet.
<i>Cupressus sempervirens</i> , Chasna,	4,500 "
* <i>Juniperus cedro</i> , in the vicinity of La Punta de Teno,	4,000 "
<i>Platanus orientalis</i> , Botanic Garden at Durasno,	300 "
<i>Platanus americana</i> , do	300 "
<i>Fagus sylvatica</i> , Valley of Orotava,	3,000 "
<i>Castanea vesca</i> , La Agua Mansa,	3,700 "
* <i>Quercus canariensis</i> , Montaña de Tagayga,	4,000 "
<i>Populus alba</i> , Botanic Garden at Durasno,	300 "
<i>Morus alba</i> , Valley of Orotava,	1,500 "
" <i>nigra</i> , " "	1,500 "
<i>Ficus curica</i> , San Miguel,	2,200 "
* <i>Ricinus communis</i> , Villa Orotava,	1,000 "
* <i>Euphorbia canariensis</i> , Guia,	1,000 "
* <i>Trifolium fragiferum</i> , Valley of Orotava,	1,500 "
* <i>Lupinus angustifolia</i> , Ycod del Alto,	3,200 "
* <i>Genista canariensis</i> , El Llano de Gaspas,	5,000 "
* <i>Spartium nubigenum</i> , Las Cañadas,	6,500 "
<i>Mimosa farnesiana</i> , Laguna,	2,200 "
<i>Amygdalus persica</i> , Chasna,	4,000 "
* <i>Fragaria vesca</i> , Valley of Orotava,	3,000 "
<i>Rosa centifolia</i> , Botanic Garden at Durasno,	300 "
<i>Pyrus communis</i> , Villa Orotava,	1,000 "
" <i>malus</i> , La Agua Mansa,	3,700 "
* <i>Cactus Opuntia</i> , Guia,	1,000 "
<i>Ribes rubrum</i> , Villa Orotava,	1,000 "
<i>Linum usitatissimum</i> , Matanzas,	2,000 "
<i>Dianthus virginea</i> , Botanic Garden at Durasno,	300 "
* <i>Ruta graveolens</i> , Laguna,	2,200 "
* <i>Viola cheiranthifolia</i> , La Rambleta,	11,700 "
<i>Gossypium arboreum</i> , Botanic Garden at Durasno,	300 "
<i>Vitis vinifera</i> , Los Silos,	800 "
<i>Citrus aurantium</i> , Botanic Garden at Durasno,	300 "
" <i>medica</i> , Santa Cruz,	100 "
<i>Isatis tinctoria</i> , Laguna,	2,200 "
<i>Brassica oleracea</i> , Laguna,	2,200 "
" <i>rapa</i> , do.	2,200 "
* <i>Daucus carota</i> , do.	2,200 "
* <i>Papaver rhœas</i> , do.	2,200 "
* <i>Anethum feniculum</i> , Valley of Orotava,	1,500 "
* <i>Apium petroselinum</i> , Villa Orotava,	1,000 "
* <i>Rubia fruticosa</i> Laguna,	2,200 "

* Those names which have a star before them, indicate indigenous plants.

* <i>Artemisia arborescens</i> , Valley of Orotava,	500 feet.
<i>Coffea arabica</i> , Laguna,	2,200 "
<i>Lactuca sativa</i> , Laguna,	2,200 "
<i>Convolvulus batatis</i> , Laguna,	2,200 "
* <i>Capsicum annuum</i> , Laguna,	2,200 "
<i>Solanum tuberosum</i> , Laguna,	2,200 "
<i>Thymus serpyllum</i> , Laguna,	2,200 "
<i>Lavandula spica</i> , Laguna,	2,200 "
* <i>Rosmarinus officinalis</i> , Laguna,	2,200 "
<i>Olea europea</i> , Villa Orotava,	1,000 "
<i>Laurus persea</i> , Valley of Orotava,	500 "
<i>Laurus cinnamomum</i> , Laguna,	2,200 "
<i>Artocarpus incisa</i> , Laguna,	2,200 "
<i>Musa paradisiaca</i> , Santa Cruz,	200 "
" <i>sapientum</i> , Santa Cruz,	100 "
<i>Agave americana</i> , Matanzas,	2,000 "
<i>Allium cepa</i> , Villa Orotava,	1,000 "
<i>Dracaena draco</i> ,* Villa Orotava,	900 "
<i>Phoenix dactylifera</i> , Villa Orotava,	900 "
<i>Zea mays</i> , Chasna,	4,000 "
<i>Secale cereale</i> , Valley of Orotava,	3,000 "
<i>Triticum æstivum</i> , Chasna,	4,000 "
* <i>Hordeum murinum</i> , Matanzas,	2,000 "
<i>Avena sativa</i> , Chasna,	4,000 "
* <i>Saccharum officinarum</i> San Juan de la Rambla,	500 "

ZOOLOGY.—In the present division, I propose to exhibit a brief summary of the natural history of the animals belonging to these islands, and for the sake of order, continue with a certain degree of systematic arrangement. The first class that comes under consideration, is the

Mammalia. These islands contain no wild animals at present, except rabbits, † ferrets, ‡ and a few wild goats § in the more elevated parts of Teneriffe, and in Fuerteventura, where they have been known from time immemorial. The rabbits are of a much smaller size than those of the same species in Europe, hundreds of which, are destroyed every year by the ferrets. In Gomera, there was formerly a species of small deer, (*Cervus*) but it is now many years since it was exterminated. The present domestic animals are horses, asses, mules, oxen, camels, goats, sheep, swine, cats, and dogs. Of the latter, a fine, powerful brindled variety yet exists in Lanzarote, the genuine descendants of the breed formerly so numerous in a wild state, as to have caused the name of *Canaries* to be given to these islands, in allusion to which, the supporters of the

* This tree, although a native of the East Indies, is also found on Gomera, Palma, and Canary.

† *Lepus coniculus*.

‡ *Viverra furor*.

§ *Capra hircus*. LIN.

provincial coat of arms are two dogs. The barking of the dogs here, even those brought from Europe, has degenerated into a howling noise. At the equator, as well as towards the poles, this animal almost entirely loses his voice. It has been asserted, that there were formerly large numbers of wild asses, (*Equus asinus*. LIN.) on some of these islands, and many of their descendants exist here at the present day, partaking of a considerable share of native elegance. Although this animal has long been condemned to a state of the lowest servitude in Europe, and looked upon with contempt, it exhibits, in its natural state, an appearance of great beauty and vivacity. It is said that the original stock were white, or a pale silver-gray, with a slight tinge of straw-color on the sides of the neck and body; along the back ran a deep-brown stripe of thickish, wavy hair to the beginning of the tail, and this stripe crossed over the shoulders, as in the domesticated animal, by another of a similar color; but it is said that this was peculiar to the male only. At the time that these islands were invaded by the Normans, the natives possessed all the other animals before enumerated, except horses and camels. There are but a few of the latter on Teneriffe, while they live and propagate by hundreds in Lanzarote and Fuerteventura. These "ships of the desert," as well as horses, were brought to these islands in the 15th century, by the Normans.

Birds. Although the general aspect and situation of these islands are unfavorable to the existence and multiplication of birds, there is a considerable variety.

The first that claim our attention are the carnivorous tribes. Of the falcon genus, there are several species, one of which migrates to Africa. There are also several species of striges, one of which is called by the natives, *el apagador*, and creates great terror among them in the night.

Of the hirundine family, there are the swift, (*Hirundo apus*) the common swallow, (*H. rustica*) and the martin, (*H. urbica*. LIN.) the latter remaining here at least nine months in the year.

Among the fringillidæ, we notice the goldfinch, (*Fringilla carduelis*) the chaffinch, (*F. cælebs*) and the green canary-bird, (*F. canaria*. LIN.) the last of which I noticed in a former letter.

Of the raven genus, we meet with the carrion-crow, (*Corvus carone*. LIN.) and a species of raven. There is also a species of upupa found here.

Next in consideration, come the gallinaceous tribes. To pass over the common domestic fowls of Europe, we find at Teneriffe, the Barbary partridge, (*Perdix petrosa*. BRISS.) the common quail, (*Tetrao coturnix*. LIN.) and in Fuerteventura, there is found a small species of grouse called by the natives, *la ganga*. It has a black breast and very small legs and feet. In the same island, there is a species of bustard, nearly as large as a turkey, called by the natives, *la albutarda*. It is never known to fly, but runs along, flapping its wings very fleetly. It is so watchful that it cannot be taken by the sportsman without his devising some peculiar stratagem. Neither of these birds will breed in any of the other islands, nor will these grouses remain there, for their young have been transported to Palma, where there were none, and even their eggs have been carried there and hatched; but so soon as the brood had strength to fly, they proceeded to their favorite isle.

Of the columbine genus, we meet with the turtle-dove, (*Columba turtur*. LIN.) and the radiant plumage of the migratory pigeon

“Fills many a damp obscure recess
With lustre of saintly show.”

Among the wading birds, the woodcock and the snipe inhabit these islands. The other water-birds that frequent these shores, are the long-winged terns, (*Sterna tenuirostris*. TEMM.) Several species of gulls, and the stormy petrel, (*Thalassidroma wilsonii*. BONAP.)

Reptiles. Intermediate between the birds and fishes, are the reptile race; but fortunately for these islands, they do not brood with those horrid monsters that spread terror to almost every portion of the African regions.

Among the chelonian reptiles, there are two species of Chelonix, the green-tortoise, (*Chelonia mydas*. BRONGN.) and one other kind.

Among the saurian tribes, we observe but two species of true lizards, (*Lacerta*. LIN.) one of which abounds here, and is very destructive to the grapes. Some of them

are nearly a foot in length, marked with an azure spot on each cheek, which they inflate when disturbed. We also notice a small gecko* here, called by the natives, *el perenquen*. It secretes itself in some dark corner in the houses in the day-time, and moves about in the night, when its eyes appear luminous like those of the cat. It is as bloated and loathsome in appearance as the toad, and is regarded as harmless.

Of the ophidian reptiles or serpents, not a species exists, nor can be made to live here. And it is asserted that there is not a venomous animal of any kind to be found on these islands.

Among the batrachian reptiles, or frogs, there is but one small species which frequent pools and springs.

Fishes. The next great class that demands our attention, is that of the finny race. From the inconceivable and continuous nature of the element which they inhabit, and the ample facilities that they possess for dispersion, it is difficult to give even a general account of them. For the present, however, I must confine myself to a brief allusion to a few species.

1st. *Scomberoides*.—Several of this family occur, among which we meet with the tunny, (*Thynnus*. CUV.) and the sword-fish, (*Xiphias gladius*. LIN.)

2d. *Labroides*.—In this family, we notice the parrot-fish, (*Scarus*. LIN.)

3d. *Fistularidæ*.—In this family, we find a species of pipe-fish, (*Fistularia*. LIN.)

4th. *Esoces*.—In this family, we recognize the flying-fish, (*Exocetus volitans*. LIN.)

5th. *Clupeæ*. In this family, we meet with the common herring, (*Clupea harengus*. LIN.)

6th. *Gadites*.—In this family, occur myriads of cod, (*Gadus morrhua*. LIN.)

7th. *Anguilliformes*.—In this family, we notice several species of eels, among which, we find the conger, (*Muraena conger*. LIN.)

8th. *Selachii*.—In this family, we meet with the shark, (*Carcharias*. CUV.) and the skate, (*Raia*. LIN.)

* Askalarotes. CUV.

Mollusca and Shells. The next classes that merit our attention, are the mollusca and conchifera of these islands. They are peculiarly rich in shells, many species of which are distinguished by their beautiful forms and splendid colorings, and are highly valuable in consequence of their comparatively rare occurrence in cabinets. But unfortunately, the heavy surf which constantly thunders round these rocky shores, appears to prevent them from being gathered in a perfect state.

A few of the more remarkable animals of these classes are as follows:—

In the order cephalopoda, we meet with the cuttle-fish, properly so called, (*Sepia officinalis*) the Spirula peronii, and the Argonauta argo.

In the order pulmona, we observe the common field-slug, (*Limax agrestis*) and a number of helices, among which, we notice the *Helix lactea*, *H. bidentalis*, *H. diaphana*, *H. plicatula*, *H. maritima*, and the *H. aspersa*; we also observe the *Lima squamosa*, *Carocolla planaria*, *C. hispidula*, and the *Pupa maculosa*.

On several kinds of fuci about these shores, we notice the *Scyllæa pelagica*, and a species of *doris*.

Among the other orders, we meet with the *Bullæa aperta*, *Bulla ampulla*, *B. physis*, *Natica canrena*, *Trochus* (?), *Scalaria communis*, *Cyclostoma flavula*, *Janthina communis*, *Conus* (?), *Cypræa tigris*, *C. helvola*, *C. lurida*, *C. moneta*, *C. spurca*, *Marginella glabella*, *Mitra melaniana*, *Purpura rudolphi*, *Columbella rustica*, *Ricinula morus*, *Triton nodiferum*, (var.) *Triton* (?), *Dolium perdix*, (var.) *Fusus* (?), *Haliotis tuberculata*, *Patella vulgata*, *Spondylus gædaropus*, *Pinna rudis*, (var.) *Mytilus elongatus*, *Cardita calyculata*, *Venerupis irus*, *Cardium costatum*, *Lucina pecten*, *Venus verrucosa*, *Macra* (?), *Balanus* (?), *Serpula contortuplicata*.

Crustacea and Insects. Although these two classes of animals are extremely interesting on these islands, I did not devote much attention to them for the want of time, consequently my readers must be contented with the following brief detail:—

Among the crustacea, we notice a species of lobster, (*Astacus*. FAB.) and several species of land and other crabs peculiar to intertropical countries.

In the class arachnides, we meet with several species of spiders, one kind of which the natives tell long stories about, as being of a very poisonous nature; but no one can be found who has ever known any injury done by that animal.

In the suctoria tribes, we meet with an abundance of fleas, (*Pulex*. LIN.) which are very noisome in the summer months.

In the coleoptera order, there are to be found several species of carabici, among which, we observe the *Carabus agrorum*, (OLIV.) There also occur in this order, several species of pimeliæ, tenebrionites, and curculionites.

In the order orthoptera, we meet with myriads of cockroaches, (*Blatta*. LIN.) and the mole-cricket, (*Gryllus vulgaris*. OLIV.) and the field-cricket, (*G. campestris*. OLIV.) In this order, too, we find several species of locusts, the most formidable of which, is the African locust, (*Acrydium migratorius*. CUV.) alluded to in a former letter.*

In the order hemiptera, we find several species of cimices, in which we recognize the *Cimex lectularius*, (LIN.) much to be dreaded by the weary traveller when he retires to his night's repose.

In the order neuroptera, we notice several species of dragon-flies, (*Libellula*. FAB.) eminently distinguished for the brilliancy of their hues.

In the order hymenoptera, we observe several species of ichneumonides, among which, occur the *Ichneumon manifestor*, and the *I. bidentatus*, (OLIV.) We also observe among the ants, the *Formica rufa*, (OLIV.) and likewise several species of bees, among which, may be found wild, the common honey-bee, (*Apis mellifica*.)

In the order lepidoptera, we meet with the usual number of butterflies, (*Papilio*. LIN.) and moths peculiar to warm countries, among which, we find a large sphynx, and the silk-worm, (*Bombyx mori*. LIN.)

At last, we find in the order diptera, the usual quantity of flies and mosquetos, common to tropical climates,

* Vide pp. 6 et 7.

which serve to keep the blood in free circulation, and prove exceedingly offensive at first, to the visitors of these islands.

Animalia Radiata. I come now to the last of the animal kingdom, called zoophytes,—“although the lowest in the scale of animated beings, yet highly interesting in the sublime plan of creation. Their numbers exceed all calculation; the minuteness of many species is such, that they cannot be discriminated by the aid of the most powerful microscopes.” Among this class of animals, these islands are not destitute of their share, but whatever relates to them I must pass over in silence.

METEOROLOGY.—Mr. Anderson, the naturalist, in the third voyage of Captain Cook, particularly recommends European invalids to go to Teneriffe on account of the equality of the temperature, and the mildness of the climate of these islands. The ground on this island rises in an amphitheatre, and presents, at the same time, the temperature of almost every climate, from the scorching heats of Africa, to the cold of the higher Alps. Three hours' ride from any part of the sea-shore towards the centre of the island, will afford every degree of temperature that man can desire; and none intolerable, except in winter, when the light atmosphere on the summits of the higher mountains becomes too much chilled. Indeed, so happy is the climate of Port Orotava, that the range of the thermometer during the years 1823-4-5 did not extend below 62° nor above 83°, although it sometimes surpasses for a day or two of south-west wind in autumn, but scarcely ever sinks below the former.

No climate on the globe seems better fitted to dissipate melancholy and restore peace to an agitated mind, than this island. The unrivalled beauty of its situation, and the salubrity of the air, conspire to quiet the anxieties of the spirit, and invigorate the body, while the feelings are not depressed by the sultry heat, the pestilential vapors, nor the revolting sight of slavery which pervades almost every colony of the torrid zone.

In winter, the climate of Laguna is extremely foggy, and the inhabitants often complain of cold. It has been remarked, that snow has never been known to fall in that

place, while it often falls in La Villa de la Orotava, which is situated at an elevation of about 1,000 feet above the level of the ocean. The climate of Santa Cruz is too hot in summer, but it makes a pleasant place of residence in the winter.

During the months of April, May, June, October, November, and December, the inhabitants of these islands experience most of the time, a northerly wind; while in the months of July, August, and September, the wind blows promiscuously from all quarters; and during the winter months, they have a prevailing wind from the east or north-east, attended by awful tempests of wind, hail and rain; but notwithstanding the calamities which they frequently occasion, and which the thunder-rod cannot infallibly prevent, they deserve to be considered as one of the greatest benefits that providence has bestowed on them. "They diffuse freshness through the atmosphere when it is in a confined and sultry state; the plants resume their lively green, the flowers raise their drooping heads when their thirst has been quenched by the rain; the crops and fruits, penetrated by the new warmth, ripen more rapidly, and man silently adores the Great Being whose power has been thus displayed."

Santa Cruz, Monday, }
October 14, 1833. }

The following table shows the results of the experiment. The first column shows the number of trials, the second column shows the number of correct responses, and the third column shows the percentage of correct responses. The data shows that the number of correct responses increases as the number of trials increases, and that the percentage of correct responses remains relatively constant.

Number of Trials	Number of Correct Responses	Percentage of Correct Responses
10	7	70%
20	14	70%
30	21	70%
40	28	70%
50	35	70%
60	42	70%
70	49	70%
80	56	70%
90	63	70%
100	70	70%

The results of the experiment show that the number of correct responses increases as the number of trials increases, and that the percentage of correct responses remains relatively constant. This suggests that the subject is learning the task and is able to maintain a consistent level of performance.

LETTER XVIII.

Social Condition.

As I commenced these letters by giving a general survey of these islands as they came from the hands of nature, it may not be improper to take a cursory view of the changes made by man; of the arts and industry, and the social and moral existence of the present inhabitants. But a grand distinction must be made between the higher orders of society, and the middling and lower classes. Although the former are possessed with a considerable portion of philanthropy and urbanity, it must be acknowledged that the latter, though the descendants of an enlightened and powerful nation, are on the next stage to barbarism. To them, most of the following remarks are strictly applied.

Physical Distinction of the Natives. In taking a glance of the inhabitants of these islands, we view every variety of feature and complexion, from the fair and well-formed European to the ugly and filthy Hottentot, who vary in stature from the Lapland dwarf to the gigantic Guancho. The natives generally, however, are of a dark, sallow complexion which is the most conspicuous among the peasantry who have, for the most part, an agreeable physiognomy, and are well-proportioned. In general, they have full dark eyes, and an abundant supply of hair, which is often black, and terminates with a yellowish-brown hue, though many of them have light-colored hair and blue eyes. Their cheek-bones are frequently prominent; the nose regular or is inclined to aquiline, and the face oval or round. They are generally endowed with a strictly moral and religious character, but possess a roving and enterprising disposition, and are said to be less industrious at home than abroad. They are exceedingly athletic, and

are susceptible of performing a great deal of labor, or of encountering the utmost hardships. The natives of Fuerteventura are bony and well-set men, but spare, and very tawny; they are excessively dirty in their person and habits, and will not work any longer than to supply their present wants. They are wild and ferocious, and are excessively vindictive, and are provoked to anger by the most trivial offences. The proximity of this island and Lanzarote to the Barbary coast, and the frequent invasions made on them by the Moors in former times, together with the intercourse kept up between them at present, give the inhabitants many of the manners and customs, and even the looks of the natives of Barbary. For example, their manner of sitting balanced on the balls of their feet, with their hams resting on their heels, is decidedly a Moorish custom; and the shortness of the distance that divides them, is indicated by one of their popular sayings:

*“ De Tunege á Berberia,
Se va, y se viene en un dia.”**

Education. All the larger towns are provided with schools of some sort or other, mostly taught on the Lancasterian system, and in a few instances, there are schools for teaching the ancient and modern languages, some of the sciences, and ornamental literature. There is also a university at Laguna, which was in a flourishing condition a few years ago, but about the time of the revolution in France, it was considered a dangerous institution by the regal authorities, and it was ordered to be closed. Notwithstanding these advantages, not more than one half of the natives can read or write. The more wealthy portion of the inhabitants send their children abroad to be educated, or more latterly, they are sent to their better schools at home. It is a happy thing to find that most of the young people who have been kept at school, can read or speak the English or French languages. The prevailing language of the province is Spanish, and the higher classes speak the Castillian in its utmost purity; but the

* From Tunege, (a spot on the S.E. shore of Fuerteventura) you may go to Barbary and back again in a day.

lower classes have many provincial terms which would be perfectly unintelligible to an inhabitant of Spain.

Domestic Accommodations. Most of the domestic accommodations throughout these islands, are simple, and often limited to the lowest degree of barbarism. There are few buildings in any part of the province that exceed two stories in height, and the greater number of dwellings are *las casas terreras*, or those having a ground floor only. The better classes of houses are built on the same plan as those in other Spanish provinces, having many large windows, but often are only partially glazed. The walls are constructed of rough stone, laid in mortar or mud, and are generally plastered or whitewashed with their corners painted in black and white squares, which, although painful to the eyes from the great reflection of the sun, give a very neat appearance to the outside. It is remarked that a visible improvement in domestic cleanliness has taken place in the larger towns within these few years past, yet there is room for much more.

Among the poorer classes of the peasantry, their houses are often built of irregular stones, carelessly laid together without the use of mortar, forming a circular wall, which they cover with rafters and tiles, or straw; and have no other floor than the bare earth. These habitations very often serve for the whole family and all the domestic stock, including men, women, children, pigs, poultry, goats, cats, dogs, etc., the latter animal being an indispensable member of almost every family in the province. Great numbers of the more wretched people dwell in caves, formed by nature in the rocks, and have no articles for convenience, except a few stones for seats and a bed of ferns.

Mode of Living. The manner of living among the natives who possess a certain degree of wealth, is very uniform. About an hour after rising in the morning, they breakfast, not making a meal of it as with us; but each member of the family takes a cup of chocolate with a small quantity of toast or a sweet biscuit in his own apartment, or takes it in his hand and eats it when sauntering about the house. Two o'clock is generally the dinner hour, though in retired places, many yet keep

up the custom of dining at noon. During this meal, the street door is always closed, but kept wide open the rest of the day. The repast invariably begins with soup, and is succeeded by *el puchero*, which is equivalent to the *olio* in Spain. It is composed of boiled beef, pork, mutton or other meat, fowls, and a variety of vegetables dressed together. After a greater or less number of made dishes and roast meat, it closes with a desert of fruit and an abundance of sweetmeats. After dinner *la siesta* occupies an hour and a half or two hours. A little after dark comes *la merienda*, or collation, when chocolate is taken with solid food, sweetmeats, and iced-water; and at ten or eleven o'clock at night, they conclude with a hot supper.

The aliment of the poorer classes is limited to three kinds of food, say Barbary salt-fish, potatoes, and gofio.* Bread or meat they seldom taste, and often in summer, they make many a meal entirely of the fruit of the prickly pear, and in time of famine, they are happy to make a meal from its leaves. In Hierro, they cure the flesh of such goats as are disabled by accident, and even it is said of such as die of disease, and when cut into pieces and dried by the sun, they call it *tocinete*. In Lanzarote and Fuerteventura, they eat without scruple the flesh of camels that die of age or of disease; and the fœtus of the camel, which they call *el majalulo*, is esteemed a great delicacy, and only is served upon occasions of particular festivity. In Palma and Gomera, they often reduce fern-roots (*Pteris aquilina*. BROUS.) to powder, and mix it with barley flour in the preparation of the gofio. The garden lupine (*Lupinus angustifolia*) is extensively used for food, both for man and beasts. It is prepared by boiling in salt and water, which deprives it of its bitterness, and in that state, it is eaten without any other ingredients.

All classes are equally abstemious both in eating and in drinking; and indeed, intoxication is scarcely ever witnessed, except among the very lowest people, and then it is far from being common. These traits, and hospitality to the utmost extent of their powers, are a few of their many virtues.

* Vide Note, p. 56, where this substance is described.

Diseases. The most common maladies, or those which may be regarded as endemical, are obstinate gastric affections, oftentimes accompanied with loss of strength; putrid and chronical diarrhœas; low and debilitating fevers; scorbutic cachexies; and cutaneous eruptions of various kinds. Most of these diseases are confined to the lower classes of the natives, and seem to derive their origin from the faulty nutriment of their food throughout these islands. The more wealthy portion of the inhabitants generally enjoy excellent health, and live to a "good old age."

Religious Customs. It is hardly necessary to remark, that in all Spanish provinces, the catholic religion is universally tolerated, and that the discipline of the church is, perhaps, more rigidly carried into effect, than in any other country. It will likewise be quite as unnecessary for me to repeat the general laws and ceremonies of that church, as they are invariably the same in all countries. But as far as local customs are concerned, which deviate from the general rules of the church, it may not be improper to name a few.

Some of their acts of penance are extremely singular. At the feast of Candlemas, which is annually held at Candelaria, it has been no unusual thing to observe women with their arms extended, and five lighted tapers in each hand, shuffling on their knees, at the distance of a furlong up to the altar of the chapel where the miracle-working virgin was placed, leaving a bloody track behind them, an undeniable proof of the pitiable condition of their knees. And men have as often been seen walking over the same ground with their arms extended in the form of a cross, with an iron crow-bar bound to each.

Besides the regular religious orders, there are several associations here bearing the name of *los colfradías*, or brotherhoods. They are exclusively composed of laymen, whose duties only consist in taking charge of the shrine or altar of which they are devotees at *las funciones*; of attending processions with their distinctive banners and uniform dress, and of accompanying the funerals of the members of their own fraternity. They raise pecuniary subscriptions among themselves, and solicit public dona-

tions on the day of their annual festival for defraying the necessary expenses attending their respective shrines.

The brotherhood of *El Gran Poder de Dios*, (the great power of God) is composed of persons of the middling and higher classes of society, the uniform of which, consists of a scarlet, silk gown, called *la opa*, in the shape of a carter's frock, worn over their ordinary habiliment. Their annual festival is held on the second Sunday of July, an uncomfortable season in this latitude to perambulate the streets, which they do, bare-headed, at mid-day, with lighted tapers in their hands.

Marriage and Funeral Ceremonies. The marriage ceremonies of the middling and lower classes are generally performed in church at an early hour of the day; but the wealthy are married in the evening, at the house of the bride's parents. The people here look without repugnance on the matrimonial alliances of an uncle with his own niece, as well as men marrying the sisters of their former wives. The practice in either case is confined, however, to the more opulent, who can afford the expense of obtaining the necessary license from Rome.

When a widow marries, on the eve of her wedding, her residence is surrounded by a concourse of people, some of whom are tinkling mule-bells, sounding conch-shells, and uttering the most diabolical terms of reproach; while others are performing on musical instruments, and lauding the couple in question to the skies, according to their approval or disapproval of their marrying. It is generally disapproved of for a widow to marry a second husband, which, they say, indicates that she did not duly and virtuously appreciate her former husband. A similar custom prevails in Spain, called *la cencerrada*.

In regard to their funeral ceremonies, the general points are the same as those of Spain and other catholic countries, but I will cite a few peculiarities which were entirely new to me. When a wealthy person dies, his relatives perform one or more solemn offices for his decease, on the days immediately succeeding that of the interment, and then in addition to the regular surplus fees, the clergy receive from them *una ofrenda*, or offering, which consists of provisions that are deposited in the

church. It is not uncommon on such occasions, to see a live sheep, a pipe of wine, and some sacks of grain, at the steps leading to the altar.

The ceremonies of children under seven years of age usually take place in the night, if their parents are wealthy, and all their male friends send their servants with lanterns to accompany the procession. No females of any class attend as mourners to the burial.

Many of the people of Hierro employ at their funerals, professional mourners, or weepers, who are always paid in proportion to the violence of their lamentations.

Superstitions. The lower classes in these islands are very credulous, and in addition to their common faith in witches, ghosts, hobgoblins, signs, and auguries, one of their greatest fears, is the effect of the "evil eye." This charm they do not believe to be always an act of voluntary malice, but think that an excess of fondness or admiration of an object, animate or inanimate, may produce the same baneful influence. Anything in the shape of a horn is supposed to neutralize the spell; and small pieces of bone worked into that shape, are frequently suspended on bird-cages, as preventives, or on the headstall of a well-conditioned mule or other beast; and the countryman who has a good share of fruit in his vineyard, takes care to protect it from the evil eye, by planting about it a number of stakes with a ram's horn on each.

It is not many years since a lady, every time her infant went out under the charge of her nurse, used to send another servant a few steps in advance, requesting every person who looked upon the child, to say *Dios lo bendiga*, (God bless it,) lest they should unwillingly cast upon it the dreadful *mal de ojo*, which operates, it is believed, in withering up, and causing to decline and perish, whatever it lights upon.

When a countryman feels the apprehension of the presence of a witch, he turns the waistband of his "unmentionables" inside out, or to make security doubly sure, pulls them off, and reverses them altogether. This is considered a charm of such potency, that no witch has the power of annoying any person while protected in this manner. Setting the

broom behind the door is also a sure way "to send a witch packing," if she attempts to enter a house, where her first act would be to suck the breath out of any infant that she might meet. The sudden death of little children is always attributed by the vulgar, to this practise of the witches.

A great source of dread to all classes of people, is the cry of a bird which they call *el apagador*, (the extinguisher) from the resemblance of its note to that word pronounced in a peculiarly harsh manner. This bird is a species of owl and makes its appearance only in the night, and often may be seen by moon-light, skimming over the roofs of the houses, which is regarded as a sure forerunner of the death of some of the inmates of the dwelling that it frequents.

Many of the peasant women on the north-western side of Teneriffe, protect themselves by the wearing of as many crucifixes, images, and amulets, about their person as they can procure, which they consider as charms, against every accident and disease, that mortality is heir to.

Amusements. Like their parent stock, the Spaniards, and other southern nations, these islanders are not at all a domestic people: indeed, the climate leads them, in general, to prefer such amusements as can be enjoyed in the open air, in the cool of evening, which bring on very different habits, from those which originate around

" Our own family and fire,
Where love our hours employs ;
No noisy neighbor enters here,
No intermeddling stranger near,
To spoil our heartfelt joys."

As there are but few places of public amusement in these islands, and there being but little taste for literature, or the cultivation of any of the fine arts, except music, the diversions of the inhabitants are principally circumscribed to frequenting the squares or public walks in the afternoon, and to attending *las tertulias*, or evening assemblies. These in many respects, are extremely agreeable, as no invitation is necessary. Every person who is in the habit of visiting a house at any other time, is at liberty to walk in, whenever a party of this kind is held, stay as long •

as he pleases, and go away whenever he may choose, after enjoying conversation, music, dancing, or gaming, as his fancy may dictate. The game that is usually played, is *monte* or lansquenet, the chances of which are among the greatest excitements that the natives seem capable of receiving.

The lower classes are also addicted to gambling, but their chief amusements are playing the guitar, singing and dancing. Their principal dances, are *las seguidillas*, *las malagueñas*, and what they call *las folias*. They are all accompanied by words adapted to the air, and these are very frequently composed, extemporaneously, each one of the party giving a verse alternately, which often contains neither rhyme, measure, music, nor meaning. Some of them, however, are noted for their quickness and repartee on these occasions, and introduce every passing occurrence into song with admirable success.

The carnival masquerading, properly begins at noon on *El Domingo gordo*, (fat Sunday) and is continued on the Monday and Tuesday following; but, a party will occasionally dress and go by night, and play a few antics at their friends' houses for nearly a month previous. The amusement of the carnival days is almost confined to the populace, who perambulate the streets, and disguise themselves in fantastic and showy dresses, their contrivances displaying in general, but very little humor. Their gymnastic sports consist principally of pitching the crow-bar, wrestling, and hand-ball. The two latter are mostly practised by the men of Fuerteventura, who particularly excel in wrestling, though their manner of taking the "gripe" and other laws of the game, would not agree with a scientific wrestler's notions of "fair play."

Costumes. It is remarkable that so great a variety of costumes should exist among so small and so scattering population as these islands afford, but an innate predilection, and jealous adherence to the pursuits, the habits, and the tastes of their forefathers, lead the natives generally, to retain such modes of dress, as not only distinguish the inhabitants of one island from those of another, but those of almost every town or village of the same, and even the occupations that they follow, which long association has rendered almost

sacrilegious to abandon. These, however, are limited to the middle and lower classes, the higher order of society following the European fashions, only varying from them in such a degree as the climate requires.

The church dress of the ladies of the first class is similar to that of the peninsula, and either is called *la saya y mantilla*, or *la mantilla y vesquiña*, the principal part of which, is of black silk, ornamented at the bottom, according to the fashion or taste of the wearer. The most striking part of the dress is the long veil of black or white lace, which forms the only covering for the head. This is called *la mantilla*.

The common out-door dress of the women of the middling classes in the larger towns of some of these islands, consists of a white flannel or baize mantilla, drawn close over the face, and is called *la tapada*, which signifies that they are concealed. It is commonly worn over a black bombazine or silk gown when they go abroad, but on ordinary occasions, it is worn over their common dress. When the mantilla is gracefully put on by a well-formed and neatly-dressed female, it is in the highest degree becoming; and being closed over the face in such a manner as only to leave an opening wide enough to display a pair of sparkling black eyes, shaded by the long projecting point of the mantilla, it gives to the whole appearance of the wearer an air of mystery, well calculated to attract attention and curiosity. This dress is frequently assumed by the higher classes, as a sort of *incognito* on shopping and other occasions.

Many of the wives of mechanics and shopkeepers wear a dress which seems to consist of nothing more than two petticoats made of black bombazine, fastened round the waist, the lower one worn the common way, and the other one thrown over the head. The lower one is confined tight to the waist, by six or seven plaited and folded runs with strings, and at the bottom it is lined with some light-colored stuff. The upper one entirely conceals the arms and hands, which are employed in closing the part which falls over the forehead. When a person with this dress is viewed sideways, her appearance is truly ridiculous. The linen coif and bodice are peculiar to most of the peasant

women on the north-western part of Teneriffe. When going any distance from home they all wear mantillas, and indeed the only difference in their habit is the pattern of the nether garment, which is obtained by unravelling English baize, and weaving it anew into stripes of a variety of colors, according to the fashion of the place. This stuff they call *el reves y derecho*. It is extremely thick and heavy, and so durable that many of their garments descend as heir-looms from mother to daughter, for generations.

The women of the hamlet of Ycod del Alto are very fond of a mixture of gaudy colors. They wear hats made of straw, ornamented with small scraps of cloth, and their "headgear," and sleeves of home-spun linen, are plaited with the nicest care. Their mantillas are of yellow baize, bordered with blue ribbon.

At certain seasons of the year, there are fairs held in many parts of these islands, and the women who attend them, ornament their hats with as great a variety of showy ribbons as they are able to obtain at these times.

In the eastern part of Teneriffe, red and yellow are the predominant colors for the dress of women; and a pair of silver buckles touching the ground on either side of the foot, is an indispensable requisite to such as wish to be considered *buenas mozas*.

The dress peculiar to the women of Palma, particularly the part called La Punta del Norte, is generally made of blue camlets lined with yellow flannel, and bordered with red cord. All of them have a peculiar way of tying a handkerchief or white cloth over their heads, so that one of the points projects out from under the cheeks, by which they may always be distinguished from those of the other islands. In the neighborhood of Las Sauces, the women wear a cloth cap resembling *el montero* which is worn by the men of Fuerteventura.

The general costume of the countrymen of the Valley of Orotava, consists of a felt hat of Canary manufacture, a pair of black breeches of coarse wool or velvet, with a shirt and *calzoncillos*, made of domestic linen. They wear the knee part of their small-clothes loose and open, below

which hang their calzoncillos or drawers, three or four inches, leaving the lower part of the legs bare, except in the colder season, when they wear long stockings, with shoes. Many of them, such as wood-cutters, herdsmen, and muleteers, wear a coarse English blanket doubled over a piece of cord by which it is fastened round the neck. This serves as a cloak, and defends them against the frequent showers that fall on the more elevated regions, and also protects them against the cold.

The winter dress of the men of Lanzarote consists of a long coat of blue cloth, reaching nearly or quite to their feet, which they wear over their ordinary garments. It is lined throughout with red baize, and the seams, pocket-holes, and cuffs are trimmed with the same color. Instead of a hat, they wear a kind of cap which they call *el montero*.

The natives of Fuerteventura are known in the Canaries by the name of *Los Majoreros*, from their formerly wearing a kind of sandals called *los majos*, which were bound on their feet by thongs. Their dress in warm weather is limited to a shirt, and a pair of very wide, short calzoncillos, confined round the waist by a parti-colored sash, and sometimes they wear a blue cloth waistcoat scalloped round the back. On holiday occasions, however, the better sort wear a cloth jacket and small-clothes with coarse leggins. The use of hats is entirely disregarded by them, a substitute for which they wear a cap called *el montero*. It is made of blue cloth, lined with red or yellow stuff, and is so constructed that the lower part of it, when loosely put on, hangs behind the head; but they can draw it, at pleasure, over the lower part of the face, in such a manner as to leave only the eyes and nose visible, much in the way of the ancient viziers. In the latter fashion, it is used in the winter, or on any occasion when the wearer chooses to disguise himself, which is, unfortunately, too often the case.

The dress of the sea-faring men of these islands consists of a cloth montero, a shirt of colored baize, and a pair of wide linen calzoncillos, confined round the waist by a broad, red sash, the folds of which serve for pockets. In the stormy or cooler weather, they wear a long, thick

jacket, which has a kind of hood attached to it, that they throw over their heads whenever occasion may require it.

From the mildness of the climate of these islands, the children of the lower classes are permitted to go almost or completely naked until they are six, eight, or even ten years of age. They are seldom seen with any other clothing than a coarse linen or muslin camisa, and often they are seen in an entire state of nudity.

Employments. The principal occupations of the natives of these islands, independent of a necessary supply of merchants, husbandmen, mechanics, shopkeepers, and fishermen, are as follows:—

Many of the peasantry of the Valley of Orotava of both sexes, lead a miserable life in gathering the branches of trees on the mountains and burning them into charcoal, which they afterwards convey on their heads, or on mules, to the larger towns, and sell it for a very trifling sum. They generally go to market provided with a hoe and sieve, with which, after disposing of their fuel, they collect and sift such part of the dung-hills in town as may be useful to carry back into the country for manure. They appreciate this article so highly, that I have known a man to work nearly half of a day in order to get his hat full.

Many of the men in various parts of the province are employed as herdsmen. They have the charge of a large flock of goats or sheep, with which they constantly keep, day and night. The goats, in many instances, are driven into town early every morning for the purpose of supplying the inhabitants with milk.

In Orotava, Santa Cruz, and most other large towns, there are men and boys employed in conveying people and luggage from one place to another on horse-back, or on mules or camels. They generally travel on foot themselves over the worst of roads, barefooted, and often with a heavy burden on their backs or heads.

On Teneriffe, there is another class of men, called *los nieveros*, who are employed in summer in conveying snow and ice from the higher regions of the Peak to the larger towns, for sale.

The wives and daughters of the sea-faring men of Port Orotava obtain their daily subsistence by leaving that

place every morning, and travelling two or three leagues into the interior, at day-break, with a basket of fresh or salted fish, and other articles of demand in the country, which they barter for vegetables or fruit. They return to town with a heavy load which they dispose of from door to door, in small quantities, or sell them to market-women for the next day's consumption. These women lead a very hard life for small gains. It is common to meet parties of them, barefooted, on their return in the evening, pouring forth in measured accents their spontaneous song, which gives utterance to their "hopes and fears," their "joys and sorrows."

In the island of Gomera, one of the principal employments of the men is that of gathering orchilla, a kind of lichen, which generally grows on the face or in the clefts of the steepest rocks. The mode of collecting it is as follows:—The gatherer fastens one end of a rope twenty or thirty fathoms in length to a trunk of a tree or to a large stone on the summit of the precipice, and, after trying its strength, he lets himself over the brink, and slides down the rope to its lower extremity, where a stick or piece of board is fastened cross-wise. On this, he seats himself, holding on the rope with his left hand, while with a scraper in his right hand, he collects the weed and lodges it in a bag, suspended to his neck. As soon as the bag is filled, he ascends the rope, "hand over hand," and after dislodging its contents, he either descends again, or shifts his place, according to the scarcity or abundance of the article of his pursuit. The dangers of this occupation are obvious, and accidents often occur from the vibrating of the rope, or from the giving way of its support; yet habit has rendered it so little to be dreaded, that the gatherer pursues it with the most daring intrepidity. He often fixes his feet against the rock, and darts off to a considerable distance from it, in order to ascertain where the orchilla grows in the greatest abundance. Often they may be heard singing, suspended in the air, at an elevation where the eye cannot easily distinguish them.

Notwithstanding these dangers, if a man once commences this business, he seldom, if ever, attempts any other

occupation. There is a certain stimulus in it that cannot be overcome, even by the utmost persuasion.

There are men to be met with from Grand Canary in almost every part of these islands, trafficking in coarse, felt hats of their own manufacture. They are purchased by the lower or middle classes, who are unable to wear those of a better quality.

Commerce, Agriculture, and General Industry. In general, the natives of these islands have but just advanced beyond the earliest rudiments of maritime commerce. They derive a considerable portion of their support, however, from their fisheries, which exist between Cape Bojador and Cape Blanco, on the coast of Africa; and, indeed, the natives of Palma have a natural turn for speculation, either in trafficking to the other islands for foreign goods, or in sending small adventures of brandy, silks, and almonds to Cuba and Porto Rico, where they send regularly a few small vessels, the only foreign commerce that any of the natives of these islands carry on.

Almost all the foreign commerce that these islands possess, is effected by Europeans, who have settled here, or a few of the higher classes of the natives. Their staple products of exportation are wines, brandy, barilla, archil, silk, potatoes, and a few other vegetables. The principal articles that they receive in return, are staves, hardware, cutlery, dry goods, and in years of famine, they draw large cargoes of provisions from America, Spain, England, and the north of Germany.

These islands, in their present state, are so far from yielding a profit to the government, that they annually exact large sums from it for the maintenance of their garrisons; while, if they were in the hands of a more liberal and enterprising nation, they would be of considerable commercial value.

Agriculture forms the most important branch of industry among all classes of society; but with few exceptions, all the processes employed in preparing the ground, casting in the seed, and gathering the harvest, are slight and simple. The only plough used here, is a rude implement, constructed entirely of wood, except a small iron colter, which just serves to scratch and turn over the stony sur-

face of the soil, and is put together in the roughest manner possible. It is drawn with a pair of oxen, and little effort is requisite to keep it down; in fact, the whole is so slight a concern, that the laborer, on unyoking his team at the end of his work, always throws the plough over his shoulders, and carries it home without any inconvenience. The greater portion of the natives, having no personal interest in the soil which they cultivate, do not exert themselves beyond that state which the fertility of the soil renders productive. No inducements are held out by the Spanish government for improvements of any kind, and the natives, possessing an hereditary aversion to the introduction of modern inventions, do not advance one step beyond the modes which have been adopted for centuries. "Unhappily, the real welfare of the inhabitants does not correspond with the advantages which nature has lavished on these regions. The farmers are not proprietors; the fruits of their labor belong to the nobles; and those feudal institutions, which, for so long a time, have spread misery throughout Europe, still weigh heavily on the happiness of the people."

The cultivated regions are so fertile, that two crops of grain may be obtained in a year, and a succession of crops of potatoes and many other kinds of vegetables or fruits. Grain is raised only by imperfectly ploughing the ground and sowing the seed which is slightly covered with a hoe, and being profusely supplied with moisture, it brings forth in abundance, and is separated from the ear in a very rude manner. A circular space in the field is prepared by making a solid and smooth foundation, upon which the sheaves are placed, and a long frame with projecting points on the under side is dragged over them by oxen or cows; upon this frame the driver sits, and often it is loaded with stones. The projecting points break the straw and detach the kernel, which is carefully separated, and is ready for use. But one of the greatest exertions bestowed upon agricultural industry, is the culture of the grape. The vines are planted among the crevices and loose fragments of lavas, from which they derive their nourishment, and spread their tendrils over the surface of the rocks, receiving the whole influence of the heat from the perpendicular rays of the sun, as well as from the reflected heat from the

stones upon which they rest. In some instances, the vines are trained over lattice-work, forming delightful arbors, but their fruit is less delicious than when ripened the other way.

The vintage occurs from the middle to the last of September, when the peasantry of both sexes are engaged in gathering the fruit and making wine. The extemporaneous song resounds throughout the valley, and the laborer keeps time to his tune, and all seems less like a scene of labor than a gay festival. The process of making wine is similar to that practised in Madeira, the Azores, or most of the countries of Europe. The grapes are first cut from the vines, and conveyed to the press, which consists of a large vat holding forty or fifty bushels. As soon as the vat is completely filled with the fruit, four or five of the laboring men enter it, bare-legged, and tread the grapes until they are quite broken. In the mean time, the principal part of the juice is expressed and conveyed into proper vessels, and afterwards to the wine-cellar, where it is put into large casks in order to undergo the process of fermentation. The remaining grapes are subjected to heavy pressure, which deprives them of the rest of their juice, which is conveyed away as the former. The wine in this state is very like new cider, but more insipid to the taste; but after being fermented and receiving a due portion of alcohol, it receives that flavor as when remitted to us.

Another considerable source of industry is the production of barilla. This substance, though generally thought to be a mineral, from the form it assumes, is made from a species of plant, (*Salsola soda*. LIN.) It thrives best on the cliffs near the ocean, and seems to be possessed with the property of decomposing the salt-water, which is conveyed to it in the form of vapors or spray, in separating the muriatic acid from the soda, the latter of which, it absorbs. Its seed is sown in winter, and the period for gathering it usually begins about the end of July or the early part of August. The weeds are first torn up by the roots and thrown into large pits dug in the earth, and after being suffered partially to dry, they are set on fire, and the alkali contained in them, flows in a liquid state from the bottom of the pit. This liquid, on cooling, hardens into large,

stone-like masses, in the manner as shipped to us. It is not fifty years since this plant was first introduced into these islands from Spain, and its cultivation is an increasing source of wealth.

The following table exhibits the amount of the principal productions of these islands in an abundant year :—

	Teneriffe.	Canary.	Palma.	Lanzarote.	Fuerteventura.	Gomera.	Hierro.	Total.
Wine,	23,560	8,848	5,158	3,720	220	2,650	2,100	46,256 pipes.
Wheat,	85,617	60,876	17,978	51,120	60,860	8,520	480	285,451 fanegas.
Maize,	38,259	122,980	5,120	19,140	5,200	4,680	1,000	196,379 "
Barley,	25,100	55,600	18,570	92,980	120,500	9,300	9,360	331,410 "
Rye,	7,948	4,960	5,600	5,060	550	1,700	900	26,718 "
Pulse,	13,710	11,560	9,100	10,150	1,600	3,820	400	50,340 "
Potatoes,	400,000	180,000	80,000	50,000	15,000	£2,000	11,000	753,000 "
Barilla,	35,000			46,000	33,000			114,000 quintals.
Archil,	410	190	135	125	390	140	108	1,498 "

The sledges used on these islands for the conveyance of casks of wine and other goods, are of the rudest construction that can be imagined. They consist of only two rough pieces of wood, terminating at a point at the forward end, and spreading out at the hind end at the distance of about two and a half feet. These are kept in their position by two cross pieces nailed on the top. One end of a pole, is fastened to the forward end of the sledge by thongs of leather, while the other end is attached to the heavy yoke that crosses the neck of the oxen directly behind their horns, to which the yoke is confined by other thongs that rest on a mat or cushion placed on their foreheads. The provincial name for the sledge is *la corsa*, and the Spanish name of the yoke, *la yunta*.

Manufactures, in a country where the people are satisfied with the simplest accommodation, cannot be expected to attain any high importance. The distaff and spindle are universally used by the spinsters of all these islands. Not a female in the province will allow machinery in the shape of a spinning-wheel to supersede their most simple and ancient implements. The females

of Palma, however, are extremely industrious, in whose dwellings is to be seen, besides their ordinary utensils of house-hold work, either a small loom for weaving ribbons, garters, and other trifling articles, or reels for winding the silk which is produced in that island. Within a few years, they have very much improved the quality of their manufactures, and now produce some excellent samples of different kinds of silk cloths, which possess almost as much firmness as the French fabric, and of far greater substance, but deficient in gloss and colors, which distinguish the latter, which they have not the means of imitating.

Boston, Wednesday, }
May 21, 1834. }

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data. The second part of the document provides a detailed breakdown of the financial data, including a list of all accounts and their respective balances. It also includes a summary of the total assets and liabilities, which shows that the organization is in a sound financial position. The final part of the document contains a list of recommendations for future actions, such as improving internal controls and strengthening the relationship with key stakeholders. These recommendations are based on the findings of the audit and are designed to help the organization achieve its long-term goals.

LETTER XIX.

History.

It is generally admitted that the Canary Islands are the Fortunate Islands of the ancients, and many writers have contended, and with some degree of plausibility, that they formed a part of the vast island known under the name of Atlantis. Those who are of this opinion found their belief on the testimony of Plato. He represents it as a large island in the western ocean, situated before or opposite to the Straits of Gades. Out of this island there was an easy passage into some others which lay near a large continent, exceeding in bigness both Libya and Africa together. Neptune settled in this island, from whose son, Atlas, came its name, and divided it among his ten sons. The descendants of Neptune reigned there during a period of 9,000 years. But subsequently, prodigious earthquakes and deluges took place, and in the space of one day and night, the whole was brought into a state of desolation, and the noble race of people who inhabited it, was at once merged into the earth, and the island itself being absorbed in the sea, entirely disappeared, and for a long time afterwards the sea was innavigable on account of the rocks and shoals that existed thereabouts.*

Most of those who admit the foregoing remarks to be true, consider the Azores, the Madeiras, the Canaries, and the Cape de Verds to be the fragments of Atlantis; and contend that the Azores were connected with Ireland, and that the Cape de Verds extended to the Carribee Islands. One thing, however, is certain, if this be true, the whole

* Vide Plato's *Timæus*.

island must have been a continuous chain of volcanos, for all these islands are decidedly of volcanic origin; and whoever will attentively examine the basaltic cliffs of the Giant's Causeway, will soon discover sufficient cause to conclude that the crater from which that melted matter flowed, was actually sunk, at some remote period of time, and became the bottom of the Atlantic Ocean—a period, indeed, much beyond the reach of any historical monument or even of tradition itself.* And often, in strong easterly winds, vitrified substances, as well as tufa and pumice-stones, are washed up by the waves on the eastern shores of the Antilles, which tends to prove that the bottom of the ocean from thence, towards the Cape de Verds, is covered with the débris of some large volcano, that has consumed its foundation, and buried itself beneath the ocean.

The first writer among the Greeks who has made any mention of the Atlantic Islands, is supposed to be Hesiod, who speaks of the Hesperides and the Gorgons, about 640 years before the commencement of the Christian era. But long before that period, some of the illustrious Myrmidonian navigators probably made occasional voyages to these and other islands, either driven there by adverse winds, or incited by an enterprising spirit, and gave rise to the various traditions respecting the renowned country, *Atlantis*, the *Elysian Fields*, the *Gardens of the Hesperides*, the *Fortunate Islands*, and other delightful abodes, the beauties of which were either heightened by the vanity of the discoverer, or were the actual descriptions of the more fertile regions and richer scenery of Teneriffe, Madeira, or other Atlantic Isles.

“When Sertorius, a native of Nursia, fled before the arms of Sylla, and having passed the straits of Gades, reached the coast of the river Bætis, he there met with some seamen who were but lately returned from the Fortunate Islands, and spoke in the highest terms of the beauty of the country.” This circumstance is mentioned by Plutarch in his life of Sertorius, with the additional information, that the islands mentioned were two in number,

* Vide Whitehurst's Theory, p. 91.

situated about 10,000 stadia from the coast of Africa. These flattering descriptions seemed to offer so much tranquillity to the harrassed partizan of Marius, that Sertorius, in a moment of despondency, had resolved to embark; but the war which broke out in Africa awakened the military spirit which he possessed in so eminent a degree. He therefore returned to scenes more congenial with his nature, delivered the Mauritanians from the yoke of a tyrant, and having accepted the proffered friendship of the Lusitanians, was invested by them with absolute authority. The information which Sertorius had received respecting these islands, and the disposition he had manifested to reside there, induced others to make the voyage. About twenty years afterwards, Statius Sebosus collected the various accounts that had prevailed, and whatever journals had appeared; but vainly attempting to make such narratives agree, he was led into errors which required more than fourteen hundred years to correct.

The short account which Juba, the young king of Mauritania composed, respecting some islands in the Atlantic, was preserved, and confused by Pliny. In this royal journal of maritime discovery, a new island is added to the number which Sebosus had previously mentioned.

The following table exhibits the names of these islands as described by Sertorius, Plutarch, Sebosus, Juba, and Ptolemy, corresponding with their modern names:—

<i>Sertorius.</i>	<i>Plutarch.</i>	<i>Sebosus.</i>	<i>Juba.</i>	<i>Ptolemy.</i>	<i>Modern Names.</i>
Atlantic.	Fortunate.	Hesperides.	Purpuria.	Apositos.	Fuerteventura.
Atlantic.	Fortunate.	Hesperides.	Purpuria.	{ Junonia Autolola.	Lanzarote.
		Junonia.	{ Junonia parva.	Graciosa.
		Pluvialia.	Ombrios.	Pluitalia.	Hierro.
		Capraria.	Capraria.	Casperia.	Gomera.
		Convallis.	Nivaria.	Pinturia.	Teneriffe.
		Planaria.	Canaria.	Canaria.	Canary.
			Junonia.	Junonia.	Palma.

Ombrios is described by Juba as being uninhabited. The Mauritanian seamen found a pond in the mountains,

and also observed many curious trees, some of which yielded a bitter kind of water, while from others they procured water by no means unpleasant to the taste. They visited *Junonia* which presented nothing remarkable except a small, stone temple. Near *Junonia*, they fell in with another smaller island to which they gave the same name. They afterwards visited *Capraria* which was infested with enormous lizards. The Mauritanian navigators then stretched across to the opposite island, which, from the continual mist and snow that enveloped it, they called *Nivaria*. Adjoining *Nivaria*, they discovered another island, to which they gave the name of *Canaria*, from the number of large dogs found upon it, two of which were captured and presented to Juba.

After the decline of the Roman empire, these islands remained unknown to Europeans until the year 1328, when they were accidentally discovered by an Englishman by the name of Robert Macham, who was driven there by a tempest, and on his return, made his discovery known. In 1334, Alphonso IV. of Portugal, sent Louis de Ordo to conquer them; but being repulsed at Gomera, he abandoned his enterprise. From this circumstance, the Portuguese founded their claim to these islands. But Pope Clement VI. granted them to prince Louis, of Spain, son of Alphonso de la Corde, the right heir of Castile, by the name of the *Fortunate Islands*, and caused soldiers to be levied in France and Italy to assist him in the conquest, which gave such umbrage to the English ambassadors then at Rome, who thought there were no other Fortunate Islands than those of the British empire, that they sent an express to the English court to prevent the danger of the suspected conveyance. But nothing was done in pursuance of the Pope's grant until 1385, when some Biscayans fell among these islands, and having plundered Lanzarote, returned to Spain with great stores of wax, hides, and other commodities of the island. The next expedition to Lanzarote was from Seville in 1393, not to subdue the islands, but to enrich themselves by robbery and plunder. At this time, several people of Spain were excited by avarice, and solicited Henry III. king of Castile, for a license to conquer these islands, as he pretended they were his property. Accordingly, a grant was given to Jean de Bethencourt, a

Norman, in 1400, who subdued Lanzarote, Fuerteventura, Gomera, and Hierro, after a contest of six years. The other islands remained unconquered, after numerous unsuccessful attempts by the Spaniards, who were repeatedly interrupted by the Portuguese, until the year 1477, when the island of Canary was conquered by Don Juan Rejon under the crown of Castile. Under the same reign, the island of Palma was subdued in 1491 by Alonzo de Lugo, who, at last, completed the subjugation of these islands by the bloody battle of Laguna in 1493. Ever since that event, they have been subject to the crown of Spain.

When the Europeans first came to these islands they were inhabited by a savage race of people, the following account of whom, is translated from a Spanish manuscript written by Juan de Abreu Gallineo, a Franciscan friar in the island of Palma, in the year 1562 :—

The natives of Lanzarote were of a middling stature, having a tawny complexion, and straight, coarse, black hair. They were of a humane, social, and cheerful disposition, and were very fond of singing and dancing. Their music was vocal, accompanied by a noise they made by clapping their hands, and beating the ground with their feet. They were very active, and took great delight in leaping and jumping, which were their principal diversions.

When they were ill, which seldom happened, they effected a cure with such herbs as were peculiar to the island; or when they had acute pains, they produced a scar on the part affected, or burned it with fire, and anointed it with butter. They deposited their dead in caves, stretching out the bodies and covering them with goat-skins.

Their food consisted of gofio, butter and milk, and goats' flesh boiled or roasted. They ate their food from vessels made of clay, and hardened by the heat of the sun. Their method of obtaining fire was by taking a stick of hard, dry wood, which they caused to turn round rapidly on the point, within a soft, dry, spongy thistle, which soon became ignited.

The costume of the natives of Lanzarote consisted of goat-skins sewed together and fashioned like a cloak, with a hood to it, which reached to the knees. The seams were closed in a very neat manner with thongs of leather,

which were as fine as common thread. Instead of knives and scissors, they used sharp stones of obsidian. Their shoes were made of goat-skins with the hairy side outward. They wore bonnets made of goat-skins also, having three large feathers placed in front; the women wore the same, with a fillet of leather dyed red with the bark of some shrubs. The men had long hair, and wore their beards plaited. The king of the island wore a diadem or crown resembling a bishop's mitre, made of goat-skin, and ornamented with sea-shells.

When they sowed their ground with barley, their only grain, they dug or ploughed it with goats' horns. They threshed their grain with sticks and winnowed it with their hands, and reduced it to flour by means of two small portable mill-stones.

Their houses were built of stones, without the aid of mortar, and were very strong. The threshold was so narrow that but one person could enter at a time. They also had houses of worship and devotion, called *efeguen*, which were built of loose stones, of a circular form, composed of two walls, one within the other, with a space between, and like their dwelling houses, were entered by a narrow threshold. In these temples, they offered to their one and only God, milk and butter. They sacrificed to him on the mountains, pouring out, from earthen vessels, offerings of goats' milk, and adoring him at the same time, by lifting their hands towards the heavens.

Duels and combats were frequent among them, which they fought with large clubs called *tezzezes*. If a man entered the door of his enemy's house, at his knowledge, and killed him, or did him any injury whatever, he was not punished for it; but if he came upon him unawares and killed him, he was put to death, by placing his head upon a flat stone, and with another, dashing out his brains.

The manners, and customs, and mode of life of the natives of Fuerteventura were similar to those of Lanzarote. They were of a larger stature, however, and were possessed with solid courage, and a warlike spirit. They were clothed with jackets made of sheep-skins with the

sleeves short, and reaching no further than their elbows. They wore high, goat-skin caps, and short breeches which left the knee bare, and socks or short stockings that reached little higher than the ankles. They wore the same kind of shoes as the natives of Lanzarote, and dressed their hair and beards in the same manner.

In this island there lived two women, one named Tibiatin, and the other Tamonante, who were mother and daughter. The business of one was to settle and compose differences that might arise among the chiefs of the island, and that of the other to regulate the ceremonies. The natives believed them to have been sent from heaven to instruct them, to foretell future events, and to cause them to live in peace and unanimity with each other. It was by the assistance of these two women that Bethencourt made an easy conquest of this island. When he arrived there, it was divided into two portions, each of which was governed by its own king, and separated by a wall of loose stones, crossing the island from shore to shore.

The natives of Gomera were of a lively disposition, of a middle stature, very active and dexterous in attacking and defending, and excellent slingers of stones and darts. It was a common amusement with the young people to cast small stones and darts at each other, to avoid which, they seldom moved their feet, but only waved their bodies; and they used to catch in their hands the stones and arrows as they flew. In their combats, they made use of slings, bows, lances, and darts made of hard wood. They had several men among them renowned for valor, and others who were famous for their songs.

The costume of the men of Gomera was a sort of cloak made of goat-skins which extended below their knees. The women wore a petticoat, and a head-dress which hung down to their shoulders, made of goat-skins, dyed and painted red and blue in a curious manner. Their shoes were made of hog-skins.

When Bethencourt arrived there, the island was divided into four parts, each division governed by a chief or king. These chiefs often had quarrels among themselves concern-

ing the limits of their respective districts ; and when a quarrel was to be decided by combat, they divested themselves of their cloaks, tied a kind of bandage about their waists and proceeded to action.

The natives of Hierro were of a middling stature, and of a melancholy turn of mind. Their songs were on grave subjects, and set to slow, plaintive tunes, to which they danced in a ring, joining together their hands. They lived in large circular inclosures, the walls of which were built of dry stones without the aid of cement, each inclosure having one narrow entry. On the inside they placed poles or spars against the walls, in such a manner that one end might rest on top of the wall, and the other end on the ground, at a considerable distance from it ; these they covered with the branches of trees and ferns. Each inclosure contained about twenty families. Their beds were made of ferns covered with goat-skins.

Their principal food consisted of the flesh of goats, sheep, and hogs ; they also had a species of potatoe, but no grain. Their bread was made of fern-roots which they ate with butter and milk. Before they offered their infants the breast, their mothers gave them fern-roots, roasted, bruised, and mixed with butter.

When any one became ill, they rubbed the patient's body all over with sheep's marrow and butter, taking care to cover him up warm to promote perspiration. When any one happened to get cut or wounded, they burned the part affected, and then anointed it with butter in the same manner as the natives of Lanzarote. They deposited their dead in caves, and if the deceased was wealthy, they buried him in his clothes, and placed a board at his feet, and the staff with which he used to travel at his side, and then closed the mouth of the cavern with stones to prevent the ravens from devouring him.

The costume of the men consisted of a cloak made of three sheep-skins sewed together, the wool side of which they wore next to their skin, in winter, and in summer, they reversed it. The costume of the women, besides a cloak made of sheep-skins, consisted of a petticoat which

reached down to the middle of their legs. In sewing these skins together, they used small thongs for thread, and small, pointed bones for needles. They went bare-headed, with their long hair done up into a number of plaits. Their shoes were made of the raw skins of sheep, goats, or hogs.

The natives adored two deities, one of them male, and the other female. The male was named Eraoranzan, and was worshipped by the men; and the female was named Moneyba, and worshipped by the women. They had no representations of these deities, nor did they sacrifice to them, but only prayed in the time of necessities. The natives feigned that when their gods were inclined to do them good, they came to the island and stationed themselves on two great rocks, named *Ventayca*, which are situated in a place called by the Spaniards, *Los Antillos de los Antiguos*. On these rocks, the deities received their petitions, and afterwards returned to heaven. When a long continuance of dry weather occurred, and they were reduced to great necessity, and their prayers were not answered, they assembled together at *Ventayca* with their cattle and there held a fast for three days and as many nights, weeping and lamenting, and their flocks bleating for the want of food. If all this did not produce rain, they sent a man whom they considered as a saint, to a cave called *Atecheita*, where he invoked the gods to send a mediator, upon which, as tradition gives it, an animal like a pig would appear to him, called *Aranjaibo*, or mediator. Then the saint would put the animal under his cloak and carry it to the natives who were assembled at *Ventayca*, and they formed themselves and their flocks into a procession, and continued to walk round the rocks lamenting and wailing.

They all lived under one king, consequently they never had occasion to go to war. They had no rules in their marriages, except that a man should not marry his mother, daughter, or sister, and could not marry but one wife. They were all on an equality, except the king, who received no stipulated tribute, but every one made him presents according to his wealth or pleasure; and the only distinction among them was in their substance, which consisted in flocks. It was customary for a man when he chose a

wife, to make a present of cattle to her father according to his ability, as an acknowledgement. When they made a feast, they killed one or two fat lambs, according to the number of guests, and roasted them whole; these they placed on the ground, and seating themselves round them, never rose until they had entirely devoured them.

They inflicted no punishment for crimes except murder and theft. The murderer was put to death in the same manner as he killed the deceased. For the first offence of the thief they put out one of his eyes, and for the second, the other, that he might not see to steal any more. Their punishments were executed by a particular person set apart to perform offices on these occasions.

When the natives perceived Bethencourt's ships approaching with their white sails, they remembered the prophecy of a man who had formerly lived among them, named Yore, and who was considered a soothsayer or diviner. This man, when on his death-bed, called the natives together, and told them that long after he was dead and gone, and his flesh should be consumed, and his bones mouldered to dust, their god Eraoranzan would come to them in white houses on the water; and advised them not to resist him nor fly from him, but adore him, for he was to come to do them good. The natives, who placed great faith in his predictions, buried him in a separate place from the rest of their dead, that his bones might be afterwards distinguished from theirs. On seeing the ships approach with their white sails swelling on the surface of the waves, they firmly believed that the prophecy was fulfilled, and directly went to the cave where Yore was buried, and there found his bones crumbled to dust; upon which, they ran joyously to the shore to receive their god Eraoranzan.

The natives of Canary were of a dark complexion, well-proportioned, and of a good stature. They were an active, warlike people, but cheerful and good-natured, and were strictly faithful to their promises. They were very fond of hazardous feats, such as climbing to the top of steep precipices, and pitching poles of so great weight, that one of them was a sufficient burden for a man of ordinary strength

to carry on level ground. They had public houses or rooms in which they assembled to dance and sing. Their songs were either dirges or amorous sonnets, set to grave and plaintive tunes.

The houses of the Canarians were built of stone without cement, but were regular, and had a neat appearance. At the top, they had wooden beams or rafters very close to each other, and were covered with earth. Their walls were low, and their floors were sunk below the surface of the earth. Their beds consisted of goat-skins dressed in a curious manner with the hair on. Their other furniture consisted of baskets and mats made of palm leaves and rushes very ingeniously wrought. The women, in general, were employed in painting and dyeing, the colors for which, they extracted from flowers and shrubs. The thread which they used for sewing and other purposes was made from the elastic sinews of sheep, goats, or swine. These they first anointed with butter, and after undergoing an operation by fire, they were susceptible of being split into fine threads at pleasure. Their needles were made of bone, and their fish-hooks of horn. All their vessels used in cooking were made of clay, hardened by the sun, in the same manner as those of Lanzarote. Their wealth consisted chiefly in cattle, sheep, goats, and hogs.

Their common food consisted of goats' flesh, milk and gofio. When they made a feast, they dressed their goats' flesh in lard or butter.

The costume of the Canarians was a tight coat with a hood to it like that of a capuchin friar; it reached down to the knees, and was girded about the waist with a leather belt. This garment was made of a kind of rush, which they beat till it was quite soft like flax, and then divided the filaments and wove them together. Over this they wore cloaks of goat-skins with the hair-side outwards, in summer, and inwards, in winter. They also had caps made of goat-skins taken off almost entire, which they placed on their heads in such a manner, that they had the goats' beard hanging under each ear, which they sometimes tied under their chin. All these garments were neatly sewed and painted, and in every respect were superior to those of the natives of the other islands. Some of

the women wore bonnets made of skins, adorned with feathers. Their shoes were made of raw skins like those of the natives of the other islands.

The Canarians had among them religious women, called *magadas*, a number of whom lived together in one house, and were held sacred; and criminals who fled to any of them were protected from the officers of justice. The *magadas* were distinguished from other women by their long, white garments, which swept the ground as they walked. The houses in which they dwelt were called *tamoganteen Alcoran*, (houses of God.) The natives had temples of worship called *almogaren*, (holy houses,) which they daily sprinkled with goats' milk. They believed that their God, Alcoran, dwelt on high, and governed everything on earth. They adored him by putting their hands together, and raising them towards the sky.

In the island there are two large rocks, one in the district of Galdar, which the natives called *Tirmac*, and the other in Telde, called *Vinicaya*. They went to these rocks at the time of public calamity, in procession, accompanied by the *magadas*, carrying branches of palm-trees and vessels filled with milk and butter which they poured on the rocks. They then commenced dancing around them, singing mournful songs or dirges, called by the Spaniards *las endechas*. From thence they went to the sea-side, and all at once, and with one accord, struck the water forcibly with their rods, all shouting at the same time with a very loud voice.

The Canarians had nobility among them, who were distinguished from the populace by the peculiar cut of their hair and beards. It was not sufficient to entitle a man to nobility by being the offspring of noble or rich parents, but it was necessary for him to be declared noble, formally, by the *facag*, a person of great rank, and next in dignity to the *guanarteme*, or king. It was his duty also to decide differences among the natives, and to regulate the ceremonies of their religion; in fact, he was a priest, and also a judge in civil affairs.

The Canarians were remarkable for their good government, regularity, and strict administration of justice. When a man committed a crime deserving death, he was apprehended and imprisoned, where he was tried, and im-

mediately upon conviction, he was led to the place of execution. Then he was stretched out on the ground with his head placed on a flat stone, and the executioner, a man set apart for that office, taking a heavy stone, and lifting it as high as he could, suddenly let it fall on the criminal's head. But for crime not worthy of death, they used the *lex talionis*, "eye for eye, tooth for tooth," etc.

In their wars, they viewed it as base and mean to molest or injure the women and children of their enemies, considering them innocent, and therefore improper objects of resentment. Their war instruments were clubs, stones, and sharp-pointed poles hardened by fire.

They had public places set apart for fighting duels, which consisted of eminences or stages raised above the ground. When a challenge was given and accepted, the parties went to the council of the island, which was composed of twelve members, called *gayres*, and obtained a license to fight. They then went to the *facag* to have this license confirmed. This being done they brought together all their friends to be spectators to their gallantry and behavior. They next mounted upon two stones, placed on each side of the stage, where they stood with their feet stationary till both had thrown three rounds of stones at one another. Though they were good marksmen, yet they generally avoided those missive weapons by the agile writhing of their bodies. Then arming themselves with sharp stones in their left hand, and clubs in their right, they approached one another and continued beating and cutting one another until they were nearly exhausted, when the parties retired, by consent, and refreshed themselves. They then returned to the scene of action and renewed their engagement, continuing with increased violence, until their council cried out *gama! gama!* (enough! enough!) when they immediately ceased fight, and afterwards remained friends. If, during the combat, one of the party happened to break his club, the other immediately desisted from striking, and there the dispute ended, and neither of them were declared victor. If they were deeply wounded, they beat a rush until it became like flax, which they dipped into hot butter and applied to the wound; the older the butter was, the sooner it effected a cure.

When the Canarians were inclined to marry their daughters, they set them apart thirty days, during which, they fed them with large quantities of milk and gofio, in order to fatten them.* Polygamy was never practised among them, as some misinformed writers have affirmed. They were very careful in the education of their children, and never failed to chastise them when they did wrong. It was also a custom among them to propose two youths, one virtuous and the other vicious, as examples for the rest, of good and evil.

When any of the nobles died, they deprived the body of its intestines, washed it, and after drying it in the sun, swathed it with bandages of goat-skin, and then fixed it upright in a cave, clothed with the same garment as the deceased wore when alive. But if no suitable cave was at hand, they deposited the body in a stone coffin in some barren part of the island, covering it up in a very ingenious manner with small stones. Some of their dead were put into chests, and afterwards deposited in a kind of stone sepulchre. The lower class of people were buried in holes dug in some retired place, and covered over with dry stones. All the bodies, except those set upright in caves, were placed with their heads to the north.

None of the Canarians exercised the occupation of a butcher except the very lowest class of society. This employment was accounted so ignominious, that they would not so much as allow one of that profession to enter any of their houses, or to touch anything that belonged to them. It was unlawful for the butchers even to keep company with any except those of their own profession, and when they wanted anything of any other person, they were obliged to carry a long staff with them, and point at whatever they wanted, when standing at a considerable distance. As a recompense for this abject state, the other natives were obliged to supply them with everything that

* A similar custom was practised among the Libyans. Before they gave their daughters in marriage, they kept them apart for a time, and fed them with milk until they became fat. One of the principal articles of food among them was a substance similar to gofio, which they called *couscoussou*. These customs tend to prove that the Canarians descended from, or had some intercourse with, the Libyans.

they needed. It was unlawful for any of them to slaughter animals, except the butchers, and when any person wanted a beast killed, he was obliged to lead it to the public shambles for that purpose.

When the Europeans first came to Canary, it was supposed that the island contained 14,000 fighting-men. They were governed by captains, or patriarchs, who presided over small circles, like parishes. Each tribe was confined to its own district, and was not allowed to graze its flocks on the grounds of another tribe. The natives were more polished and civilized than those of the other islands. Their division of time was reckoned by moons. They tilled their ground with a wooden instrument, not unlike a hoe, with a tooth or spur at the end of it, on which they placed a goat's horn. After sowing their barley, if the rain neglected to fall, they watered their fields by means of canals or rills. They threshed their grain with sticks, or beat it out with their feet, and winnowed it with their hands.

When the Europeans first landed on Palma, the island produced no sort of corn nor edible roots, except the seeds of a kind of shrub, and fern roots. Both of these substances were reduced to powder and eaten with milk or broth. The rest of their food consisted of the flesh of goats, sheep, and hogs, which they either boiled or roasted. The skins of the first two animals served for clothing, and that of the latter for shoes. The weapon they used in war was a staff or pole, sharpened at the point, and hardened by the fire.

The island was divided into twelve districts, each of which was governed by its own lord or captain. Their police was not so good as that of the other islands. He who could steal with such address as not to be discovered, was considered as the cleverest fellow, and if any one happened to be detected in this practice, no other punishment was inflicted on him than of being obliged to restore the article stolen. If a man received an insult from any one of his own district, he thought it mean to complain of the injury to his captain, and avenged his own cause, by col-

lecting his friends, and retaliating the affront, by taking up their residence in some other district.

The natives of Palma held the sun and moon in great veneration, keeping an exact account of time, in order to know when it would be new or full moon, which were times of particular devotions. Their manner of worship was by assembling together on certain occasions, singing and dancing round a high pyramid of loose stones, and sometimes accompanied with wrestling, and performing other feats of agility. In one of the districts, instead of a pyramid of loose stones, there was one formed by nature, being a large basaltic rock upwards of a hundred fathoms in height, where the natives worshipped their god *Idafe*, whose name the rock still retains. They were in continual apprehension of its falling down, and therefore, when they killed a sheep or goat, they roasted a piece of it, which was presented to the rock by two persons, who, on going thither, sung these words:—*Yiguída, y iguan, Idate*, which signifies in their language, “It will fall, *Idafe*.” Upon this, the other answered in the same tone, *Guegerte, y guantaro*, which signifies “Give to it, and it will not fall.” On reaching the rock, they threw down the offering, and both ran away, and the meat was quickly devoured by the ravens which hovered round the rock. Besides *Idafe*, they acknowledged one God in the heavens, greater than all, called *Abora*, whom they adored. They also believed in an evil being, called *Irvene*, which it is said, sometimes appeared to them in the shape of a shock-dog. They were extremely alarmed in time of sickness, and when any one was taken ill, he sent for his friends, and said to them, *vacaguare*, that is, “I want to die.” Upon this he was carried into a cave and laid upon a bed of goat-skins, with a vessel of milk by his side, and the mouth of the cave was closed, leaving him to expire by himself. The natives deposited their dead in caves, and always placed them on goat-skins, considering it improper for a dead body to touch the ground.

The *Guanches*, or natives of Teneriffe, were generally famed for their tall stature, and sometimes attained an

incredible height. It is said that a descendant of one of the kings of Guimar was fourteen feet in height, Spanish,* and had eighty teeth. His body, when dead, was kept for many years in the cave of Guar Damohatex, which is situated a few miles to the south-westward of Santa Cruz. He is said to have been hardy, brave, and of good stomach. The natives of the southern part of the island were of a tawny and sun-burnt complexion, and many of them had dark hair, flat noses, and spare, thin faces. Those of the northern side of the island were rather tall, well-made, and of robust constitutions. They had fine, clear countenances, and generally lighter hair than those of the southern part. The females were peculiarly beautiful, having expressive countenances, and brilliant eyes. The Guanches possessed an acute understanding, and were so quick of discernment, that they would count a large flock of sheep and goats, when issuing tumultuously out of the fold, without so much as moving their lips or pointing to them with their fingers, and this with the greatest exactness.

The Guanches had no other houses than caves formed by nature in the rocks. They slept on beds made of herbs and grass covered with goat-skins, neatly dressed and sewed together, and with blankets or coverings of the same materials. There were among them artificers who dressed goat-skins and made their garments. They also had potters who manufactured a kind of rude earthen-ware, and carpenters who wrought in wood. They had no animals except sheep, goats, and small dogs which they called *cancha*. Their grain was wheat and barley. The men prepared the ground for seed, by digging it with wooden hoes, and the women sowed the seed.

The Guanches were very neat and cleanly; they washed their faces and hands whenever they rose from sleep, and before and after their meals. Their food was the flesh of goats and sheep, boiled or roasted, which they ate alone, and not like the Europeans, with the addition of bread or roots. The rest of their food consisted principally of *gofio*, milk, butter, and roots. After eating, they did not drink for the space of half an hour, as they imag-

* About twelve feet and eleven inches English.

ined that drinking cold water immediately after eating warm food, injured their teeth. Both sexes anointed their bodies with tallow. Their common diseases were fluxes and pleurisies. When they were troubled with acute pains they drew blood from the part affected with lancets made of obsidian, as they had no metals, and all their sharp instruments were made of the same kind of substance.

The costume of the Guanches consisted of cloaks made of goat-skins, dressed and softened with butter. Those of the women were longer than those of the men, and reached down to their feet. They wore, beneath their cloaks, petticoats made of the same kind of materials.

The Guanches acknowledged but one God, whom they believed existed above, and sustained both heaven and earth. They believed that he created them of earth and water, and that he made, at first, as many men as women, giving them flocks and herds, and everything necessary for their subsistence; but afterwards he thought them to be too few, and created more, whom he would not give anything, but bid them serve the other people whom he had made. They had not idols, nor did they worship the sun or moon, stars or stones; neither had they rites nor ceremonies. When they were in great distress, occasioned by the want of rain or dews, they assembled in certain places set apart for that purpose, with their children and flocks, where they sat in a circle on the ground, weeping and making a mournful cry, and at the same time, their flocks were bleating for the want of food. They washed their children at birth all over with water, which was performed by women who lived in separate caves, and declared themselves virgins. They taught their children precepts similar to the scriptural commandments, which they strictly obeyed; if not, they were severely punished.

A few years before the conquest of Teneriffe, the whole island was governed by a prince named Betzenuria. He had nine sons, who, upon his death, divided the government equally amongst themselves; consequently, the island contained nine kingdoms. Eight of the kings did homage to Tmobat, the elder brother, who was the most powerful, and possessed the richest and most fertile part of the island, being that tract which stretches between San Juan de la

Rambla and Laguna, in which he could raise 7,000 fighting-men. One of the brothers, named Acaymo, was king of Guimar; another, called Atguarona, of Abona; and a third, Arvitocaspe, of Adexe. The names of the other five are lost; one however, reigned in Tegueste, another in Ycod, another in Centejo, and another in Daute. The royal dignity, in the Guanche language, was called *quebechi*, and was elective. In summer the king resided in the mountains, but in winter he removed to the sea-side. When he changed his place of residence, or travelled, the elders of his tribe assembled, and carried before him a sceptre and a lance, with a kind of flag upon it, to give notice of his approach to all who might be travelling upon the road, that they might pay him their customary homage, which consisted of prostrating themselves before him on the ground, wiping off the dust from his feet with the corners of their garments, and kissing them. The natives were divided into three classes, the nobles, the gentlemen, and the peasants. The first was called *achimensey*, and belonged to the house or family of the king; the second class was called *cilhiciquico*, and included the gentry or yeomanry; and the third was called *achicarnay*, and included the peasantry or servants. The Guanches often had disputes among themselves about their flocks and pastures, which frequently ended in wars. Their war implements consisted of darts made of pine wood, sharpened and hardened by the fire like those of the natives of other islands. They also had a weapon like a spear, which they were so dexterous in throwing, that they scarcely ever missed their aim. When an enemy approached, they alarmed the country by making a smoke which was repeated from one district to another. The women always attended the wars with provisions and other necessaries, and in case that any of the men were killed, they carried them off and deposited them in caves. Their manner of holding their courts of judicature was by assembling to some plain in the island, in the middle of which they placed a large, square stone, and on each side of the plain they placed several stones of an inferior size and height. On the day appointed for holding the court, the king was seated on the high stone, and the principal elders, or council, were placed on

the lesser stones, according to their seniority; and in this manner they heard and decided causes. When any one was sentenced to corporeal punishment, he was laid flat on the ground, and the king delivered his staff or sceptre to some person, commanding him to give the offender such number of blows as the crime merited, and then to be taken from his presence. For murder, the king took away the criminal's flocks and effects, giving them to the relations of the deceased, and banished the murderer from his district, but always took him under his protection, so that the friends and relations of the deceased might not injure him. They never punished any person by death, saying that it belonged to God alone to take away that life which he had given. They had a law among them, that when a man, by chance, met a woman alone on the road, or in a solitary place, he was not to look at her, unless she first spoke to him, but to turn out of the way; and if he used any indecent expression, or behaved in an unbecoming manner any way, he was severely punished. They also had a custom among them, that when one person went to the house of another, he did not attempt to enter, but sat on a stone at the door, and either whistled or sang, till some one came out and desired him to walk in. Whoever observed not this rule, and entered another person's house without being invited, was liable to punishment, as it was considered among them as the highest offence.

Polygamy was not practised at all by them. They paid no regard to marrying kindred, except that of father and brother, or mother and sister. When a young woman pleased a man, he, in person, asked her parents, if she had any, if not, asked herself for her hand, and if agreeable, without any further ceremony than giving one another the hand, they became man and wife. If at any time afterwards they became disgusted with one another, they parted, and their union was dissolved, and they were at liberty to marry any one else. If they had children, they were considered as illegitimate, and could not inherit their father's effects. The king was always obliged to marry a person who was his equal, and if such a one could not be found, he was allowed to marry his own sister, that he might not debase his family by a mixture of plebeian blood. They

also had a custom, that in a house or cave where the husband and wife slept, no other person was allowed to lodge, and the man and wife were obliged to sleep on separate beds.

When any person died, they preserved the body, by first carrying it to a cave, and placing it on a flat stone, where they opened it and took out the intestines; then, twice a day, they washed the porous parts of the body, such as the groins, the arm-pits, the parts between the fingers, and behind the ears and neck, with cold water; and then they anointed those parts with sheep's butter, and sprinkled them with a powder made of the dust of decayed pine trees and pumice-stones, and let the body remain till it was perfectly dry, when the relations of the deceased came and swathed it tight with thongs of sheep or goat skins; then they deposited it in a cave which had been set apart by the deceased for his place of inhumation. The king could only be interred in the cave of his ancestors, in which the bodies were so prepared as to be known again. There were particular persons set apart for the office of embalming, each sex performing that of his or her own. During the process of embalming, the bodies were strictly watched, to prevent the ravens from devouring them.*

The Guanches have now become nearly or quite extinct, and probably there is not an individual of pure blood in existence, although there are a few families in the south part of Teneriffe, who boast of being possessed with pure, unmixed blood. In the fifteenth century, the Spaniards and Portuguese made voyages to this and other islands, to procure slaves, in the manner as has latterly been done by Europeans on the coast of Africa. At that time, it is said that one Guanche became the property of another, and was sold to the dealers; while many of them, rather than be carried away, killed their children and themselves. They had been greatly depopulated in this manner, and when Alonzo de Lugo completed their subjugation, most of the residue of that unfortunate race perished by a terri-

* The above method of embalming, given by Gallineo, does not exactly correspond with that given in page 65; however, it is not probable that all the manners and customs of the Guanches were uniform; hence both may be correct.

ble pestilence which was supposed to have originated from the dead bodies left exposed after the memorable battle of Laguna.

Numerous inconsistent theories have been advanced by writers, respecting the origin of the antiques of these islands, the labor of confuting which, would only equal the absurdity of expressing such opinions. It is not probable, however, that they descended wholly from any particular nation, but were impelled there by fortuitous or other circumstances, at different periods, and from different countries.

Thus, gentlemen, have I laid before you a short detail of my observations and research on the Canary Islands. Many more, equally interesting, might be given of the places that I have since visited, but time and circumstances forbid. Allow me to close by expressing my high veneration for your characters, which persevering industry and virtuous principles have given birth, and to solicit for my labors, a continuance of that honorable distinction which your patronage has ever conferred.

I have the honor to subscribe myself,

Your most faithful and devoted servant,

D. Jay Browne.

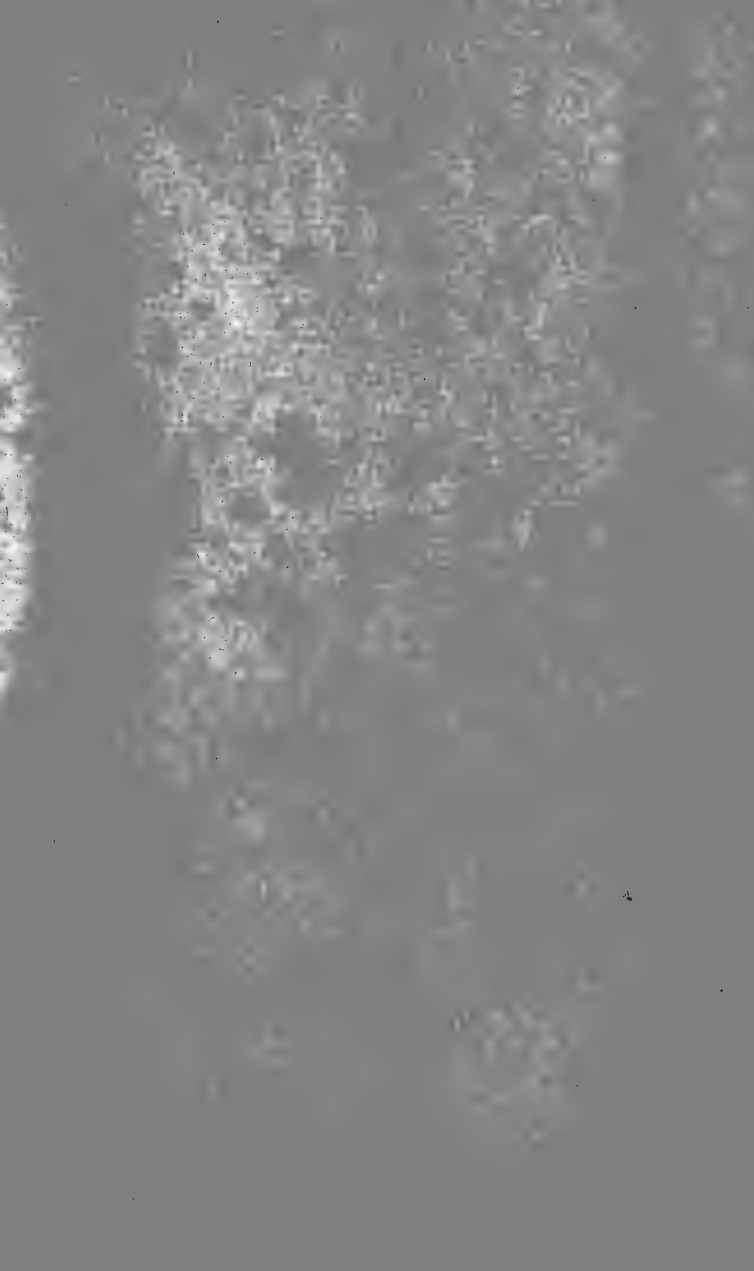
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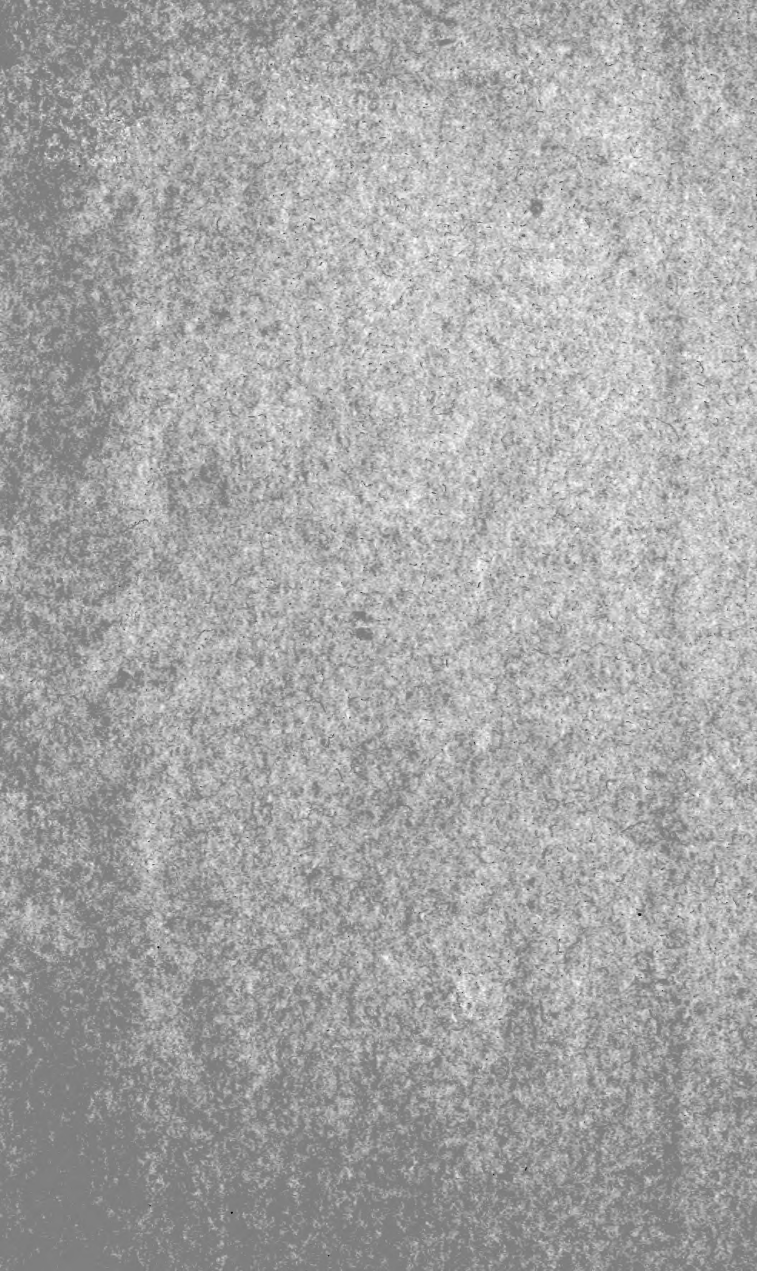


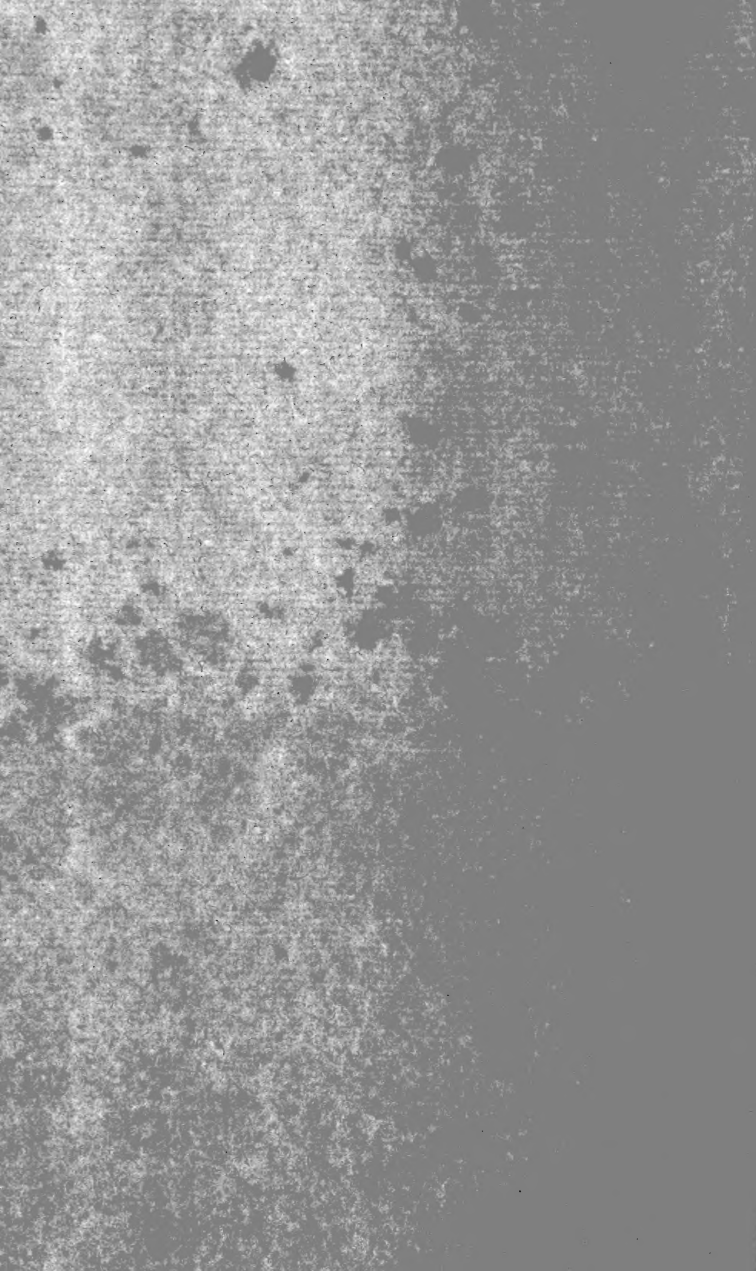












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