in escaping without any broken legs. Almost all the party had their feet more or less bruised, and the skin knocked off, by slipping through the old and weak crust. Walking over clinkers is, even when one can see the way, irksome and dangerous, but passing over them when concealed, is particularly so. We all felt ourselves heartily tired, and I am satisfied that scarcely any thing would have tempted any of us to pass over the route again. What made it more provoking was the the ease and facility with which the natives traversed it.

Towards sunset we had a drizzling rain, and finding it impossible to reach Pahuhali, we determined to encamp a mile or two beyond the Kaimo road, at the head of the eruption. When this was done, we found ourselves with little or nothing to eat in the camp. A messenger was therefore forthwith despatched to Pahuhali, and after waiting anxiously, and speculating on his success, we were gratified by the light of distant torches, and soon found ourselves supplied with all that the land afforded—pig and taro. The men got a good supper, but they had little sleep, for it rained hard and they were completely wet; although protected by tents, we found ourselves floating in water.

Kalalua is the largest cone-crater in this part of the island; and I was informed it had thrown out lava, but I had not time to examine it. Appearances indicated that the native account was true; the streams of pahoihoi, on its flanks, appeared to come from its crater. The height is one thousand one hundred feet.

The altitude of our station above the sea, was one thousand two hundred and forty-four feet. The thermometer stood at 70°.

Early on the 21st, we began to examine the locality, and found that we were a short distance below the upper part of the eruption. It had begun first in a kind of point, and accumulating there, had stretched itself out on either side, gathering strength as it went, until after proceeding about two miles it became a torrent of fluid rock, from ten to fifteen feet in thickness, which swept every thing before it, overlaying the soil, and destroying all the vegetation that came in its way.

After a northeast course of three miles, we entered upon the lava stream, where it was about a mile wide, resembling a river congealed at once into stone, leaving all its flowings and eddies distinctly marked and perpetuated. It was covered here and there with the fallen timber, appearing in some instances as if it had been bleached; only a hole was left to mark where each tree had stood, the stump having been entirely consumed. These holes were frequently found as much as twelve or fifteen feet in depth. Of their origin there can be no doubt, and my supposition is, that by the time the tree had been burnt off, the rocky stream became fixed, which would account for the tree

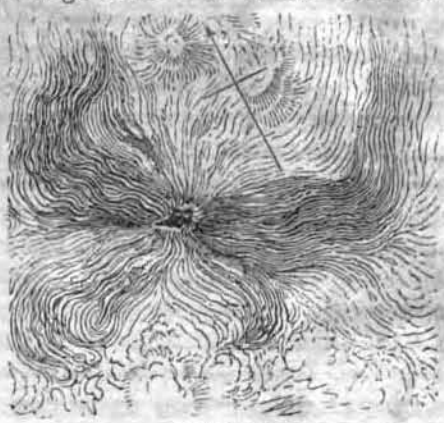
being still so near the place where it had formerly stood. Some of the trunks were partly burnt, and others again had epiphytic plants still adhering to them.

In some places lava was found adhering to the leaves and branches of trees, appearing as if it had been spattered upon them. In some instances the lava thus adhering might have been taken for birds' nests, yet the wood exhibited no signs of fire. The circumstance which astonished me most, was the state of a copse of bamboos (Bambusa arundinacea), which the lava had not only divided, but passed on each side of: many of them were still living, and a part of the foliage remained uninjured. Some of the large trees, not more than twenty feet from the stream, seemed scarcely affected, and yet not thirty yards from them we lighted our sticks by putting them down no farther than two feet below the surface, although eight months had elapsed since the eruption happened. Nearer to the sea, all the foliage to the distance of three hundred and fifty yards from the lava stream was killed. To account for these circumstances, we must suppose either that the lava flows more rapidly, or that its power of radiating heat is much less than is generally believed.

The fixed stream has so much the appearance of a fluid mass that it is deceptive, and the whole seemed yet in motion. Fire and smoke were to be seen in many places. Its line of descent to the sea was on a declivity of one hundred feet to the mile, and according to the native account it reached the sea in two nights and a day—thirty-six hours. The distance being a little over ten miles, the velocity must have been about four hundred feet an hour.

We proceeded down the lava stream until it expanded to a width of three or four miles. There are many fissures along the whole line, as will be perceived by the dark places on the map. I feel confident that from each of these an ejection had taken place, and that the lava had in some cases flowed in a contrary direction to the general course of the stream; for being traced in such cases, it was seen to have proceeded from a fissure that had occurred on rising ground. Wherever the ground was steep, it was there perceived that tunnels or hollowed places occurred, in consequence of the molten lava having flowed from beneath the crust formed by cooling. The upper part of the stream was composed of the description of lava called pahoihoi; the lower portion was much broken, though not of that description called clinkers, and seemed as though it had been crowded together and broken up like ice in the breaking up of the frost in our rivers, slab overlaying slab, and many of them ground to pieces by the great pressure from behind.

About six miles from the sea, it appeared as though there had been a simultaneous outbreak over a large area. The stream was sufficiently fluid at all places to seek the lowest level, and an idea of the flowing may be formed from the annexed diagram, which I sketched from the top of a cone.



LAVA FLOW.

Near the centre of this flow was a mound that had been covered with trees. These were all left standing, but had not a leaf upon them, which increased the desolate appearance of the scene before us. In our walk we occasionally met a "blowing cone," with quantities of salts, sulphur, and hot sulphureous gases still issuing from it.

After having satisfied ourselves with this part, we ascended an old crater-hill, and crossing over it, came to an old lava plain of the kind called pahoihoi: this appeared quite solid, and its surface was unbroken; there were no holes like those I have described on the recent flow; but in place of them there were a large number of raised truncated cones, some of which were inverted. These appeared to me to have been lava jets that had resulted from a subsequent flow of the upper pahoihoi, which had been forced upwards, cooling as it met the air, and congealing. Each of these pillars was perforated with a hole from top to bottom, and the lava that composed them was laminated. The wood-cut of lava jets will be seen at the end of this chapter.

These columns are sometimes twenty feet high, and some of them resemble colossal statues of rude workmanship.

As long as the pahoihoi lasted, we had pleasant walking; but it did not reach far, for the rough lava seemed to predominate in our path, and made the way irksome and fatiguing.

This hill has a tradition attached to it, which one of our guides related to us. When Palila, one of their gods, in former times, was on the hill roasting bananas, the people of Papapala saw the smoke, and went up to ascertain who was there. They found only a boy cooking bananas, and attempted to take them from him; but his power was such, that he beat them all and drove them down the mountain; and they never again ventured to encounter so powerful a god.

Almost all the hills or craters of any note have some tradition connected with them; but I found that the natives were now generally unwilling to narrate these tales, calling them "foolishness."

After leaving the pahoihoi plain, we passed along the line of cone-craters, towards Point Kapoho, the southeast part of the island.

Of these cone-craters we made out altogether, large and small, fifteen, trending about east-northeast. The names of the seven last are Pupukai, Poholuaokahowele, Punomakalua, Kapoho, Puukea, Puuku, and Keala. On some of these the natives pointed out where there had formerly been slides, an amusement or game somewhat similar to the sport of boys in riding down hill on sleds. These they termed kolua.

This game does not appear to be practised now, and I suppose that the chiefs consider themselves above such boyish amusements. The manner in which an old native described the velocity with which they passed down these slides, was, by suddenly blowing a puff; according to him, these amusements were periodical, and the slides were usually filled with dried grass.

As we approached the sea-shore, the soil improved very much, and was under good cultivation, in taro, sweet-potatoes, sugar-cane, and a great variety of fruit and vegetables. At about four o'clock, we arrived at the house of our guide, Kekahunanui, who was the "head man." I was amused to find that none of the natives knew him by this name, and were obliged to ask him, before they could give it to Dr. Judd.

By this little circumstance, we found that it was still customary for the natives to change their names, according to their caprice, and it appeared that this was the case in the present instance. I neglected to put down his former name, which appeared to me as much too short as the last was too long. We found him to be a petty chief, who superintended lands belonging to another. He had sent on in advance orders to have his large house prepared for us; and we found that it had been vacated for our accommodation; but as both Dr. Judd and I had been punished before by sleeping in a native house, we preferred our tent; and it was lucky we did so, for the men informed me the house was infested with fleas.

The view from the guide's house was quite pretty, the eye passing over well-cultivated fields to the ocean, whose roar could be distinctly heard. I felt great delight in again seeing it.

The course which the subterranean stream appears to have taken, is somewhat singular, and may be followed pretty accurately by the direction of the steam-cracks.

From the best information we could obtain, it appeared that the lava first showed itself in the crater of Aleaea-nui, and burst out next within one fourth of a mile of it on the north; thence it appears to have passed under Moku-opuhi, a cone, crater, and reappeared again on its opposite side; whence it seems to have had a long subterranean course, until it reappeared near the Kaimo road. The natives say, that it burst out in eight different places before it reached the sea. An intelligent-looking native, whom we met and took as guide, who had lived near and appeared perfectly well acquainted with the ground, told us, that the recent eruption was preceded by three days of earthquakes; that the lava appeared and ran down to the sea within a single day, but that it was three weeks before it was cool enough to bear a person on its surface.

Having time before dark, we determined to pay a visit to the three craters nearest the coast, from which they are distant less than a mile and a half. They are four hundred and fifty-six feet high, of irregular form; and although each is distinct from the others, yet they seem to have, at one time, run into each other. They looked very picturesque within; and one of them, to our surprise, exhibited a well-cultivated farm, with a pretty cottage in the middle, surrounded by a few trees. One of my Yankee sailors declared, that he would not be ashamed to own such a farm and dwelling in New England.

In the bottom of one of these is a small lake, as smooth as a mirror, and of a light-green colour, which contains plenty of fish. After an earthquake, its water has frequently turned red and yellow, and smelt strongly of brimstone. It is about six fathoms deep, by the report of the natives, and two hundred yards across.

In another of the craters is a pond of fresh water, of small dimensions. Another crater, near by, is said to have a hot spring in it, which the natives use as a bath.

We returned to our guide's house, where we had an abundance of every thing supplied us; and at eight o'clock distinctly heard the evening gun on board the Vincennes, at Hilo, a distance of fifteen miles. While we were at the crater of Kilauea, the men reported to me that they had heard it; but I was then under the belief that the sound was occasioned by an explosion in the volcano. The whole country between Hilo and the southeast point of Hawaii, is covered with lava; which may account for the distinct transmission of sound, for so great a distance, from a small howitzer.

One of the men shot a beautiful white owl, and brought it to my tent, where Dr. Judd laid it down, to all appearance quite dead; a few minutes afterwards, to our surprise, it flew away, having been only

stunned. I regretted its loss; for it was a beautiful specimen, and one that we had been endeavouring to obtain for some days past.

During the night, one of the heaviest rains I had experienced in the island, fell; but the morning was bright and clear,—every thing seemed to be rejoicing around, particularly the singing-birds, for the variety and sweetness of whose notes Hawaii is distinguished.

Previous to our departure, all the tenantry, if so I may call them, came to pay their respects, or rather to take a look at us. We had many kind wishes, and a long line of attendants, as we wended our way among the numerous taro-patches of the low grounds, towards Puna; and thence along the sea-coast towards the place where the lava entered the sea, at Nanavalie. The whole population of this section of the country was by the wayside, which gave me an opportunity of judging of their number; this is much larger than might be supposed from the condition of the country, for with the exception of the point at Kapoho, very little ground that can be cultivated is to be seen. The country, however, is considered fruitful by those who are acquainted with it, notwithstanding its barren appearance on the roadsides. The inhabitants seemed to have abundance of bread-fruit, bananas, sugar-cane, taro, and sweet-potatoes. The latter, however, are seen to be growing literally among heaps of stones and pieces of lava, with scarcely soil enough to cover them; yet they are, I am informed, the finest on the island.

At Puna, there is a large church; but no appearance of a village, the houses being much scattered. The church, it is said, will contain two or three thousand persons. The Rev. Mr. Coan, I understood, officiates here occasionally.

Before reaching Nanavalie, we passed through Kanakiki, a small village; and the sand-hills at the former place were reached before noon, when I was enabled to get the meridian observations. The height of the highest sand-hill was found to be two hundred and fifty feet: it is perpendicular on the side next the sea, which is rapidly washing it away. Here we met several natives, who confirmed the story of the earthquakes, and said that they had been very severe. I have not before stated the fact, that none were felt at Hilo; and indeed earthquakes on Hawaii seem to be local. One was said to have taken place during my visit to Mauna Loa; but no one of the party felt any shock.

There are three of these sand-hills, which caused me more astonishment, and involved greater difficulties to account for them, than any other phenomenon connected with the eruption. From the accounts given me, the coast at Nanavalie, previous to the eruption, was one

continuous lava cliff, of the hard metallic kind, like that which is still found on both sides of the sand-hills for several miles. There was no appearance whatever of sand. At present there are three large hills, composed of sand and gravel of a light yellow hue, with little mixture of lava or scoria. The last unite with the lava plain near the sea, which may be observed in some places to flow under them.

Beds of sand and gravel, similar to those composing the hills, exist for some distance along the sides of the lava streams. From all accounts, the formation of these took place at the time the lava stream joined the ocean, which must have produced a violent sand-storm, the effects of which are rendered evident for a mile on either side of the stream, by the quantity of sand and gravel that is lodged in the pandanus and other trees.

From the top of the hill I could perceive no appearance of a shoal having been formed, for the water appeared quite as blue as in mid-ocean. This point I particularly attended to, for it had been reported to me that such a shoal had been formed. The sand-hills appeared to have encroached upon the line of the coast about one hundred feet.

Through the sand that was near the sea-shore chrysolite was disseminated in greater abundance than it was met with elsewhere, and of larger size. This mineral is found throughout all the lava formation, in greater or less quantities. To account for the presence of greater quantities of it at this place, it may be supposed that the melted lava, coming in contact with the water, has freed the chrysolite, which the sea has thrown on the shore.

The width of the lava stream was found to be three-fourths of a mile. The portion of it nearest the sand-hills is in a very confused and rugged state, and there are some large accumulations in mounds, that have been forced up by pressure from above and beneath. It is said to have passed over the ancient village of Nanavalie, and left upon its site and cultivated grounds a deep layer of rock. The natives told us that they had remained till the last moment, hoping the torrent might be stayed or turned aside, and thus save their houses. It however swept on, and they had barely time to remove the few articles they possessed. I was somewhat surprised at the natives making so light of these appalling streams of fire, of which the first notice they have is a few shocks of earthquake, and shortly after a distant fire in the woods.

I was particularly struck with the difference between the old and recent flows of lava: the old looks the more fresh of the two, and has the smooth dark metallic lustre before observed, without any vitreous crust; it seems to have flowed over the surface when of the consistence of tar. The late flow has a decided vitreous character, with

chrysolite disseminated through it; it has a dark brown hue, and a reddish scoriaceous appearance.

The south sand-hill commands an extensive view over a scene of complete devastation, heightened in its character of desolation by the sulphurous gases and smoke which were still escaping from the recent stream of lava. The latter, except in its dark colour, resembled a river on whose banks large masses of ice are heaped, which had carried destruction in its course, and had crushed or pulverized every thing that obstructed its way. The very hill on which we sat was the effect of the power of this stream of fire. A sketch of these sand-hills is exhibited in the annexed wood-cut.

SAND-HILLS AT NANAVALIE.

The effect of the view was enhanced by the contrast of the bare rock of the eruption, with the verdure that appeared on either side of it.

The stream of liquid lava seems to have borne down all opposition, and to have filled up every hollow that lay in the line of its course.

The country around the stream does not appear as if it had any descent, but the lava stream shows its slope very distinctly.

The natives had been planting sweet-potatoes near the foot of the sand-hills, but there was little prospect of their succeeding in raising a crop. We passed several hours here, and then proceeded on our way through Makuu and Wekahika to Keeau, where we arrived at sunset. The school-house of Keeau was appropriated to the men and natives; but I preferred to occupy the tent, as I was well aware of the peculiar trials to be undergone in the native houses, although it was newly built.

Here we found a delightful spring of fresh water upon the shore, and within the flow of the tide at high water. It enabled us to enjoy a bath, which we had not had the means of doing for forty days. During our journey, we met Lieutenant Budd on his way to the lava plain, who informed me that they were all well on board the ship.

As we had dispensed with all the baggage we could spare, we determined to trust to obtaining provisions on the road; in consequence we generally had a market at our encampment, and one of the first things

to be attended to was buying our supper. In this traffic, to which Dr. Judd usually attended, many curious scenes occurred, which caused us much amusement. At Keeau, for instance, an old woman brought some eggs for sale, which we were very desirous of obtaining, but she had determined that she must have a pair of scissors, and refused to take any thing else. Unfortunately for us we had no scissors to give, and no persuasion could prevail upon her to take any thing else for them, although three times their value was offered in money, and she was told it would buy a pair; but no! she marched off with her eggs, and we went without them.

This trait is stronger in the Hawaiians than in the other islanders of Polynesia; and I heard of another remarkable instance of the same sort. A native woman brought to a friend of mine in Honolulu a large watermelon, and desired to have a needle for it; the melon was worth far more, and she was told so. With the needle, more was offered, but refused, and possessing herself of the coveted article, she went away, fully satisfied that she had made an excellent bargain.

Not unfrequently at the markets a native will bring an article for sale, upon which he has fixed an exorbitant price, and he will continue to visit it day after day, until he is quite satisfied it cannot be sold for the desired price, when, instead of offering it at a lower price, he will prefer to carry it away.

I here learned their mode of reckoning distances is sometimes by lands, which I found to be equivalent to about one-fourth of a mile.

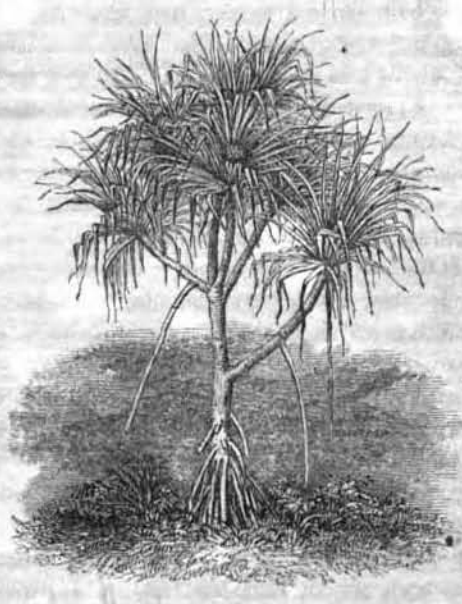
In some places they have taken great pains to secure a good road or walking path: thus, there is a part of the road from Nanavalie to Hilo which is built of pieces of lava, about four feet high and three feet wide on the top. The largest and best pieces are placed on the top; but notwithstanding this, the road is exceedingly fatiguing to the stranger, as the lumps are so arranged that he is obliged to take a long and a short step alternately; but this the natives do not seem to mind, and they pass over the road with great facility, even when heavily laden.

The lava along this part of the coast was similar to that which has been called old, and in some places I observed the impression of trees that had fallen on it before it was cold: the marks of them are now as fresh as if it had happened yesterday. There is no traditionary account of any flow of lava on this coast, which is a precipitous shore, about fifteen feet high, on which the sea beats with violence at all times.

On the 23d of January we were up betimes, being desirous of

reaching Hilo before noon, and started, leaving the baggage to follow Our route diverged somewhat from the sea-shore, and lay most of the way through a thick wood of pandanus. This tree is one of the most valuable to the natives: almost every part of it is of use, and especially the leaves; with these they thatch their houses, and make both fine and coarse mats. The women use the fruit, cut into sections and strung, for necklaces: they are of a bright red colour, tinged with orange and yellow, and at a little distance have a pretty effect upon their dark skins.

The mode of using a knife, for pointing the pandanus and other purposes, amused the sailors very much: it is held in either hand, with the point towards the body, and the article to be cut is drawn over it.



PANDANUS TREE.

The growth of the pandanus is peculiar: it forms whirls, generally from left to right, but occasionally one is seen turning in the opposite direction, and it becomes not a little puzzling to determine where they differ, unless the two happen to be seen together. Its mode of providing for its own support by the pendent roots, is an economy of nature that appears astonishing, and almost gives an idea that the tree possesses instinct. Many are to be seen very much inclined, that are in the act of putting forth several of these roots on one side, in order to prop themselves up, while not a single one shows itself on the other;

these roots not only grow from the side which requires support, but seem to take that direction which will likewise furnish soil. When the pandanus forests are in full bloom, the whole air for miles around is scented with the fragrance.

This day, for the first time, I saw a deranged native. He had escaped from his keepers; and I thought he was rather harshly used in what I saw of the affray. There was great difficulty in securing him.

Within a mile or two of the observatory, we met Mr. Drayton, going out on another excursion.

We reached the observatory after an absence of forty-two days, and it was delightful to feel ourselves as it were at home again, after so arduous and fatiguing an expedition. I had the pleasure to hear that every thing had arrived safely, and that all were well. On inquiry being made for the Kanaka that had been missing, I learned that a party of natives had gone to the mountain in search of him, but that little hope was entertained that he would be found.

On the 24th, Lieutenant Carr, Dr. Fox, Lieutenant Case, and several of the other officers, were allowed permission to visit the crater.

On the 25th, 26th, and 27th, we were employed in putting up the pendulum apparatus, and began on the night of the latter to observe coincidences. The three series obtained, to my great astonishment did not agree. I could not account for the discrepancies, for I examined the whole apparatus, agate planes, knife edge, &c., and found them in perfect adjustment, both with plumb-line and level; the scale and telescope were also found correct; the rate of the clock was steady under hourly comparisons with the siderial clock, and observations of the transits of stars.

Although I had covered the pendulum-house with its tent, I thought that some of the discrepancies occurring might be owing to its want of uniformity of temperature. I therefore, on the 29th, had a grass-house built over both, which remedied any defect of temperature. I then continued to observe, but did not find the results more satisfactory; I therefore took down the whole apparatus, put it up, readjusted it anew, and took another series during the night. These were rather more in accordance. I continued observing through the 30th and 31st, but with no satisfactory results. I then examined the pendulum again with the plumb-line on both sides at the same time: they both coincided with the marks made in London by Mr. Baily and myself, in 1836. I next tried the iron pendulum, and found it to agree also; reversed both pendulums on the knife-edge, but the results were still discrepant.

I must admit I felt perplexed and mortified, not only at the loss of time, but at being unable to detect the cause of the discrepancies. I determined, however, to persevere, and continued to observe from the 1st to the 10th of February, but with no better results, some corresponding, whilst others disagreed every alternate series. The deviation was irregular, and having kept a watch upon the apparatus, I began to suspect that the discrepancy was the effect of volcanic action, and that the ground was unstable. To ascertain whether this was the case, I tried a mercurial horizon on the top of the pendulum-frame, and after watching it for nearly an hour, I could perceive no movement or vibration. On inquiry, I found there was a hot spring beyond low-water mark, which the man who attended the tide-staff had discovered in wading off. This spring was about one hundred and twenty feet from the pendulum-house; but I at last satisfied myself that the tide, and more particularly the surf, had more to do with it; and in looking over the series, I found that when the surf was heaviest they were most discordant.

During this time I was employed in making astronomical observations, and when they were finished, I felt myself at liberty to try other situations for the pendulum observations. Mr. Pitman having offered me his son's house at Paneo, I had every thing transported thither. Paneo is situated on a high bank of lava rock, covered by six or eight feet of decomposed lava rock and vegetable mould. On this soil, large bread-fruit trees, some of them two feet in diameter, were growing. The height of the house above the water was fifty-four feet, and it is removed about three hundred yards from the beach. Between Paneo and Hilo the Wailuku river runs, at whose mouth on the Hilo side, there was generally a long and regular surf rolling in; but I did not suppose it possible that this surf could incommode the observations. After repairing one of the grass-houses, the pendulum-house and apparatus were put up, the whole being in perfect adjustment, and the series was begun.

The first difficulty I now had to contend with was the stopping of the clock. When this was reported to me, I was almost in despair, for on the other side of the bay it had been proved to go well. The clock was again set in motion, but in a short time again stopped; and the apparatus was once more to be taken down, and all the adjustments were again to be made, a work of three or four hours. On opening the clock-case, the cause of its stopping was disclosed by the appearance of a large spider, which had wound his web so tightly round the fork, and connected it so closely with the case, as to stop the pendulum. Although this was provoking, I was much relieved by

finding that it was a cause so easily removed; and the whole was put up anew.

I now flattered myself that I should be able to go on successfully; but this was soon found to be a fallacious hope. The series were evidently less disturbed, and the disturbance was found to be connected with the times of the greatest surf. I, however, went through a thorough examination of the apparatus, and discovered, with a high magnifying power, what was thought to be a scratch in the agate planes. I therefore shifted the knife-edge, causing it to rest about one-sixth of an inch from its former place. As like irregularities continued, the scratch could no longer be assigned as the cause. I therefore concluded finally that the roll of the surf was the sole cause of the discrepancies; and on the 23d of February I determined to make another move, to Mount Kanuha, a hill back of Hilo, which I named after the chief who owned the spot. At this hill I engaged three grass-houses, one of which he agreed to enlarge for me, about ten feet, which, with the rent for the time I should require them, was to cost ten dollars. A detachment of sailors was at once ordered, and the whole apparatus, house, &c., was soon on the move. Mount Kanuha is three quarters of a mile from the bay, and elevated above half tide one hundred and forty feet. Before twenty-four hours had expired, the whole apparatus was up and the clock in motion. After its rate became settled, the series with the pendulums were successfully completed, no disturbance being found to exist at this last locality.

For these interesting results, the reader is referred to the volume on Physics. The difference in altitude of the two stations at which the pendulums were swung, was thirteen thousand three hundred feet.

On this occasion I was assisted by Mr. Eld, who entered most fully into my anxieties and the excitement incident to them, and who joined me in the perseverance and exertions necessary to overcome all the obstacles we had to contend with. On the 2d of March, these duties were completed, and the instruments embarked.

Our time would have passed quite agreeably here had it not been for the vexatious delays that have been spoken of. The house I occupied at Paneo was on a charming spot, susceptible of much improvement; and altogether one of the most desirable situations for a residence on the islands. During the period of my stay, it offered a delightful retreat, and enabled me to enjoy it as well as the fine weather: the latter I may have estimated more highly than it deserves; for the inhabitants of the village were by no means inclined to extol their climate, and considered the season as quite remarkable both for the absence of

rain as well as the constant sunshine that prevailed; and from all the statements I received, I should, notwithstanding my own experience, advise all those who visit this port to be prepared for the interruptions a few hours of rain each day may occasion; with this exception, it may be strongly recommended as a convenient and safe resort for vessels.

Having thus closed the narrative of the ascent of Mauna Loa, my visits to Kilauea, and of the difficulties that attended not only the excursion to the mountains, but the experiments performed near the water's edge, it is time to revert to the operations of the parties which were not under my own immediate command. These will form the subject of the succeeding chapter.

BLOWING CONE OF THE CRATER.

CHAPTER VI.

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CHAPTER VI.

HAWAII.

1841.

During the time of our residence on Mauna Loa, Dr. Pickering and Mr. Brackenridge volunteered to make the ascent of Mauna Kea. They were furnished with guides, among them Sandwich Jack, our bullock-driver, whose true name I believe was Dawson, though he went by the sobriquet of Billy Lilly. They set out on the 8th of January, attended by natives from Hilo, belonging to Kanuha, having agreed to pay each of them fifty cents a day. Their first stage was to the saw-mill erected on the Wailuku, distant about seven miles from Hilo, and three miles within the verge of the forest: here they stopped for the night with a man by the name of Simons, who is the occupant of the mill, which belongs to a Mr. Castle. The mill, as I understand, had proved but a bad speculation: it is now out of repair, and there is not sufficient demand for boards to make it at all profitable.

In the evening a native from Hilo joined them, and communicated the information that the chief Kanuha, who was entitled to one-fourth of the pay of the natives, was much displeased with them for having agreed to serve for fifty cents a day, when they should have asked twelve dollars each for the trip. In consequence of this, they would not proceed the next day; and Dr. Pickering determined on returning to Hilo to have the affair settled. Kanuha disclaimed any participation in the refusal, and sent a messenger back to order the men to proceed.

On the 10th of January they resumed their journey, and followed the "Long Road" for about two miles, which is the whole distance to which it extends; the removal of the chief who was engaged on it had put a stop to its further progress. They were now fairly in the forest,

which was thought by our gentlemen to be a fine one; it consisted altogether of two kinds of trees, the ohea (Callistemon), and koa (Acacia); they also met with several species of the tree-fern, which seem to vie with each other in beauty. Many of these were of genera and species that had not before been met with, one of which afforded the silky down before spoken of, and another, the edible fern, a drawing of which will be seen at the end of this chapter. On reaching the bed of the stream, which is one of the routes through the wood, the guides led them upon it. As they proceeded, they overtook one of the boys who had preceded them, endeavouring to catch a large bird. He had armed with bird-lime one of the pendent branches of a small ohea tree that overhung the stream and was in full flower. As they were passing, the bird was seen hovering about, while the boy was slily watching its movements. When they had passed it a short distance they heard the scream of the captured bird; but by some mishap it afterwards escaped.

Their encampment was under an ohea tree, where the natives built a hut for them with boughs and the fronds of ferns. From the prevalence of heavy rain they found all the wood wet, and could not succeed in making a fire: they consequently passed a miserable night; for in almost any climate, when encamped in the open air at night, a fire seems to be necessary for comfort, particularly when the weather is wet.

Conglomerates were the most frequent rock in the bed of the stream. This rock had not been met with on the trip to Mauna Loa; and on diverging from the stream, the compact rock of that mountain seemed to prevail.

Their guide, Dawson, during the morning showed much alarm at their starting some young cattle, lest the old cows should be near, who he thought might be troublesome: the cattle, however, were discovered afterwards to be tame. At the forks of the stream they took the left branch, and after a walk of two miles, came to some huts occupied by natives who had been bullock-hunting. In this illegal practice they seem to have been extensively engaged, judging from the quantities of jerked meat they had on hand.

The cattle have been tabooed for five years, from the year 1840, in consequence of the slaughter that had been made among them. Upwards of five thousand hides, I was told, had been procured in a single year, and when this became known to the government, it interdicted the hunting of the animal. I heard no estimate of the number of the wild cattle, but they are believed to be very considerable, and all from the stock left by Vancouver in 1795.

From these natives they procured some jerked beef, and were told

that ice had formed there the night before. The effects of frost on the foliage was evident, and yet the elevation did not exceed five thousand feet.

They encamped at night in an open space in the woods, near some shallow pools called the Duck-Ponds, from the quantity of these birds frequenting them. The ground was chiefly covered with tufts of a small Carex. The trees now began to appear gnarled and covered with moss, resembling oaks in habit. The ground had become much drier, and the brushwood was gradually disappearing.

On the 12th, they started at sunrise, and by eleven o'clock found they had cleared the forest. Their altitude was about six thousand feet. The woods had become for some time previously much scattered. They passed also a distinct lava stream, of no great size. The ground was frozen, and the pools of water were covered with a thin ice.

This upper part of the forest afforded a greater variety of trees, though of smaller dimensions: here they met with the false sandal-wood (Myoporum); the koa was, however, still the principal tree.

To the forest succeed the plains; but why this region should be so termed, our gentlemen were at a loss to conceive, for there is an ascent, although gradual, towards the base of the higher peaks; and there are, besides, numerous cónical hills, varying in height from two to eight hundred feet: even between these the surface is undulating, and cut up by ravines.

This district is famous, according to report, for the number of wild cattle found on it, and from that circumstance would be supposed to produce fine pasturage; but this is far from being the case, for there is nothing but a few scattered tufts of grass, and a species of ranunculus, which is of so acrid a nature that the cattle will not eat it. The prevailing feature of the country is aridity, and concealed rocks cover a great part of it. Shrubs seem to be almost absent, but the scattered mamanee trees are every where conspicuous.

It was now evident that their guide had taken them a wrong route, having pursued that leading across the island; they therefore changed their course, and took a direction to the northwest, crossing the country for an eminence, where Mr. Castle, (the proprietor of the mill,) formerly had a station. When they reached it, they enjoyed a fine view over the distant forest, with the bay of Hilo and the sea beyond: the day being clear, the whole extent was distinctly visible; even a small vessel, which had sailed for Oahu, was seen going out of the bay.

They chose their encampment just above this eminence, under a

projecting ledge of lava; close by there were several pools of water. Such pools form in the compact lava; and where this rock occurs, water is to be met with at intervals, while in the porous lava none is to be found.

On the 13th, they set out at an early hour, and passed a belt where the vegetation became very rich, and the variety great, particularly on the sheltered banks of the ravines. Among the plants were several Compositæ, two or three with decussate leaves, Pelargonium Douglasii, five or six species of ferns, several Rubiaceæ, grasses, and other small plants.

About three miles beyond this, they reached a cave, where they intended to leave the natives and baggage. It was difficult to induce the former to come up even thus far, on account of the cold; but being here in the vicinity of wood, they were enabled to have a fire to keep themselves warm: water was also at hand. This cave was a convenient rendezvous, and sufficiently near the top to allow them time to reach it and return in a day. Some of the natives had gone down to a larger cave, three quarters of a mile below.

A few wild cattle were to be seen in the distance; but, according to the report of Dawson, their guide, they ought to have heard from this position cattle lowing in every direction.

On the 14th, one of their guides was sent off after a bullock; Kanuha, the chief, having granted permission to the party to shoot one.

Dr. Pickering, Mr. Brackenridge, and Billy Lilly, set out for the summit. When about three miles above their rendezvous, and having the high hill of red scoria to the south, they entered upon a plain, of many miles in extent. On reaching this, the vegetation of temperate climates almost at once disappeared, and an Arctic flora succeeded. This plain is made desolate by stones, gravel, sand, scoria, and boulders: a few scanty blades of two sorts of grasses (Aira and Panicum), and one or two stone-mosses, were all the verdure, if such it may be called, that was seen. The whole plain resembled the dry bed of some great river over which the water had passed for ages. There was no appearance of lava streams or clinkers, as on Mauna Loa. In the distance rose six peaks, around whose bases were rough blocks of lava, while towards their tops scoria of a red colour, with gravel, prevailed.

On their way, they passed through a gap to the southeast of the three terminal hills, where stood the stone pen, said to mark the place where the Rev. Mr. Bingham was once lost. The terminal peaks were found steep and very fatiguing to ascend; and when they reached the

summit, they took shelter under a pile of stones—the same that Douglass speaks of. They were unfortunate in the weather, as a cold, cutting, and strong wind blew from the southwest, sweeping over these peaks with great force. The water in the bags froze in a few minutes in the bright sunshine. Their man Dawson, alias Billy Lilly, soon became weary and exhausted: he was so stiff, that it was with difficulty they could get him to move down to the base of the mountain. The lee side of the mountain, was a sheet of ice for several hundred feet down the peaks; the weather side on the contrary, was covered with minute icicles pointing to the wind, which, on being walked over, were detached in numbers.

In the early part of the day, Mauna Loa was in sight; but when they reached the summit, the atmosphere became hazy, and consequently their view of the country around was very indistinct. The terminal crater of Mauna Loa, however, was still perceptible.

The highest peak of Mauna Kea is the southernmost; but our gentlemen did not visit it, proceeding to the western side of the mountain, until they obtained a view of the slope to the northwest and north. The lake spoken of by Mr. Goodrich, which lies in the direction of the highest peak, was not visited.

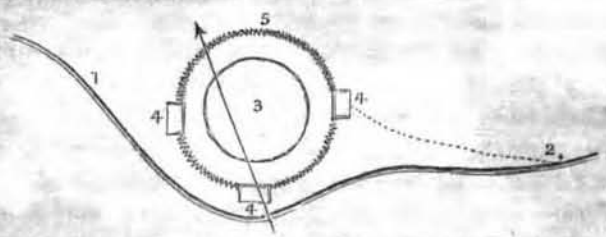
Mauna Loa and Mauna Kea differ essentially, both in form and apparent composition. Mauna Loa, as has been seen, is one mass of lava streams for the distance of four or five thousand feet from its summit; while Mauna Kea is found to consist almost entirely of scoria without any craters, unless the conical hills spoken of can be so considered; which is probable, for they are represented as cup-shaped on top. Vegetation on the one ceases at about seven thousand feet; while on the other it is continued to twelve thousand, and a few scattered plants may even be found within a few hundred feet of the top of Mauna Kea. The plants also differ: the mamanee occupies a belt eleven thousand feet high, while none of this plant is to be found on Mauna Loa.

On their return, they determined to proceed to the lower cave, where the natives had taken refuge.

On the 15th, they concluded to descend, after making a tour on this same level, where they found the ground as barren as on the route by which they had ascended. Small herds of cattle were seen, but at a great distance apart: these have now become shy, from having been hunted by Spaniards with horses from California, which were imported for the express purpose of carrying on systematically the business of killing the cattle for their hides. These hunters would soon have exterminated them.

The golden plover is very abundant on the plain, as every where else; but is said to quit the islands in the breeding season. No geese were seen on this mountain; but many small birds appeared as high up as the mamanee trees. They also saw hawks, which, by a perversion of language, are called "crows."

They then went towards "Ned's House," (now deserted,) and took the path leading in a southeast direction, along the margin of the woods. This was the route that Douglass followed, when he left Ned's House, on the morning of his death. In about three quarters of an hour, they arrived at the pits; in one of which he was found dead. They are situated in an open clearing, in the centre of which is a low marshy spot, sometimes containing water, which the cattle come in search of. The annexed diagram will give an idea of the locality. These pits are covered with raspberry and other fragile bushes; which are covered again with soil, and the hoofs of cattle imprinted on them, to deceive.



SKETCH OF CATTLE-PITS.

1. Path leading from Ned's House. 2. Place where Mr. Douglass left his bundle and dog. Track towards the pit in which he was found with the bull, gored to death. 3. The pool of water. 4. The three pits. 5. The fence which surrounds the pool and compels the cattle to pass over the pits.

The locality of these pits is in a dell, with banks sloping on both sides: the one to the northwest is about twenty feet high, while that to the southeast is about thirty feet. On each side, both above and below, thickets close the dell.

These pits are about seven or eight feet long, and four feet wide, and are walled up: they are placed broadside to the water.

There were many circumstances attendant upon the death of Douglass, leading to the suspicion that he had been murdered by Ned, at whose house he had breakfasted. The general character of Ned gave rise to a feeling that such was the fact, he having been a runaway convict from New South Wales. It seems somewhat singular that Mr. Douglass should have laid down his bundle and returned after passing the pits; and it is remarkable too that his servant, who had parted from him the same morning, should also have perished.

Ned's conduct afterwards was not a little suspicious, for he mentioned he had warned Mr. Douglass against the dangers of these pits, and had accompanied him to within a short distance of them. So strong were the suspicions against him, that a post-mortem examination took place by Drs. Judd and Rooke; but nothing could be elicited, for all the wounds were such as Mr. Douglass might have received from the animal. Few deaths could be more awful than that which he is supposed to have suffered.

Bullock-hunting seems to partake somewhat of the dangers of the chase of wild beasts, and has much of its attraction. Many stories are related of natives having been tossed, gored, and carried on the animal's horns for hours, and from these reports the natives are easily alarmed with the appearance even of a half-tamed animal, as we had abundant reason to observe on our way up Mauna Loa.

A story was related of a native, who, having prepared a pit, succeeded in entrapping a large bull, but became so excited at his success, that he slipped and fell in himself; however, being armed with a knife, he succeeded in killing the animal: when discovered both were dead.

Mr. Castle had three ribs broken, and Ragsdale, our old guide, a leg fractured, while hunting; and many other rencontres, partaking too much of the marvellous to be repeated here, were told me.

They encamped for the night in an old bark hut, in the line of woods. The 16th was rainy, but they continued their way down the mountain in a north-northeast direction, passing through the woods. The path was wretched, and full of mud and mire. The last part of the way the trees became more numerous, and consisted, besides the ohea and koa, of the Ilex, Aralia, Myoporum (false sandalwood), several Compositæ, a Silene, and four or five species of Lobelias, with handsome flowers, mostly blue. Lower down, near a deserted hut, they unexpectedly found a mamanee tree, which they were told had been planted for the purpose of enticing the birds.

From scrambling over roots and through mire, they were much fatigued before they reached Puahai. This village contains a few straggling houses on the table-land: it is distant about two miles from the sea and twenty-five miles to the northwest of Hilo. The natives here appeared to be much more primitive than they were in other places, and had had but little intercourse with strangers. It was with some difficulty that provisions could be procured: a dollar was demanded for a turkey, and four needles for a chicken. No more than three of the latter could be found in the village. Their guide met with considerable delay in getting the necessary quantity to supply the

party. At Puahai they were permitted to occupy the school-house, and remained over Sunday.

The coast to the north of Hilo is somewhat peculiar: it is a steep bluff, rising about two hundred feet; this is cut into small breaks, called here "gulches," within which the villages are generally situated, and the natives grow bananas and taro. In some places they cultivate small patches of sugar-cane, which succeed well.

These gulches are ravines, from eight hundred to one thousand feet deep, which have apparently been worn by water-courses: they extend back to the woods, and have made the country impassable for either vehicles or riders on horseback, for no sooner is one passed than another occurs. There is no landing for boats, for all along the shore the surf beats on the rocks with violence.

Mr. Castle's residence was reached the next day: it is about seven miles from Hilo. He has been turning his attention to the cultivation of coffee, and has now a plantation of several thousand trees in and among the coast-craters, which is in a fine condition.

Mr. Castle is a carpenter, and has erected and owns some of the mills on the island.

They walked the next day to Hilo. On approaching it they saw many bread-fruit trees, with the fruit lying under them rotting: for the natives never think of eating it so long as they can get taro, or the sweet-potato; and, seemingly, it has lost its value in their eyes.

On my return to Hilo, finding the survey of the bay had not been begun, we commenced it immediately. Lieutenant Alden, whilst putting up a signal on the north point was upset in the surf, and narrowly escaped being drowned. He was saved by the Kanakas, who were part of the boat's crew. The surf, as I have before remarked, is too heavy to allow a boat to land on this shore.

An accident also occurred to the launch, while watering, during our stay. Mr. Vanderford, who had charge of her, was passing out of the Wailuku river, off the point of which the boat entered the breakers, and a heavy roller capsized her: being heavily laden with water, she sunk, and drifted out, leaving those who were in her in danger of drowning. Mr. Vanderford could not swim, but a native came at once to his assistance, who, however, would do nothing until he was promised two dollars, which of course a drowning man was not long in doing, when he acted promptly and rescued the officer from drowning.

In order to give the native a lesson as to his conduct in demanding money in such a situation, he was told that he would have received twice as much if he had not made the demand. It is due, however, to

this fellow to say, that in all probability he never imagined there was any danger of loss of life; for if these people are at home any where, it is certainly in the surf, enjoying as a pleasure what we from our want of knowledge and confidence in the art of swimming, consider dangerous.

Some account will now be given of the proceedings of the officers left in the Vincennes, and of the festivities which they exchanged with the chief Kanuha and the missionaries.

Lieutenant Carr, who had charge of the ship, was also, with the officers under him, entrusted with the duties of the observatory, including the meteorological and tidal observations. Acting Master Totten and Passed Midshipman May were engaged on the charts.

Among the festivities was one given by the chief Kanuha to the officers. Kanuha lives in a large native house, situated on the south side of the bay, in a pretty location near the beach, and surrounded by large trees, which not only add to its beauty, but afford the shade so important in this climate.

The chief is, like all those of noble blood of these islands, of large dimensions, and might be called a fine-looking man. He is thought to regard his own interest before that of others, and is desirous of making money when and how he can. His wife is equally remarkable among her sex in size. He was dressed in a blue roundabout and white pantaloons, hat, and shoes; his wife and females about the house were chiefly dressed in calico gowns, such as have been before described. Lieutenant Case, Messrs. Waldron and Drayton, and two or three midshipmen, went to the feast or dinner. The hour of dinner was one o'clock. They were received with much dignity in an apartment which occupied the whole house, and was decorated with green wreaths, not unlike our churches at Christmas. This room contained all the goods and chattels of the proprietor, consisting of two bedsteads, good beds and bedding, tapa screens, nests of beautiful camphor trunks, fine mats, common chairs, with several large chests, said to contain much riches. The visiters were presented by Kanuha to his wife, her sister, and his five daughters: the former were robed in neatly-made black silk dresses, with high-topped combs in their heads. Kanuha's youngest daughter, however, seemed to make the most impression. She and her sisters were dressed in painted-muslin dresses, white stockings, and shoes; their heads were tastefully ornamented with the valuable feather-wreath, before spoken of, and a garland or wreath of a carmine-coloured flower, natural to the island; in their hair behind were enormous high-topped shell-combs; a red silk sash, and a sweet-scented evergreen garland thrown over their shoulders,

hanging nearly to the ground, completed their costume. During the presentation, the females took off their evergreen scarfs and wreaths, and placed them upon our gentlemen, quickly getting others for themselves.

The attendants were in great numbers; each of them had one of these wreaths hanging from one shoulder to the opposite hip.

The table was spread with a white cloth, and just enough plates to accommodate the guests. Our gentlemen, however, insisted that the host and hostess, with their daughters, should sit down with them; and knives and forks being brought, they all joined the feast. The dinner consisted of pig, pork, roast turkey, and luaad fowls, sweet-potatoes, taro, &c.; the meats were divided into eight courses, and most of them were deliciously cooked; for dessert, they had watermelons and bananas. The entertainment went off well. At three o'clock part of the officers returned on board, while the rest went with the young women, by invitation, to bathe.

A few days afterwards this compliment was reciprocated, Kanuha and his household dining on board. They were highly delighted with the attentions and ceremonies, which were all quite new to them, as neither the missionaries nor residents ever receive natives at their table, not even the king. Their behaviour was quite decorous, and they seemed to enjoy every thing that was set before them, particularly the wine.

Pea and his family were also guests. Pea is the king's agent, and has charge of the fish-ponds, although he is not chief of the district: he speaks some English, and is under the patronage of the missionaries; he lives on the Waiakea side, in a large grass-house, near the fish-ponds. The latter cover many acres, and have a great many fine mullet in them, very few of which are caught, as they are reserved for the king or his representative Pea, and his family. From this cause, the fish have multiplied to a great number, and are in very fine order for the table.

Kanuha is the representative of Governor Adams, who is the ruler of the five districts of Hawaii, of which Hilo is one. Adams had been in Hilo shortly before our arrival, but was not able to remain, and is so enormously unwieldy, that it is with difficulty he can move about. Kanuha collects all the taxes, acts as magistrate, and from all accounts is a very energetic one.

I have before spoken of the fruitfulness of this side of the island of Hawaii: the sugar-cane grows here in abundance, and of a large size; coffee succeeds well, as do indigo and the tacca, from which they make a quantity of arrow-root.

For the manufacture of sugar, Governor Adams owns a small mill, in charge of two or three Chinamen; but it is in a wretched condition. It is worked by a small stream of water led from the Wailuku river. The quantity of sugar made in the year 1840 was about thirty tons; but with a well-adapted mill, and under good management, a much larger quantity might be made, for much of the cane is now suffered to rot from want of facilities to grind it. The natives now understand its culture well, and each has a small patch. If a demand was created for sugar, the cultivation might be greatly extended. The cane comes to perfection in twelve months. There is certainly a large field open here for enterprising individuals, as much of the land now lying waste in the neighbourhood is admirably adapted to this cultivation, and might be obtained on lease from the government for a small price.

Mr. Castle has a mill, also, about seven miles north of Hilo, which he uses, I was told, to great profit, although it is but a small concern.

The only extensive plantation of coffee that I heard of was that of Mr. Castle, which, however, is not yet old enough to produce crops. Some isolated trees in gardens at Hilo have yielded eight or nine pounds of coffee each; and the calculation is, that the average yield of each tree will be equal to that amount.

Mr. Goodrich, the missionary who preceded Mr. Coan, was very desirous of introducing the culture of sugar-cane and coffee, and became very active in promoting it. With the assistance of the natives he planted a large number of coffee trees, and was bent upon instructing them in the mode of cultivating both. He also erected a small sugar-mill. I regretted much to hear that his successor viewed all these improvements in a far different light, and, not content to allow the trees to fall into neglect, he actually took the trouble to root them up, in order to arrest the progress of the improvement of the natives in their culture.

I walked round the garden with the missionary, and saw all the vines, fruit, and ornamental trees, to which his predecessor had paid so much attention, and in which he had taken such pride, going to waste. One would have thought that the spirit of his calling would have dictated a more worthy and enlightened course. I never was more satisfied with the folly of such a step, than when the question was asked me by an intelligent native, "Why the missionaries no like grow sugar-cane and coffee?" I could not but believe that the intelligent lady of the establishment, with her numerous scholars, would have been well employed in superintending the garden, and that it would have proved a source of recreation as well as of profitable industry to all concerned.

The districts of Hilo and Puna are embraced under the same pastor,

the Rev. Mr. Coan. It is the largest charge in the group, and according to the last census, contains twelve thousand inhabitants. In 1840, seven thousand of these were reported as communicants, forming twenty separate congregations, all of which are under the charge of native catechists, and are visited quarterly by the missionary for inspection, instruction, discipline, and the Lord's Supper. All the communicants meet yearly at Hilo.

Being much engaged with the natives, I had a fair opportunity of observing their improvement in religious knowledge; and I regret to say, that it is not such as I anticipated from the accounts that were given me, or equal to what it ought to be from the exertions of their pastor; for, while I cannot but condemn the course he has pursued in rooting up the coffee plantations, and overturning the good works of his predecessor, I must do him the justice to say, he is untiring in his clerical duties, and his field is one of constant labour, both of mind and body.

In giving an account of the wants of his parishioners, he includes the following, viz.: lawyers, doctors, teachers, artists, agriculturists, manufacturers, preachers, and, above all, money.

The schools were in the first place composed of adults and children, and numbered five thousand scholars; but now they are confined to children, between two and three thousand of whom attend school, being one-sixth of the population.

With regard to the population of this district, I have no positive proof of its decrease. Children are, indeed, said to be few, but the numbers that are reported as attending the schools show that there is as large a proportion of them as in other countries.

There is at Hilo a boarding-school for boys, under the care of Mr. and Mrs. Lyman, which was established in 1836. This school is sustained by annual grants of the American Board of Commissioners for Foreign Missions and by lay donations.

The number of scholars at the time of our visit was fifty-three, fifteen of whom had just been received, and seventeen had been lately sent to the high-school at Lahainaluna. Twelve more were preparing to join that school. The annual expense of each scholar is from sixteen to eighteen dollars: the boys raise about one-fourth of the food they consume. They cultivate a little sugar-cane, which was estimated to be worth fifty dollars the last year. The boys eat at a common table: the dormitory is eighty feet long, by twenty-eight feet wide, and immediately over the school-room; each bed-place is partitioned off into a small room, with mats, six feet by four. The whole is extremely neat and clean.

The boys in this school appear more cheerful than any others I have seen in this group; all of them look remarkably healthy, and, indeed, robust for these islands. They are fed upon poe, one of the most nutritious articles of food, and thrive proportionately; they were, in fact, the largest boys of their respective ages that I saw on the islands.

Through the kindness of Mr. Lyman, I was present at an examination of the scholars: sacred geography and arithmetic were the two branches most dwelt upon; the exercises in mental arithmetic would have done credit to our own country, for they were quite as proficient in them as could possibly have been expected. I was much pleased with the arrangements of the dormitory, eating-rooms, hospital, and with the appearance of the "farm," or few acres they had under cultivation. It was very evident that system and good order prevailed throughout. The dormitory, particularly, appeared to me well calculated to promote health, and give notions of comfort foreign to the ideas of a native.

Mr. and Mrs. Lyman seem quite competent to the charge, particularly the latter; for one cannot but perceive the hand of the mistress pervading throughout. This and Mrs. Coan's school for girls, are decidedly the best-conducted establishments, I saw in the Pacific. I cannot pass by the latter without adding a few words.

Mrs. Coan had been kind enough to ask me to appoint an hour to attend the examination of her pupils, or to come when I could. My employments placed it out of my power to select a time, and I took advantage of her general invitation to drop in when I was quite unexpected. I was very kindly received, and found her with all her scholars seated around, some hard at work with the needle, and some reading. My entrance occasioned little or no disturbance, either to the lady or her scholars; and the regular routine of the school went on. It gave me great pleasure to see what the industry, talent, and zeal of my countrywoman had accomplished; for by her untiring assiduity this school had been established, and is kept up. The whole care devolves upon her of maintaining, clothing, and educating these children; and the only aid she receives is through the donations of parents and strangers, and what little the girls can earn by sewing for the storekeeper.

The accommodations for this school are far inferior to those for the boys; and I must say, I felt some astonishment that the Board of Managers had not given it a helping hand. When it is stated that Mrs. Coan has young children of her own, without servants to whom she can trust them, it will be seen that the task of taking under her

charge twenty-three native girls for education, clothing, and food, is one of no ordinary labour. She is one of the most useful of the missionaries; and were it not for the less liberal notions of her husband, would be much more so. I could not but perceive that his interference in the matter of this school is detrimental to the progress of the scholars in civilization: when this is the case, it cannot advance their progress in true religion.

The number of district schools in Hilo and Puna, is said to amount to one hundred; but of these I saw only one, which was under Mr. Wilcox, a teacher attached to the mission. This was kept in the old church. The numbers in attendance varied from sixty to eighty, consisting of all ages between five and fifteen.

I was in the habit of passing this building almost daily, during the latter part of my stay, and frequently was much amused at the behaviour of the scholars and their teacher. These little boys are for the most part nearly naked; but what they wanted in clothes they made up in curiosity, and on my passing on Kanuha's white horse, out they would come without the consent of their teacher. On one occasion, I was not a little amused at his attempts to restrain them, through which a kind of hurry-skurry ensued, as though so many rats were escaping from a cage; all the teacher could do, escape they would; and when he ran to one door to close it, they would nimbly seek the other, until none were left but such as he had tumbled over. I could not help laughing at this scene. This will give some idea of the difficulties to be sometimes encountered here in teaching, although I would not have the reader suppose that such is the case always.

During our stay at Hilo, I visited the Rainbow Fall: it is about a mile and a half from Hilo, and is well worthy of a visit. The Wailuku river, which I have mentioned as dividing the village of Paneo from that of Hilo, here descends about one hundred and twenty feet into a circular basin, formed apparently by the caving in of the lava, with which the whole country is covered: the strata of sand and clay has in places become undermined, and has left the ledge over which the fall shoots, projecting beyond the walls of the basin. This has the effect to bring the water in broad relief, and the height is sufficient to dissipate it into foam before it reaches the quiet and secluded nook below: this causes a fluctuation in the quantity of spray that is constantly arising, which being agitated by the breeze, throws it about in various directions, and with a bright sun, causes innumerable rainbows to be seen, from those of great brightness to the most delicate tints. The walls showing the

basaltic formation add much to this effect, and might almost lead one to fancy the basin had been built by fairy hands, to enchant the visiter.

The missionaries often make visits to this beautiful spot in the evening, and one of the first places of interest that they point out to a stranger are these falls. The basin into which they fall is also a favourite resort of the natives for bathing.

The tacca, from which the arrow-root is made, is not cultivated; although it grows wild all over the island. It is gathered and prepared by the natives; but they are not sufficiently careful when they dig up the large roots, to replace the smaller tubers in the ground. From this neglect, the plant is on the decrease. I was told that attempts were making to cultivate it: it grows well in the upland regions, in the poor soil, covered with fragments of lava, which is unsuited for any other culture.

Their mode of preparing the tacca for use is simply by first washing,

then scraping and straining it through fine leaves. After standing awhile, the fecula settles, when the water is poured off. The fecula is then made into small cakes with the hand, by which operation it is freed from the remaining water; and it is then placed in the sun to dry. The manufacture of this article is generally limited to the quantity necessary for furnishing each of the females with a calico frock. This of course does not amount to any very great quantity, in a commercial point of view; but will yet be considered large, when the manner in which it is gathered is considered. I was informed, that the quantity shipped to Oahu yearly, was two hundred thousand pounds; and that the price paid for it was two or three cents a pound, in goods. At Honolulu, it is sold at a profit of one hundred per cent. to the shipper.

Indigo might be made a profitable culture; for it grows wild in many parts of the island, and in great luxuriance. It is naturalized at Hilo, where I learned that some experiments had been made, which leave little doubt that if it were cultivated, it would be found to be equally valuable with that of the West Indies.

Sandalwood, it is well known, was the first article that brought this people into notice, gave importance to the islands, and tempted foreigners to visit them. The chiefs, finding they had a store of treasure, believed it to be inexhaustible; and were tempted, by their own cupidity and that of their visiters, to cut it without stint. The course of this trade led to all sorts of tyranny and oppression by the chiefs towards their dependants. The trees have been for some years tabooed; but this plan was adopted too late to preserve any of large size. Those which were not cut down for sale, it is said were destroyed by the natives, to prevent impositions being practised upon them. Not unfrequently, the chiefs would despatch their dependants to the mountains, with nothing to eat but what they could gather from the forest of ferns, the core of whose trunk supplied them with a scanty and precarious subsistence. These hardships were enough to cause whole tracts to become waste. It will be a long time before the remainder of these trees are large enough to become an article of commerce.

Mr. Brackenridge on his return from the mountain passed from the volcano to the sea-board at Papapala. He found the whole country to the southwest of the crater a flat barren waste of smooth lava, mixed with fields of drifted scoria, and with bundles of capillary glass, or Pele's hair, hanging to the few stunted tufts of Silene and Compositæ. This character continues to within six miles of the sea, when the lava becomes more rough, and bushes of Metrosideros and Sophora

(mamanee) succeed, and extend to the edge of a precipice, whose height was estimated at six hundred feet. This precipice is faced with loose blocks of lava, thickly overgrown with bushes and trees. Among these was an amaranthaceous shrub of great beauty. From the base of this precipice to the sea-cliff, is a flat plain of smooth glassy lava, with some rents and crevices. In these grew the Agati grandiflora, which here assumed a prostrate habit, Daphnes, and some rubiaceous shrubs, and several grasses. Against the cliff, which is perpendicular, the sea breaks with great violence.

Mr. Brackenridge succeeded in procuring a few shells, among which were some Patellas, a Nerita, a Trochus, and Chiton. He estimated the distance from the volcano to the sea at fourteen miles, in a south-southwest direction.

He left the sea after two o'clock, and did not reach the volcano until eight or nine in the evening, having been obliged to feel his way back with a pole, to avoid the rents. This part of the island is uninhabitable, in consequence of its being devoid of water as well as soil, and not a single native was seen during the whole day. A few wild-cats and one goat were all the animals that were seen.

On the morning of the 23d, Messrs. Brinsmade, Drayton, Brackenridge, and Midshipman Elliott, took their leave of the Recruiting Station, with an allowance of two biscuits. After a very fatiguing walk, they reached the volcano at dark. Midshipman Elliott the next morning departed for Hilo, with my despatches for the ship.

On Christmas-day, the ingenuity of the consul procured a turkey for the party, which was trussed and cooked in a steam-vent by one of the natives.

Having procured guides and natives to carry the provisions which they had obtained from those going to the mountain, they concluded to leave the volcano on the 28th, for the lava plain. They first struck it the same evening, but not having time to halt, they passed to Panau, a distance of nine miles, and on their way found several very interesting mosses and ferns.

After passing the night at Panau, on the morning of the 31st, they set off for the first outbreak of May 30th, 1840.

The first flow of lava which they saw was that to the eastward of Moku-opuhi: it consisted of a bed of smooth lava in the centre, with many cracks, and here and there sulphur strewed around, from which the fumes were issuing in great quantities. Pieces of pumice as large as a man's head were not uncommon, and of the colour of ashes. These extended about three miles in length, by one-third of a mile in width. This stream of lava was fifteen feet above the general level,

and appeared to have been vomited forth through a chain of vents in a highly heated state, spreading destruction around, and leaving not a vestige of the forest remaining, although it covered a space of about two miles square. Scoria which had been pressed or had run off to the edges, had overthrown all the bushes and trees with which it had come in contact; these remained unconsumed, proving conclusively that the scoria had been much less heated, or had cooled so rapidly as not to have injured the vegetation.

The direction of the course of this stream was east-northeast, through a dense forest. Owing to the great roughness of the field, they were not able to walk upon it: its margin was equally impassable, owing to the entangled state of the bushes and trees, which had been pressed together by the lava. Taking a parallel course with this eruption, they suddenly came upon a pit-crater, which is named on the map "the Old Crater." This they found to be one hundred and fifty feet deep, and covered with bushes; its diameter is about one mile. Towards the centre, steam was issuing from some small cracks. They now ascended part of Moku-opuhi, but found themselves soon on the edge of another pit-crater, the deepest they had yet seen: the walls of this appeared to be of more recent date than the others, for the north part of the hill bounded it, and it was supposed to be eighteen hundred feet deep.

The old bank to the south was clothed with bushes: the part of this which they ascended proved very treacherous to the footing, and occasioned no small panic, as it gave way underneath their feet, threatening them with instant destruction.

On the 1st of January, they pursued some of the steam-vents, until they reached the Pahuhali road. Here Mr. Brinsmade left them, to proceed on his way to Hilo, where he shortly afterwards embarked for Oahu, with his health (as he wrote me) quite re-established, notwithstanding the fatigue and exposure he had undergone. To his agreeable disposition on the journey, and his kind attention to us during our stay in these islands, we feel ourselves greatly indebted.

Messrs. Drayton and Brackenridge continued their route to Pahuhali, where they procured a guide to take them to the lava stream. Pahuhali is a small village situated one and a half miles from it. They soon reached the great flow, which had spread destruction throughout its course, leaving nothing standing that came in its way. It was from one to three miles wide: down its middle was seen the long channel or rent from which the stream had poured forth, running for the most part smooth, though occasionally in wrinkled and twisted forms, the scoria lying on the outer extremities of the flow, as though

it had been borne on the surface of the molten mass, and thrown off on one side.

After surveying about five miles of its extent and to within three of its termination at the sea, they returned to Pahuhali, passing through an extensive bamboo-brake in the forest, many of whose stems were five inches in diameter. The next day they returned to the ship at Hilo.

The district of Waimea is situated on the northwest side of the island. So much of the soil of this district as lies along the coast, though rich, is badly watered, and seven or eight miles in the interior from Kawaihae Bay, it becomes exceedingly rocky and barren. The amount of the good land is supposed to be about one hundred square miles, and the greater part of this lies on the eastern side, where it is well watered. The face of this district combines hills, valleys, plains, and mountains.

The high land to the eastward of Kawaihae causes an almost perpetual calm. This mountain region is rocky, and has a burnt appearance until the eastern side of the mountain is reached, when a dense forest and a most luxuriant vegetation succeed.

On the south are Mauna Kea and the barren lava plains. The latter lie, as we have seen, between Mauna Kea and Mauna Loa, where desolation reigns. In this plain is said to be the remains of a pathway, upwards of a mile in length, of flat stones, leading to the temple of Kaili, before described in Messrs. Peale and Rich's journey.

The climate of this district is, upon the whole, unpleasant, particularly at Waimea, in consequence of the trade-wind, which is exceedingly strong, bringing with it a mist towards sunset. This wind rushes furiously down between the mountains which bound the valley of Waimea, and becomes very dangerous to shipping in the bay. It is called by the natives "mumuku," and is foretold by them from an illuminated streak that is seen far inland. This is believed to be caused by the reflection of the twilight on the mist that always accompanies the mumuku.

The productions of Waimea are the same as those of the other districts, but it abounds also in timber of good size and quality for building. This was the famous sandalwood district, whence Kamehameha procured the cargoes which he sold for the Canton market. As I have before remarked, there are now no trees left larger than mere saplings. The niau, or bastard sandalwood, is plentiful, and considered as a fine wood for building.

Waimea was also the principal place of export for hides, tallow, and beef. Of these articles only a small amount is now exported,

owing to the taboo on cattle. Leather is here tanned in sufficient quantities to meet the wants of the domestic manufacture, and there are many trees having astringent barks, adapted to the use of the tanner.

A species of morus abounds in the forests: from this, a tapa is made that is highly esteemed, and which is exported to other parts of the island.

The cultivation in this district is much affected by the annoyance of caterpillars, which prove very destructive to the crops.

Waimea enjoys frequent communication with Honolulu, which affords the best market in the group. Besides, there are three or four stores, kept by foreigners, for trade and barter.

In 1830, Waimea was first brought into notice by Governor Adams, who took up his residence there for the purpose of taking the wild cattle, that had become extremely numerous. While he remained in it, there was much activity and life: all trades found employment; roads were made, and ox-carts travelled a distance of fifty miles. Now, since the taboo has been laid, the place is comparatively deserted; and unless the cultivation of the soil be resorted to, it will, before many years, become a barren waste.

During the period of its prosperity, many of the habitations of the natives were improved, and they advanced much in civilization. Some of them own horses and cattle, and are industrious; but the mass, who have lived on this precarious employment, and found their subsistence in that way, have become, since it ceased, more indolent than before.

In this district there are forty-two schools; half of these are for adults and half for children; all are taught by native teachers, excepting two, which are under the instruction of the missionary, the Rev. Mr. Lyons and his wife. In these there are about four hundred children and five hundred adults.

The population is registered at six thousand five hundred, of whom four thousand seven hundred and fifty-four can read; about one-fourth of this number write and understand some arithmetic; nearly four hundred study geography. The number of communicants is two thousand eight hundred and fifty-six.

From a comparison of births and deaths, the population would seem to be decreasing. Of the former there were registered in 1839 one hundred and sixty-nine, of the latter two hundred and thirteen. Of marriages there were about fifty in the year.

Infanticide does not exist in this district, nor is intemperance a common vice; ava, made from fermented potatoes, is considerably used, and also tobacco.

The diseases are fevers, inflammation, and scrofula.

The opinion generally prevails, that the natives of the Sandwich Islands have an abundance of food, and are not exposed to any hardships; but this I found to be extremely erroneous; for, with the exception of chiefs, and those immediately connected with them, they often suffer as much as the poor of other countries. As civilization advanced this suffering seems to have increased, partly owing to the decrease of food, and partly to the diminution in the authority of the chiefs. Many were formerly obliged to labour for the chiefs, by whom they were in turn supported; these are now compelled to trust to their own resources for support, and seldom can be brought to work until they are driven by necessity.

The Kohala district lies on the north point of Hawaii, and is divided from that of Waimea by a range of mountains. The soil on the leeward shore is barren from three to five miles inland. On the windward shore it is of good quality quite to the beach. The face of the country is regular, gradually ascending from the coast to the summit of the high lands.

Kohala, the residence of the missionary, the Rev. Mr. Bliss, is the principal place in this district. The view from that place is pleasing; in front is a fine prospect of the ocean, with the island of Maui in the rear; the ground gradually rises from the shore to the volcanic peaks of Mauna Kea, tipped with snow; while on the right and left are extensive forests and uncultivated fields.

In this district it is estimated that there are fifty thousand acres of good arable land, much of which is fit for the plough, and suitable for the growth of sugar-cane, Indian corn, potatoes, the mulberry, and the other productions of the country. The country inland, especially, is well suited to the culture of the common potato. It is also well adapted for grazing, but is now a waste. The natives only raise sufficient taro, sugar-cane, and sweet-potatoes, for their own use, and a very small patch suffices to supply their wants. Some of them attempt to carry a small quantity of their produce, on their backs or in canoes, to Kawaihae, for sale, but this is of little account. One of the natives, however, has been induced to begin the erection of a sugar-mill.

Little has been done by the inhabitants towards the improvement of their dwellings: these are very small and often exceedingly filthy: the doors are from two and a half to three feet high. A few attempts have been made to erect larger houses, and to improve the quality of the thatch; but the people do not seem inclined to change their former modes of life.

To give some idea of the state of these people and their wants. It is admitted by all, that licentiousness prevails to a great extent among the people, even at present, but to a far less degree than formerly: then promiscuous intercourse was almost general,—men were living with several wives, and vice versa. No improvement in this respect had been made, until the missionaries began their labours. To them this nation owes its moral code, and the enactment of laws respecting marriage. A native's idea of luxury does not extend beyond poe and fish, with which he usually seems satisfied, and when they are obtained ceases all exertion. To overcome this inertness, it is requisite that they should, as some few do, feel artificial wants, which cause them to look about for employment. Even these are so few that they are soon satisfied. It is said a native may be supported in the Hawaiian Islands for two or three cents a day: on some of the islands they receive no more than seventy-five cents per week, and even this is paid to them in tickets, entitling them to goods to that amount from the store of their employer, who pays them in this way at an advance of fifty to one hundred per cent.; this brings the value of their labour for the week (six days) down to twenty-five or thirty cents. This is all the inducement the commercial men or foreign residents hold out to the natives to work.

The population of the Kohala district consists of six thousand four hundred; and during a year and a half it has diminished between four and five hundred, owing in part to emigration. As to the other causes of decrease, if they exist, there are no facts to show it.

The schools are not attended with any regularity: sometimes they are crowded, at other times thinly attended. This is attributed to the want of proper teachers, and on the part of the parents to a want of interest in the education of their children. About one thousand two hundred children are regarded as scholars in the different schools; one hundred of these are taught in the station school, under the care and personal superintendence of the missionaries. At the last examination of these schools, eight hundred were present, four hundred and sixty of whom are able to read, several can write, and a few have made some advancement in mental and written arithmetic. Of the adults in the schools, there were one thousand one hundred who could read intelligibly.

The church was organized in this district in 1838, and in 1840 there were nine hundred and fifty who professed Christianity, though it is believed that all are not Christians.

Mr. Bliss states that the people of Kohala are intemperate in the use

of tobacco, and that he has known some deaths from this cause. He, however, bears testimony, that there is some reformation in regard to this debasing habit.

The diseases are very similar to those mentioned in other places, with the exception of several cases of decided consumption which have been met with. The climate is believed to be, upon the whole, more healthy than other parts of the island, and the weather is generally cool, with a bracing air.

On the 12th of February, I witnessed an interesting sight,—the chase of blackfish, of which a school was seen in the afternoon in the bay. Upon this, the natives who were fishing, and those on shore, put off in their canoes to get to seaward of them: when this was effected, they began making a great noise, to drive the fish in; and finally succeeded in forcing many of them into shoal water, from whence they were dragged on the beach, when about twenty of large size were taken. I measured one, which was eight and a half feet long. The whole scene was animated, and the fish seemed completely bewildered and exhausted from fright. They afforded a fine feast to all the inhabitants of the bay, besides yielding plenty of oil, of which they are very fond. The moment a school of porpoises is discovered, it is their usual practice to drive them in, gently at first, but when they are sufficiently close, a loud clamour begins, in which old and young of both sexes join.

Mr. Drayton was, with the exception of Dr. Pickering, the last to visit the crater. On the road to Keaui, the former examined a curious cave, called by the natives Pariorii, which is said to have been one of the dancing-halls of the attendants of the goddess Pele. This legend also points out the drums upon which the music was performed. These are hollow cones or pillars formed by the lava blistering up, and remaining hollow: when struck, they give a deep sound, not unlike that from a large drum. The cave is said to have been much curtailed in its dimensions about a century ago.

At all the small places along the coast there are some petty officers, mostly connected with and appointed by the missionaries. Besides the religious duties they perform, they are likewise tax-gatherers, have a good deal of authority over the people, and were found to be the greatest extortioners our gentlemen met with.

At some of the houses, the natives were seen to be very much afraid of the tax-gatherers, and when any of them made their appearance, all merriment would cease; those who were indulging in a pipe or cigar, would at once put them aside, and all seemed under restraint.

The native women are generally found employed, either in plaiting

hats from the flowering stock of the sugar-cane, or making mats from the bleached leaves of the pandanus.

At some of the houses where Mr. Drayton stopped, the women were dressed as they are represented when dancing, in the figures of Cook and Vancouver's voyages; they are still permitted to dance, but the song called hoori-hoori is forbidden on account of its indecency.

Dr. Pickering was the last who visited the crater of Kilauea. He passed towards the lava stream by the way of Pahuhali, having John the pilot as his guide, and spent the first night about three miles to the south of that place. The inhabitants were found to have returned to their place of residence, and were again cultivating the ground.

He crossed the recent lava near its upper part, and found it overlying the soil, about twelve feet in thickness, having a surface resembling the "black ledge," with the friable vitreous crust before remarked. Towards the margin of the stream he found many trees, two feet in diameter, which the lava had flowed around and burnt off. The road passed between two patches of lava, and had not been burnt as the natives had reported; crevices, however, passed across, and divided the road. After exploring these parts, Dr. Pickering proceeded to Kaimo, which was found to be a large village, scattered along the beach for one and a half miles. Cocoa-nut trees were observed to be more numerous here than at any other place on the island.

They here found a well-built school-house, kept by a native teacher. This place has seldom been visited by foreigners, and the consequence was a very great curiosity to see the strangers. The proportion of children was larger than usual.

From Kaimo, Dr. Pickering passed along the coast, which is formed of lava that breaks off suddenly, and leaves a perpendicular cliff, from thirty to sixty feet high, against which the sea breaks with violence. Along this coast houses are rarely to be met with, and when they are seen it is at those points where, from accident or other causes, there is a breach in the lava.

Owing to the porous nature of the lava, the dwellers on the shore are at times much distressed for water, and resort to various devices to obtain it. In some places they use the leaves of the ti plant (Dracæna) fastened together; also boards set obliquely, with calabashes underneath, to catch the drops of rain; and in other cases the calabashes are set to obtain the drippings from the roofs.

Dr. Pickering reached Panau, and afterwards the patches of the recent eruption which lie in the vicinity of the pit-crater of Alealea-nui, and found them unaltered since they had been seen by me. What seems remarkable, there was no earthquake felt at Hilo before, during

the time of, or after the eruption. It has been mentioned, that some slight shocks were felt in the neighbourhood of Nanavalie, but they are reported as being very frequent and violent at Kealakeakua Bay, on the opposite side of the island, though much more remote from the scene of destruction than Hilo.

Two of the missionaries were once on the black ledge, looking down on the burning lake, when an earthquake took place which was felt over the whole island: no change took place in the lake, or elsewhere in the crater, excepting that some pieces of stones were shaken down from the surrounding walls.

From all the information I could obtain, the causes of the earthquakes do not appear to be connected with the action of the volcanoes. The accounts, however, are contradictory, and depend principally upon native testimony, which is not to be relied on in such observations. It is to be hoped, that the resident missionaries will endeavour to devote a small portion of their time to the interesting phenomena of these eruptions.

Dr. Pickering reached Kilauea on the 22d of January, where he found the large lake, according to his estimation, still about thirty feet below the rim, to which height it had again risen. If this estimate was accurate, it would prove a rapid formation of lava, for only ten days had elapsed since we had seen it many feet lower. About 9 P. M. of the same day, a large part of the southern bank fell in at once, producing a great light, and surging to and fro for some minutes, the surface of the fluid rising sometimes even with the rim.

According to the native account, the crater is more active at night than in the day, but this probably arises from its greater apparent brilliancy.

The small or Judd's Lake, was still overflowing in all directions, and this action had continued for the last ten days. According to Dr. Pickering's account, it was not as active as on its first outbreak. A vast quantity of lava had been poured out since our last visit, and there was a very perceptible increase of it in the crater.

I have before remarked the great difficulty of retaining a knowledge of the situation and relative position of things, on first descending on the "black ledge." This was evident from Dr. Pickering's not recollecting objects which must have been seen by him.

The way he accounts for this is, that every thing at first was so novel, and excited so much wonder and astonishment, that it made no lasting or distinct impression; but after proceeding for some time, this appears to have worn off, and the eye became accustomed to the

scene; for on descending from the black ledge to the bottom of the crater, he found the way quite familiar, and every toppling rock was precisely in the same position. The bottom of the crater had been entirely overflowed during our absence, which made it more even, and the travelling more easy.

The new lava was of four or five different varieties, as if each overflow had been of a different kind. The variety that seemed to predominate was quite thick and solid, and its crust had something of a metallic or leaden lustre; the solidity of the layers seemed to be in proportion to their thickness, and where this was five or six feet, the central parts were compact and nearly destitute of vesicles.

On first entering on the lower lava, Mr. Colvocoressis and the Doctor found it was so hot that they were fearful they could not proceed; but on advancing they found the heat did not increase, and by avoiding the small lake, which was then overflowing, they had no difficulty in reaching the larger one.

The surface was, as has been before remarked, about thirty feet below the rim: they were to the north of the great lake, and from that side of the cauldron the jets were thrown up. Walking up to the edge, they found it was impossible to look at the glowing pool for more than an instant at a time, on account of the heat and glare on the face and eyes, that made it necessary to retreat almost immediately a few paces backward. The more distant and darker part of the lake appeared little less glowing. The noise, which has been represented by former visiters as so terrific, and the absence of which I have before remarked, was so trifling during this visit that it was not even regarded by them in conversation. In this place Dr. Pickering says they remained some ten minutes, but truly remarks, "It may have been more or less; for, to look on the tottering banks, seemingly so inadequate to hold a fluid like this, to see it glowing with almost a white heat, just above the surface, and the current directing itself towards them, and to reflect upon the falling in that had occurred the evening before; added to which, Judd's Lake might, by a change of its overflow to a contrary direction, have cut off all retreat." It was indeed no place to take note of time.

That variety of lava which is destitute of a vitreous crust, is found on the black ledge alone, and none of it was observed in the lower pit. Noises of all kinds were carefully attended to, and if not heard were expected and referred to the crater itself: these sometimes proceed from the rolling down of small pieces of lava on the black ledge, making a pattering kind of noise, by no means pleasant.

Dr. Pickering found a new route of descent into the crater, and one that he deemed the most easily accomplished. This was on the south-east side, near the sulphur-bank.

While in the crater on the black ledge at night, there is often a deceptive appearance of a rising storm, from the darkness produced by the overhanging cloud.

The old crevices have been found to be the only ones that give out steam.

Though volcanic action is and has been so rife in this group of islands, and so many appearances of it are to be seen on the surface, both in the crater shape, and also that of lava crevices and jets, yet there are but few that ought to claim the name of volcanoes. Those that attract most attention are Mauna Loa, Kilauea, and Hualalai, as being in present action, and the great crater of Haleakala. These have already been described sufficiently in the foregoing pages.

Cone-craters, or hills of scoriaceous lava, are found throughout the group, sometimes on the sides of the larger mountains, at others isolated near the coast. Many of these are composed of fragments of lava and sand. They are likewise to be seen in the terminal craters of Mauna Loa and Haleakala, and do not appear to have ever discharged any fluid lava, but seem to owe their shape to the successive discharges of the loose materials. They are frequently in a lineal direction, as will be observed by inspecting the map of Hawaii; but this will give little idea of their number. If reports be true relative to Hualalai, hundreds may be seen from its summit, like excrescences on its sides.

One of the most striking features of this island is the difference in the formation of the two great mountains, whose height so nearly corresponds. The form of Mauna Loa is unique, and has been increasing, from the overflow of its terminal or pit-crater, and may perhaps be entirely formed by the boiling over of this, for upon reflection this would not seem impossible, but, indeed, quite probable; and one is irresistibly drawn to this conclusion on ascending it.

The extent of the lava stream flowing over the surface is very great, and has been supplied by most copious springs; the recent flow, for instance, covered an area of twenty square miles with a thickness of twelve feet on an average. The height of Mauna Kea has been increasing from the effects of the cone-craters, of which there are now nine on the surface of its flat top: thus while one gives out a molten mass, the other sends forth scoria.

The pit-craters are also represented on the map. They have not been the seat of volcanic action, yet from their extraordinary forma-

tion, they are deserving of that name: many exhibit a flow of lava into them. The mode of their formation seems very simple, and is just the effect that one would suppose to arise from a sudden undermining; but that they should always form nearly a true circle, with perpendicular walls, is remarkable, and cannot be easily accounted for.

As will have been seen, there have been copious eruptions from the sides as well as from the terminal crater of Mauna Loa, and among these may be reckoned that of Kilauea on its flank. It was proved satisfactorily to my mind that the craters have no connexion whatever with each other. An instance has been stated, where none apparently existed between Judd's and the large lake in the crater of Kilauea, although they were only two thousand feet apart, and it is equally evident that Kilauea has none with the top of the mountain. The eruption of 1832, from the terminal crater, and the one that has taken place since our visit, is sufficient proof of this. All these flows tend constantly to swell and increase the bulk of this mountain.

It has been remarked already, that a great deception in relation to the height of these mountains occurs when they are first viewed from the neighbouring sea. This is more particularly the case when the weather is clear; and the impression was hardly removed from my mind even after the fatigue and labour encountered during our visit to Mauna Loa. I still could not help wondering how they could possibly be as high as I had found them by actual measurement.

In addition to the information regarding the Hawaiian Group, which has fallen naturally under one or other of the preceding chapters, several miscellaneous matters attracted our notice, which require to be spoken of before we take our final leave of them.

Mr. Coan obliged me with the following account of the influx of the sea at Hilo, on the 7th of November, 1837. A similar occurrence, it will be recollected, took place at the island of Tutuila, in the Samoan Group.

At about seven o'clock, P. M., the sea at Hilo was observed to retire far below its usual low-water mark. In a few moments afterwards the water returned in a gigantic wave, rushing to the shore with great velocity, and breaking upon the beach with a noise like a peal of thunder. All the low grounds in the neighbourhood of the beach were instantly submerged, and a large number of houses were swept away. So sudden and unexpected was the catastrophe, that many of the inhabitants were engulfed in the flood, and compelled to struggle for their lives. The sea remained upon the land about fifteen minutes, when it retired beyond the line of low water, and after a short interval, returned again, but with less violence. It afterwards continued to

vibrate for a time, gradually decreasing at each oscillation, until it attained its usual level.

The scene of distress which this phenomenon produced was great. Hundreds of natives were at a meeting near the sea-shore, when the wave rushed upon them, and left them struggling amidst the wreck of their worldly effects. Some of them were carried to sea, while others were dashed upon the shore, surrounded by the fragments of their houses, which had been broken to pieces, together with the timber, frames, calabashes, &c.

Cries of distress came from all sides, as well from those who were struggling for life, as those who had come down to their relief. Parents were rushing to and fro, looking for their children, husbands for their wives, children for their parents, each inquiring for the other, with wailings and hallooings. The whole, combined with the loud roar of the sea, rendered the scene one of thrilling interest. Fortunately, an English whaler, the Admiral Cockburn, of which James Lawrence was commander, was lying in the bay at the time. He in a most praiseworthy manner lowered his boats, and kept them cruising about the bay, in search of the natives, many of whom were picked up, wearied and exhausted, and by this timely aid their lives were preserved. Not a canoe was left on the shore to assist in this work.

The master of the Admiral Cockburn affirms that the water ran past his ship at the rate of eight knots an hour, and that the soundings were reduced from five to three and a half fathoms, which left a great part of the bay dry.

At Oahu this phenomenon was likewise noted by Dr. Rooke, who has given an account of it in the Hawaiian Spectator, Vol. I., January, 1838. The time of its occurrence, as given by him, was six o'clock, P. M., and the sea continued to vibrate until the next day at noon. The time of commencement at Oahu preceded that at Hilo by half an hour.

It appears, from the facts that have been stated relative to a like phenomenon at Tutuila, that although the two were not coincident, yet they were so closely allied in point of time, as to leave no doubt of the same cause having produced both. It is certain that the phenomenon took place first at the Samoan Group, and supposing that the two watches by which it was noted were both correct, as the difference of longitude is thirteen degrees, the elapsed time from the first wave at Tutuila to that of the observations at Oahu, allowing for the difference of longitude, was two hours, thirty minutes. The actual distance is two thousand two hundred and fifty miles, on a course N. 20° E., which

would prove that the wave must have proceeded from south to north at the rate of nine hundred miles an hour. It would also go to prove that the wave which was felt at Hilo, and on the north side of Maui, was a returning wave, the difference of time having been an hour; and what is remarkable, its extent seems to have been confined to a very small belt, as it does not appear to have been felt at Kauai. There was no recoil or return wave on the north side of Tutuila. Its breadth, therefore, would seem not to have extended beyond one hundred miles.

By comparing the velocity of its rise and fall, we find that at Tutuila it exceeded that at Oahu. At the former place the rise and fall was nine and a half feet in two minutes, while at the latter it was only two feet a minute. It is remarkable that it should not have reached above high-water mark on the south side of the Hawaiian Group. The centre of the wave seems to have passed in a line over Maui. The southern side of that island was more affected than that of Oahu, but the wave on the north side seems to have been larger and more destructive, for the small village of Kahului, in the district of Wailuku, was entirely swept away.

The inhabitants of Kahului, on seeing the sea retiring, rushed to the reefs with great joy to secure the fish, but before they could reach them the sea-wave came rolling in, like an extended wall, to bury and destroy all their habitations, or sweep them away. Only two lives, however, were lost there, while at Hilo there were twelve persons missing. The rise at Hilo, according to a mark on the boat-house, was found to be eleven feet above ordinary high-water mark.

The weather was somewhat similar, and was at both places rather lowering.*

I afterwards made inquiries on the coast of California whether this rise and fall of the sea had been observed there, but did not succeed in obtaining any information.

There was a similar phenomenon in the year 1819; but, from all accounts, it appears to have been less violent.

Earthquakes are quite common on Hawaii: they appear to be, for the most part, local; thus, they are occasionally felt at Maui, but I heard of none at Oahu or Kauai.

The following are those observed at Hilo since July 1832, which the Rev. Mr. Lyman furnished me from his memorandum, viz.:

* On comparing the times of this great rush of waters at the two points, viz.: the Samoan Islands and this group, we find them almost coincident with the earthquake of Chili, that happened on the 7th of November, 1837; how far they are to be imputed to it, is a subject of interesting inquiry that it is not in my power to pursue in this place.

June,	1833.	Two slight shocks.
October 3d,	"	Shocks in the night; one slight.
" 13th,	"	At 3 P. M. a smart shock, motion up and down.
February 19th,	1834.	At 6 P. M. a shock which shook down stone walls, stopped clocks, upset bottles, and threw milk out of pans but half-full. Undulating motion north and south.
" "	"	At 9 P. M. another, but a slight shock.
May 14th,	"	Between 2 and 3 P. M. a severe shock.
August 3d,	"	Between 3 and 4 A. M. a severe shock.
March 23d,	1835.	At 9 A. M. a slight shock.
" 26th,	"	At twenty-five minutes past 6 A. M. three shocks in quick succession.
July 21st,	"	Three shocks during the day.
September 6th,	"	Between 2 and 3 A. M. a slight shock.
In the year	1836.	There were none felt.
June 20th,	1837.	At forty minutes past 6 P. M. two shocks.
January 4th,	1838.	One severe shock.
" 29th,	"	At 10 P. M., there were three shocks in quick succession two heavy, the third light.
July 9th,	"	A slight shock in the morning.
October 16th,	"	A jar, accompanied with a noise, resembling the discharge of a cannon.
Nov. 5th,	"	One shock in the morning, and two in the afternoon.
" 6th,		One shock in the morning.
" 7th,	"	A smart shock at midnight, one at 3 A. M., and another at four.
" 8th to 13th,	"	Slight shocks were constantly occurring, and on several of these days it was thought the ground was never free from motion.
December 4th,	"	A slight shock, but decided and distinct.
" 9th,	"	A slight shock.
" 10th,	"	A slight shock at 4 A. M.
" 12th,	"	A slight shock.
" "	"	At 1 P. M., a severe shock, attended with all the phenomena of that of February 1834. The motion of the earth was such as to render it difficult to walk or stand: the motion was up and down.
April 7th,	1839.	At midday a smart shock.
February 1st,	1840.	Half-past 1 P. M. a smart shock.
May 5th,	"	At 4 P. M. a slight shock.
September 5th,	"	At 10 P. M. a slight shock.
October 14th,	"	At 9 P. M. a slight shock.
December 18th,	"	At 5 A. M. two severe shocks.
February 18th,	1841.	A slight shock.
March 18th,	"	Severe; felt at Maui.

Making in all fifty shocks in eight years.

The usual motion or jar is like that produced by the firing of distant artillery, or the falling of a heavy body on the ground; to this is added a tremulous motion when the earthquake is slight.

On the 3d of March the instruments were all embarked, and the observatory duties broken up.

On the 4th of March, at 9 P. M., an attempt was made to get under way, but the land-breeze failed. We made another attempt the next morning, but were again obliged to anchor near the end of the reef. I mention these circumstances, in order to show the difficulties that sometimes occur in getting to sea from this port. This is in consequence of the land-breeze frequently failing near the shore, so that a vessel is sometimes becalmed for more than half a day between the two winds. Fortunately, there is little or no current here, and, therefore, no danger to be apprehended, although it is a disagreeable situation to be placed in.

As respects the bay of Hilo, I cannot but view it as a safe anchorage. We were detained there about three months, and never had a gale strong enough to ride to our anchors, though these were the winter months, December, January, and February. At times, however, there was a considerable swell rolling in, so as to make it uncomfortable on board ship. The weather we met with was not so rainy as I had been led to expect from the accounts given me, and during the month of February we had some of the most delightful weather I ever experienced.

Provisions can be obtained, though not in abundance, and the markets are not well supplied. The prices are the same as those at Honolulu, although the demand is not so great. For wild cattle we were asked thirty dollars. Kanuha, the chief, has the character of wishing to impose upon strangers: I must, however, do him the justice to say, that this imputation seems undeserved. Like all the rest of the natives, he will ask double; but it is only requisite to bargain for the articles required, and for services beforehand, and to insist on them complying strictly with their engagement; when this is done, no difficulty will be experienced.

The best landing is at Waiakea, which gives its name to the bay, although it has been called Hilo and Byron's Bay. The latter name was conferred on it, in compliment to Lord Byron, by Kaahumanu; but the native appellation cannot be set aside, and the bay is now scarcely known among the natives when called Byron's.

Excellent water is to be had in abundance, and with great ease, within the mouth of the Wailuku river; but it requires some care in passing in and out the river when the surf is high.

Although I have spoken of the landing on the eastern side of this bay as being the best, yet it is feasible to land on the beach in proper

boats. Wood is also to be had here, and at a much less price than at Oahu. There is another inducement, which makes it a desirable place for vessels to recruit at—there are no grog-shops as yet.

The rise of the tide is three feet—high water full and change at 1 P. M.

The morning previous to our sailing, I learned much to my surprise that the Rev. Mr. Coan had received many complaints from the natives, of the destruction of the sugar-cane by my crew. Although I was well convinced that the complaints were unfounded, as strict orders had been given that no plantation should be touched, I sent Mr. Waldron on shore to inquire into it, and to settle any demands. It turned out as I had expected, that little or no damage had been done, and this fact was evident enough. We were compelled, however, to pay ten dollars, which I cannot but view as a piece of extortion. How far the reverend missionary was aware of its being so, I will not pretend to say; but a little inquiry would have satisfied him that not one-tenth part of the value had been touched, if any. I do not mention this in any feeling of hostility towards the missionary: I would, however, recommend that when complaints are made, they should at once be sent to head-quarters, and not allowed to be heard through any other channel.

After this affair was arranged, I had the gratification to receive a complimentary notice from Mr. Coan, on the behaviour and exemplary conduct of my crew during the whole time the ship was at Hilo.

EDIBLE FERN.

CHAPTER VII.

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CHAPTER VII.

MAUI.

1841.

By the 15th of February I found that my long detention at Hilo would place it out of my power to visit the Marquesas Islands, as I had intended. I therefore determined, before returning to Oahu, which I intended should be by the 1st of April, to pass a short time at Maui; and as we had exhausted the field of research on Hawaii, I gave orders to Messrs. Pickering, Drayton, and Brackenridge, to take passage thither in a small vessel, in order that they might have a longer time to explore that island. Dr. Judd took passage in the same vessel, to return to Oahu. It was with much regret that I parted with him, and I feel it my duty here to acknowledge the obligations I am under to him, for the service he performed on this tour of duty. I should have experienced great trouble and difficulty with the natives, had it not been for his admirable management. He succeeded in settling with all of them without any difficulty, when it was once understood that no sort of imposition would be allowed.

On the 5th of March, we succeeded in getting to sea, and at eight o'clock discharged John Ely, the pilot, whom we had found of great use as a guide to the volcano, &c. He possessed a good deal of knowledge respecting the native character, acquired during a sojourn of twenty years among them, and from his conversation he did not appear to entertain much friendship or respect for them.

The longitude of Waiakea Bay was found to be 155° 03′ 00″ W., latitude 19° 43′ 51″ N.

At 1 P. M. the sea-breeze reached us, and soon wafted us beyond the region of calms. We then steered to the westward to pass through the channel between Hawaii and Maui, which is thirty miles wide.

The afternoon was fine, and the snowy peak of Mauna Kea was quite distinct: by running a base line with the patent log, and obtaining the requisite angles, we made its height thirteen thousand six hundred and fifty-six feet.

At midnight, being nearly up with Kahoolawe, we hove-to, to await daylight, as I wished to look for a shoal that was supposed to exist off its southern end. I passed within two and a half miles of that point, and had nothing less than seven and a quarter fathoms water. By half-past nine we had entirely lost the trades, owing to the high land, and, after being becalmed for an hour, we took a light sea-breeze from the southwest, which slowly brought us to an anchorage in Lahaina Roads, abreast of the king's palace.

The island of Maui is divided into two oval-shaped peninsulas, connected by a low isthmus, only a few feet higher than the beach. Although on a first view the peninsulas resemble each other, on closer examination they are found to be very different. East Maui is the largest of the two, and rises in one unbroken mountain ten thousand feet in elevation, which falls almost perpendicularly towards the sea. West Maui has many sharp peaks and ridges, which are divided by deep valleys, and which in descending towards the sea open out and form sloping plains on the north and south sides of considerable extent. The highest peak of West Maui was found, by triangulation, to be six thousand one hundred and thirty feet.

An officer was at once despatched to wait upon the king, who signified his desire to see me in the afternoon. I accordingly had the honour of waiting on him, and was received with great warmth and kindness. I paid him a long visit, in which the conversation turned principally on the business of his islands.

On my way back after leaving the king's house, I was very much amused with the sight of a number of little children, that could but barely creep, crawling into the deep water of the enclosed spaces along the path, and paddling about with as much confidence as if it was their native element, and seemingly more at home than on the land. They reminded me of ducklings. No regard seemed to be paid to them by the older ones or their parents; and it was a matter of surprise to them that I should think it any thing extraordinary. Although these young children could not exactly swim, yet by the movements of their arms and legs they contrived to make progress and keep their heads well above water. I returned on board before sunset, where I found a handsome present of fish, that had just been sent off by the king.

The most remarkable building to be seen as the bay of Lahaina is

approached, is the seminary of Lahainaluna situated on the side of the mountain that rises behind Lahaina.

The king's palace is built of coral rock, and is only half finished: it already seems to be in a somewhat dilapidated state, and exhibits poverty rather than regal magnificence. I could not but feel that too little attention had been given to his household by those who have had the management of his affairs. I regretted to see that any change, except for the better, had been effected in the native style of accommodation. His present residence is neither calculated to maintain the respect of his subjects, nor to enhance his importance in the eyes of foreigners. I am well aware that improvements are going on near to and connected with the situation his house occupies, but I believe that these could all have been long since finished, had proper exertions been made.

The town of Lahaina is built along the beach for a distance of three quarters of a mile: it is principally composed of grass-houses, situated as near the beach as possible: it has one principal street, with a few others running at right angles. After the king's palace, the fort is the most conspicuous object: its form is quadrangular, the longest side facing the sea: it is of little account, however, as a defence, serving chiefly to confine unruly subjects and sailors in. The area within is about one acre, and the walls are twenty feet high. By the observations which I made here, it is situated in longitude 156° 41′ 00″ W., latitude 20° 51′ 50″ N.

There are storehouses, which are used for the reception of the king's revenue, that consists of large heaps of tapas. At a short distance from the landing are situated the cottages of the Rev. Mr. Richards and Dr. Baldwin, who act as missionaries here. Mr. Richards, as has been before remarked, is connected with the government.

I had the pleasure of receiving his majesty on board, with suitable honours, accompanied by his suite. They made a very respectable appearance; and although what I had already seen of the king had greatly prepossessed me in his favour, a visit which I paid him before my departure tended greatly to increase the interest I felt for his welfare. Instead of being received in the dilapidated and half-finished palace, I was ushered over a small causeway to a short distance behind it, into his private apartments, and introduced to his wife, who had been quite unwell. She is not acknowledged as queen. She is the daughter of an inferior chief on the island of Hawaii, and the prettiest woman on the island. The king, it is believed, married her from affection, and against the wishes of his chiefs, after they had prohibited his marriage with his sister Nahienaena, as has already been mentioned.

In order to prevent any dispute in the succession to the throne, it was formerly deemed necessary that the king should take all the women of the highest rank as his wives, and all the children born of them were declared and considered as his heirs.

The present king is said to be the natural son of Kamehameha I., and became, from political causes, heir to the throne.

After crossing the causeway we reached a small island: on this was a grass-house of moderate dimensions, surrounded by hibiscus trees, which grow quite low, and made a bower almost impervious to the sun's rays. At the entrance of the house I was met by his majesty, dressed in a roundabout of blue cloth, and white pantaloons. He led the way into the bower, in the centre of which his wife was lying in a clean white hammock, suspended between the trees. Every thing about her was pleasant-looking, betokening care and attention to her comfort, and a degree of refinement I little expected to see. Although unwell, she showed many marks of beauty, and I was much struck with her appearance.

The king told me these were their private apartments, where they could remain undisturbed and free from intrusion. They passed most of their time together, and he pointed out a small hut of ti-leaves that he had constructed for her, in which she had been lying on new-mown grass. The king pointed out the improvements he had in contemplation, but complained that he had not money to carry them on. Although his income is very considerable, in tapas and native produce, and would have constituted great wealth in former times, yet, from the depreciation in the value of these articles, it is now of little value. He has so many hangers-on, that it takes a large amount to supply, maintain, and clothe them, even in the ordinary garments of the island. These circumstances leave the king quite as poor as any of his subjects.

The little domestic scene I had witnessed gave me great pleasure, the more so from being quite unexpected; and I found afterwards that very few are ever admitted to this sanctum sanctorum. I take pleasure in mentioning it, as I had not before given his majesty credit for the domestic virtues, which I am now satisfied he possesses to a great degree, both from the tenor of his conversation and the pleasing picture he exhibited in the last interview I had with him.

His wife is much fairer than the natives usually, and she has not so coarse and disproportionate a figure as seems characteristic of the females of distinction in these islands. Her features, however, were decidedly of the native character. The tone of voice was pleasing and ladylike.

Wishing to inspect the female seminary of Wailuku, which I had heard much spoken of, I went over to it, in company with Mr. Drayton. One of the chiefs was obliging enough to furnish me with a horse for the occasion. We rode along the south shore of West Maui, as it is here termed. This portion of West Maui is rendered susceptible of cultivation by means of irrigation, supplied by numerous small brooks, running from the mountains. A very small portion, however, is thus cultivated; but I should think it could be made to yield large crops of taro and sugar-cane, with very little care.

The leeward side of West Maui is similar in climate to Oahu, and, as was to be expected, the plants were the same.

Most of the habitations we passed were occupied by fishermen. Some large heaps of coral taken from the reef were observed along the shore, which were to be transported to Lahaina, in order to be burnt for lime.

As we approached the east end of West Maui, the mountains kept increasing on the plain, until they formed an abrupt precipice several hundred feet in height at the sea. There the way led up a zigzag road, if road it could be called, which it is difficult for man or horse to pass over. A portion of this path, two or three miles in length, had been worked, and is yet in good repair; but that on the south side has been suffered to fall entirely into ruin, and is the most difficult part to overcome.

The rock of the cliff was basaltic, containing grains of chrysolite, which were also observed in the sand in the beds of the dry streams. No conglomerate was seen.

The greatest discomfort we experienced in this excursion arose from the violence of the gusts that passed by us: the power of the wind was almost violent enough to unhorse us, as it burst in intermitting gusts through the ravines every few minutes. After passing this rough road, we reached the sandy alluvial neck or isthmus, the lowest part of which is only seven feet above the sea. Here the sand is constantly shifting, being thrown up into "dunes," and again dissipated by the wind. On reaching the neck, we turned to the west, and rode seven miles before we reached Wailuku, over a plain nearly uninhabited, and hardly susceptible of cultivation, until within a mile of Wailuku.

The seminary of Wailuku consists of an extensive range of coral and adobe buildings, beautifully situated on an inclined plane, with high and massive precipices behind, in a flourishing village, which shows more of systematic improvement and organized exertion than any place I have met with in the Hawaiian Islands. The fields, also, are better fenced, and the crops more diligently attended to. We were kindly

received by the Rev. Mr. Greene, his lady, and Miss Ogden, who have the charge of the establishment, which consists of eighty scholars, between the ages of twelve and eighteen years. Every opportunity was afforded me of inspecting the establishment, and while I found much to commend, there were many things I could have desired to see changed.

In the first place, I was much struck with the appearance of a want of cleanliness in the dresses of the scholars, contrasting so unfavourably with the neatness and cleanliness of the rest of the establishment. Neither can it be expected that they should imbibe cleanly habits, or be able to preserve them, when they are allowed to wear their clothes unchanged from the beginning to the end of the week. The dress consists of the usual loose gown adopted in the islands, and in which these children are allowed to sleep. On Saturday they wash, and on Sunday make their appearance in a white cotton smock, shawl, and bonnet, the latter of their own manufacture. Their dormitory is a long adobe building, with walls two feet thick, divided into compartments twelve feet by ten, each of which acommodates three scholars. More than half of this space is occupied by their bed, which is made of mats laid on a bank of ti-leaves, or sugar-cane, about two feet thick, with a small pillow of about eight inches square. What clothes they had were hung up in the corners, and a scanty supply they appeared to be. Rolls of tapa were laid on the mats, which serve to cover them at night. The only ventilation was through a small window and the top part of the partition-wall, which was left open. I passed into several of these small rooms, all of which had a musty smell, as of decayed or mouldy vegetable matter. It was no longer a subject of surprise to me that the establishment had obtained the name of being unhealthy, or that several of the girls had died.*

While Mr. Greene gives the scholars instruction in the various departments of education, Miss Ogden teaches them all kinds of useful employments, such as spinning, weaving, knitting, sewing, quilting, millinery, &c. She has, also, the superintendence of their eating apartment, and no place could be better arranged than this part of the establishment: every thing has a useful purpose, and one readily sees the practical operation of all that is doing. I had the pleasure of seeing the scholars at their meals, where all was regulated and went according to rule: those who were appointed to "wash up" kept their places while the rest left the table. They made a better appearance

* I have since understood that this defect has been remedied, the scholars having been provided with bedsteads and bedding, and that no cases of sickness have since occurred.

at their morning meal than they had done on the day of our arrival, wearing now neat white capes; but I still saw the same frocks. I do not, however, wish to give the idea that they are not in reality clean: they are so beyond a doubt, as I understood they bathed almost every day; but they did not look tidy. Miss Ogden took her place at a small table, whence she was enabled to overlook the whole. Their food is that of the country, consisting principally of poe and fish, and they are occasionally indulged with molasses.

Baths and walking-grounds are prepared for them, where they can take exercise. The avowed object of this establishment is to educate the daughters of Hawaii as wives for the young men who are educated at Lahainaluna. They are fed and clothed by the Missionary Society, and it is proposed that they shall remain at the establishment until they be married.

One courtship has already taken place by letters; and I was informed these were the first love-letters that had ever been written in this group. I was extremely desirous of obtaining the originals or copies, but was not successful. The correspondence appears to have been carried on under the eye of the missionaries, and the expressions they contained were very common-place.

This whole establishment does great credit to those who are engaged in rearing it up, on account of the method and perseverance with which it is carried on. It is extremely gratifying to see efforts of this kind made, but I cannot help doubting the policy of not allowing any of the burden of it fall upon the natives themselves (the parents). The only argument advanced in justification of this course, was the rather unsatisfactory one, that these people cannot understand and appreciate sufficiently the advantages, to be persuaded to contribute to the education of their children. As far as my own observations went, I believe this to be an error. As long as the children are educated and maintained gratis, the natives will never make any exertions to furnish the means. Some of the natives said to me, on my making inquiry why their children were not at the seminary, that they could not get them there, for all those admitted were selected by the missionaries, and there are no other means of tuition; they also added, that they would be willing to contribute a few dollars for the education of their children, if allowed.

The greatest objection to the system of this school, in my opinion, is that the pupils are not taken at an earlier age, and before their habits are in any way formed, and that it is attempted to educate them exclusively for civilized life as it now is. Taken at too advanced an age, they have scarcely an opportunity of forgetting the life of ease

they led while in their savage state; and thus their early impressions remaining still uneradicated, they return almost as soon as they leave the school to their savage state, finding it more easy than to keep up their partially civilized habits; whereas, if they were taken very young, and put under a course of discipline that would make their improvement permanent, and were, besides, taught the way of maintaining themselves as they now are, by useful employment, they would not be so likely to relapse into their former habits, or adopt those of their parents. I have little doubt, that such a course would be a great means of reforming many of their parents, as far as they are susceptible of reformation; for the relation between parents and children is altogether different with them from what it is among us, parents being invariably under the control of the children, after the latter have grown up.

The plan of taking the children, as is done, from the dregs of the natives, is, I think, another mistake. The higher orders in a monarchial system of government ought to be more carefully instructed than the others. This principle is admitted by the establishment of the chiefs' school at Honolulu, and I see no reason why it should not equally apply to the children of the petty chiefs, or second class. I am, indeed, satisfied that greater advantages would be derived from such a course, and the school would, in this way, become more popular. Parents of this rank would, also, be enabled to assist in its maintenance, and the lower orders, as elsewhere, would imitate the higher.

I must do full justice to the good fare and kind attentions of Mrs. Greene; and from the appearance of the supper-table, I could readily have believed myself in New England instead of the Hawaiian Islands.

Early the next morning, Mr. Drayton and myself went to breakfast with Mr. Baily and his wife. He is the assistant missionary at this station, and superintends the school for boys. It being Saturday, and a holiday, we had not the pleasure of seeing the scholars.

Mr. Baily had provided bountifully for us, and there was ample evidence here that this was a land of plenty, to all those who exercised ordinary industry.

After breakfast, Mr. Greene was obliging enough to accompany us to see the sugar-mills and taro-plantations, in the valley of the Wailuku. The sugar-manufactory is an experiment of the king, and is now under the superintendence of a Chinese. By some awkward mistake in making the agreement, his majesty's interests were entirely lost sight of, and it is said that he will lose money, although his agents have a prospect of considerable gain. The iron-work of the mill was imported from the United States, and is turned by water-power. The water-

wheel is badly constructed: it is a breast-wheel, with great loss of power.

There appears but little economy about the establishment: as an instance of this, instead of drying and preparing the cane for fuel, they use wood altogether, which is very scarce, and costs much to transport it. The sugar appears to be of good quality, and with proper attention, the manufacture could no doubt be made profitable. I understood from the Chinese who had charge, that the sugar could be sold at four cents per pound, and that with a proper economy as to fuel, might be reduced to half that sum.

Both the king and chiefs have a desire to encourage the arts and agriculture. Unfortunately, however, after they have incurred expenses, they are obliged to give the sole direction into the hands of those who have nothing but their own interests in view. The consequence is, that in all these undertakings the king and chiefs have found themselves deceived, by listening to foreigners by whom they have been defrauded.

We now rode down the valley among the taro-patches, and over to the Sand-hills. In passing over them we saw some remarkable concretions, resembling large tunnels or broken pipes, which were quite hard, and resembled solid rock interspersed with amorphous sandstone. Mr. Greene, who was with us, could give me no information respecting their formation. Dr. Pickering met with these also, and considers them as mineral concretions, although they appeared to him to resemble those formed by annelidæ, or like beds of sabellæ.

On the isthmus, the sand was drifting like snow, and afforded a good illustration of the rapidity with which it changes its place by the effects of the winds.

In the centre of the Sand-hills, we stopped on a mound of human bones,—a perfect Golgotha. There appears to be no tradition respecting this accumulation of mortal relics. By some it is supposed to have been a burying-place after a battle, for the place where they were found was known to be a battle-ground. Bloody contests, indeed, must have taken place here, if we are to judge from the number of skeletons which are exposed. Some of these are in a state of perfect preservation, and I regretted not being able to transport one to the ship.

Near this place we saw several boys anxiously watching some object, and on getting near them, found they were employed in catching birds. This was done by baiting small sticks, to which a string was tied, and the other end of the string fastened to a small stone: the bird swallows the stick along with the bait, and in attempting to fly off, it pierces his throat, and he is thus secured.

After riding around these plains we returned to Wailuku, where we

partook of a sumptuous lunch, and parted under a feeling of obligation for the kind attentions we had received, and the tokens of remembrance from the scholars. We reached Lahaina before dark, after a fatiguing ride.

On our way I heard a rumour that one of the boats had been lost, which made me anxious to get on board as soon as possible. I had been flattering myself that from dangers of this kind we were, at least for the present, exempt; but the report proved too true. Previous to leaving Lahaina, I had despatched Lieutenant Budd, with Passed Midshipman May, in charge of two boats, and it was to one of these that the accident occurred. Lieutenant Budd gave the following account of it.

At ten o'clock, on the 9th of March, they left the ship, when it was blowing a moderate breeze, and steered for the south point of Kahoolawe. After they had proceeded some distance on their way, it fell calm for a short time, and then the trade-wind set in strong from the northward and eastward, and soon increased to a stiff gale, the sea rising to a dangerous height for the boats. Just after doubling the point of Kahoolawe, Passed Midshipman May, in the Leopard, hailed Lieutenant Budd, to report that his boat was sinking; and four of the men were perceived to be baling. Lieutenant Budd pulled alongside, and seeing the boat was settling, ordered the anchor to be dropped. Most of the crew continued to bale with their hats, whilst the rest passed out the most important articles. A portion of the Leopard's crew, who could not swim, were now ordered to get into the Greyhound; Lieutenant Budd intending to land them and return for those on the wreck. The men who were thus left said that the boat was drifting to sea, and wished to be taken off; but this would have endangered the lives of all. Passed Midshipman May, perceiving their unwillingness to remain, jumped overboard and joined them: his example encouraged them to do their best. Lieutenant Budd succeeded in as short a time as possible in landing the men and articles from his boat, and then returned. He found the boat sinking fast, and the officer and men supporting themselves with the oars. The boat was now turning over and over as every wave struck her. Mr. May and the rest of the men were taken on board, and they then returned to the shore, all much exhausted. Lieutenant Budd, seeing that the side of the boat had been stove in by a heavy sea, and the impossibility of saving or being able to repair the boat, left her to her fate, and took such measures as he found necessary for the comfort of his men. Lieutenant Budd deserves much credit for his presence of mind in preserving the lives of the men entrusted to him, as well as protecting them afterwards from unnecessary exposure.

Kahoolawe, the island they were now on, lies to the west of the

south end of Maui, and is fourteen miles long by five miles wide. It is uninhabited, except by a few poor fishermen, and is used as a place of exile: at this time, there was one state prisoner confined on it.

Lieutenant Budd concluded next morning to set out in search of the town which he had heard one of his boat's crew, a Kanaka, say that he knew of. After wandering over the rugged face of this barren island for twenty miles, he discovered, to his great joy, from the top of a ridge, a cluster of huts near the water, which they soon after reached. They proved to be inhabited by Kenemoneha, the exile above spoken of, who for the crime of forgery had been condemned to spend five years in exile upon this island. This was effected in a singular manner, and the punishment of the offender will serve to show the mode in which the laws are carried into execution.

The chief, Kenemoneha, treated Lieutenant Budd with great kindness, supplied him with dry clothing, and gave him some of his scanty fare. The village is a collection of eight huts, and an unfinished adobe church. The chief has three large canoes for his use.

In passing over the island, the walking had been found very tedious; for they sunk ankle-deep at each step. The whole south part is covered with a light soil, composed of decomposed lava; and is destitute of vegetation, except a few stunted shrubs.

On the northern side of the island, there is a better soil, of a reddish colour, which is in places susceptible of cultivation. Many tracks of wild hogs were seen, but only one of the animals was met with.

The wife of Kenemoneha resides at Lahaina. She was a great favourite of the king, who, notwithstanding, was determined to let the law take its course, being well satisfied of her husband's guilt.

The only article produced on the island is the sweet-potato, and but a small quantity of these. All the inhabitants are convicts, and receive their food from Maui: their number at present is about fifteen.

Besides this little cluster of convicts' huts, there are one or two houses on the north end, inhabited by old women. Some of the convicts are allowed to visit the other islands, but not to remain.

On hearing of the accident, Lieutenant Carr at once despatched provisions for the party; which reached them the next day, and proved a seasonable supply. After much fatigue, Lieutenant Budd returned to the ship on the 15th.

I visited, in company with some of the officers, the seminary of Lahainaluna, which is, as I have before said, situated on the hill behind the town, and about two miles distant from it. The road thither is partly made by the pupils of the seminary. We found the students at work along this road, making stone walls. Many of them were large

boys or young men. Their mode of working was not systematic, and every one appeared to be doing what he thought best: they did not appear to be identified with their work, but seemed more like a rabble. We were received by the Rev. Mr. Andrews, who was kind enough to show us the whole establishment.

On our approach, we noticed an air of neglect, and particularly in the out-buildings. The garden also was in bad order; indeed, nothing succeeds well in it, because its situation is too high for irrigation, which in this climate is absolutely necessary. The soil is composed of a red clay, which in dry weather forms a fine dust, covering every thing, and which the daily winds continually raise into clouds. These circumstances present an obstacle to one of the great objects of the institution, while the scarcity of water prevents the inculcation of habits of personal cleanliness, of which the natives stand in great need.

The object of the institution is, to forward mental improvement and a knowledge of the useful arts, as well as to prepare suitable teachers for the native schools.

This school was established in 1831 on the principal of self-support, and only those who could maintain themselves, were admitted. These were principally adults, and mostly married persons: they even built their own houses, which were of adobes, covered with thatch. The Rev. Mr. Andrews was the first who undertook the charge; and the only expense to the mission was the books, &c., together with the salary of the superintendent. This plan continued to be acted upon for three years, during which time the number of scholars had risen to ninety. In 1834, the mission decided to increase the school, and to put up buildings at their own expense. The Rev. Messrs. Clark and Dibble were appointed to it as instructers of mathematics and philosophy; they were also to be employed in translating and preparing native books, of which none existed at the time, and which were to be printed at the Mission Press.

In 1836, the character of the school was entirely changed, and the self-supporting system laid aside, as was also the reception of adult scholars, none now being admitted over twenty years of age.

In 1837, the present edifice, consisting of a centre building, forty-four feet square, and two wings, fifty by twenty-six feet, were erected, at considerable expense, I was informed, (twelve thousand dollars,) and a class of thirty-six boys admitted, from the various district schools on the island, as boarding scholars. These are lodged in a number of small thatched huts, ten feet square. There are likewise dwellings for the teachers. It was endowed by the king and chiefs

with a grant of five hundred acres of land; only fifty of which, however, were capable of being made productive, and but thirty have been cultivated.

Since 1836, when, as has been seen, the system was changed, its usefulness has in a great measure ceased, for the simple reason that the institution in its present form is not required. I look upon the plan as wholly impracticable, and unsuitable to the wants of the natives. In the form it was first established, Mr. Andrews was extremely well adapted to its superintendence; but when it was taken under the fostering care of the Board, few of whom are practical men, they remodelled it, still keeping it under the superintendence of one who, though admirably adapted for its original plan of instruction, was unfitted for the cares of its future operations.

The professors who are associated with Mr. Andrews, are no doubt well qualified for their situations as teachers and translators, but naturally look more to mental improvement than to practical illustration. The latter indeed appears to have been almost wholly abandoned, and instead of carpentry, smithery, and agriculture, being pursued, the two former have been entirely abandoned, and in order to induce the scholars to the latter, they give them a price for their work, which goes to the clothing of the individual, so that in reality this labour is at a higher price than would be paid for it in the United States.

We were shown some of the engravings done by the scholars, but these were of a very rude and inferior description, and at the price paid for the work, cost more than if beautifully done by the best artists in the United States. No one in the establishment knows any thing about engraving, and therefore it seems highly injudicious to have attempted to teach it.

In all the departments of this establishment I saw nothing but ill-directed means, and a waste of funds that might have been avoided by proper forecast, and a full examination of the subject by practical men. The school has passed its meridian, and is now fast going to decay, a fact which must strike every one on a casual visit. The discipline of the scholars is loose and irregular; they are their own rulers, and make their own laws: in this respect it may be called a republican school. The scholars act by committees, and without the knowledge or consent of their teachers, in every thing that concerns themselves and their apartments. As may be supposed, they are left to settle their own disputes, and little discipline of any kind exists.

I had an opportunity of seeing one of the classes reciting to the Rev. Mr. Dibble. We happened accidentally to pass through the large hall or chapel, where this exercise was going on. The reverend gentle-

man was mounted on a platform, and the scholars oddly arranged on the ends of each of the long benches. A more ragged, dirty-looking set of fellows I have rarely laid my eyes upon in the shape of scholars, or as they are now termed, students of the university. Most of them were dressed in trousers and shirts, the latter partly within and partly without their waistbands. They had no shoes or handkerchiefs, and and as the light colour of their clothes showed spots of grease distinctly, they appeared dirty enough. The exercises were continued, but as they were in the Hawaiian language, it was impossible to judge of their explanations of the questions put to them: they seemed, however, to satisfy the tutor.

I then went to the lower rooms and was shown the process of teaching; among other branches in which they were instructed was music. We next visited the dormitories, which, as I have stated above, were small separate grass-huts. The scholars sleep as they choose, either within or without the hut, and always in their clothes, which I had surmised was the case from their appearance. The whole struck me as being badly planned and loosely conducted: the buildings are much too large and expensive; consequently to keep them in repair, and meet the other expenses of the establishment without additional aid, is impossible; and like all attempts on too large a scale, it must fail.

I am well aware that the gentlemen who have the matter in charge are doing all that they can to meet their own wishes, and the expectations of the community, both at home and in the other islands; but I look upon their exertions as thrown away; for it requires practical men and artisans to instruct the natives, and some plan is essential by which their habits and customs can be changed. I was told here that their character combines idleness and unclean habits; that they are deceitful, obstinate, indifferent to truth, and have no social qualities.

Each scholar now costs the society twenty dollars per annum, seven dollars and fifty cents of which provides them with food; the remainder, twelve dollars and fifty cents is for clothing. But besides this, they are paid twenty-five cents per day when they are allowed to work, which amounts to as much more during the year. Why this premium has been adopted to induce them to work, I could not see; and I look upon it as one of the very worst features of the establishment, particularly when the scholars must see that their labour is frequently of no account, as when employed in building stone walls to enclose lands that are not worth fencing in.

That this institution is not popular among the natives, is little to be wondered at. Many of them complain, as I have already said, that it

is impossible for them to get their children there; for to do so, they must be themselves devout members of the church, and first place their children at one of the district schools; while it depends, after all, upon the selection of the missionaries, whether the boys will be allowed to enter.

From this school, of late years, have been taken all the native teachers, and most of them are employed on the part of the government; it therefore becomes desirable to all to have their children educated in it.

There is another circumstance which prevents and interferes with the proper cultivation of this establishment, namely, the want of water, which the native land-owners refuse to allow the use of for the lower part of the grounds. With a very little trouble and expense, this difficulty might be overcome; but there is wanting the inclination, both on the part of the missionaries and government, to effect a change.

It is easy to point out the defects in an establishment, but much more difficult to suggest a remedy. The difficulty is, perhaps, not easily overcome, but I will offer one or two plans, which appeared to me to be feasible, and calculated to give the natives a turn towards becoming a pastoral as well as an agricultural people. The pupils should be taught the care of cattle and the superintendence of flocks, to which pursuit the greater part of the land of these islands is well adapted. A sufficient inducement might be held out for exertion, by giving them a portion of the increase of the flocks, that would recompense them for their care, without increasing the expenses of the society. Above all things, in their manual labour schools the higher branches should not be taught before the pupils are all well grounded in the lower ones; for instance, I can conceive of nothing more absurd and useless than spending the time of both teachers and scholars in studying Greek, as was proposed. Fortunately for the students, however, they could not proceed for want of books. I would not be understood as throwing any blame on the missionaries: there are many errors committed and expenses incurred in conducting a mission, that ought to be looked at with much charity by those who are visiters, as well as by the society at home. Even a slight knowledge of the situation of things will show how difficult it is for the Board of Missions to judge of the expenses incurred in carrying on their operations, and how unwise it is for the managers at home to control their agents, except by some general rules applicable to their duties. The employment of persons in whom they have confidence is the best and only security; and if those who are invested with

the power should make a wrong use of it, the remedy is to remove them.

Much discontent has been caused, and the usefulness of the missionaries impaired, by the control which the Board of Missions exercises over their conduct. The restriction on the liberty of the press, and the extravagance complained of, is not justly chargeable to the convention; for, constituted as the Board is, it is impossible it should be otherwise, and the effect naturally arises from employing an irresponsible body. I am well satisfied that harm results to the cause from want of full confidence being extended to those who are engaged in these duties.

Lahaina being the great resort of our whalers in these islands, a survey was made of the roadstead. The chief reason for resorting to this place is, that their crews are more easily kept in order, and have not that temptation to visit the shore that is experienced at Honolulu; besides, provisions are in greater plenty, particularly potatoes, which are raised in abundance on the highlands of Maui.

Lahaina contains about three thousand inhabitants. More order reigns here than in any other town of the same size I have seen in Polynesia. This is to be attributed to the influence exerted by the authorities, and to the absence of foreigners, and their attendant grog-shops.

To Mr. Richards, Dr. Baldwin, Mr. Andrews, and their families, we are much indebted for many kind attentions during our stay.

The Rev. Mr. Baldwin is the pastor as well as physician of the place, and preaches both in the native church and in the seamen's chapel, which has been erected here by the subscriptions of the whaling fleet. This was nearly completed at the time of our visit, and is intended to accommodate about two hundred persons.

The native church is a large building, capable of containing one thousand eight hundred persons, and the usual congregation is about one thousand two hundred.

This district is well supplied with schools, containing between eight and nine hundred scholars. Some of these are under the superintendence of David Maro, the native teacher, and author of several tracts before spoken of.

The district of Wailuku is composed of valley and upland. The soil in the former is extremely rich and well watered; the upland, also, produces good crops when sufficient moisture can be had. Potatoes, corn, sugar-cane, and sweet-potatoes, are the chief products of the windward side of the island.

In some places there are extensive woods, the trees in which are of

large size; but the timber is of little value, being either soft and spongy, or hard and difficult to work. Of the former kinds the natives make their canoes.

The district of Kula, on East Maui, although extremely rough and rocky, has a loamy, rich, and productive soil: it produces the finest Irish potatoes, turnips, corn, melons, and wheat. The latter, of an excellent quality, is found growing wild. It was introduced about twenty years before our visit, planted, and not the least attention paid to it; instead, however, of "running out," it has increased. At Malaca Bay there is good anchorage for vessels of any size, and a fine fishery.

The isthmus is too dry to be fit for cultivation: it is in extent about twenty by fifteen miles. During nine months of the year it is a fine grazing country, and feeds large herds of cattle, that are mostly owned by foreigners.

The productions on Maui are the same as those of the other islands: to these may be added a few fruits, as grapes, &c., but these are not raised in large quantities.

In industry and enterprise, the natives of this island have made but slow progress, though there is abundant evidence that they possess both, if properly developed. This is shown in their attempts at cultivation.

The king, in order to foster a spirit of enterprise, proposed to a company of about fifty natives, that each should cultivate a small lot of land, of from one to two acres, with sugar-cane; and that when ripe he would manufacture it into sugar and molasses for one-half, and would, besides, relieve them from all taxation. It was considered that four-tenths of the sugar would pay for its manufacture, and that two-tenths should be equivalent to the taxes. Sixty or seventy acres were planted. The produce was found to be one and a half tons to the acre, besides some molasses.

Both at Wailuku and at Hamakualoa, the natives have shown much perseverance and enterprise in erecting stone churches. These are built by native workmen, and their dimensions are one hundred feet in length, by fifty feet in width. For the construction of that at Hamakualoa, they were obliged to bring the stones, lime, and sand, on their backs, to the place of building. The lime and sand were brought from a distance of two or three miles, and the timber was dragged from four to six miles. In putting on the roof, it fell in twice, after nearly all the timbers were up, and broke them to pieces; but they persevered until they had completed the edifice, which will contain

about one thousand people. The whole amount of money laid out was sixteen dollars! At Wailuku the building-stone used was vesicular lava.

The following may give some idea of the duties of a missionary at these islands. Their labours on the Sabbath are, a sermon at sunrise, Sabbath-school at eight o'clock, sermon again at eleven o'clock, Bible-class at one, and lecture at four. On week-days, going to adjacent villages, lectures, schools, and visiting the poor and needy, besides acting as physician for a whole district, which alone is a work of no trifling labour.

In Wailuku, the population is thought to be decreasing at the rate of about one hundred and thirty annually, but no adequate causes are assigned for this diminution. The climate of Maui is healthy, and no diseases prevail. Infanticide may be said not to exist. In speaking with Mr. Richards upon this subject, he mentioned to me that there had undoubtedly been very erroneous computations prior to the last census of 1840; and a case had come to his knowledge in one district, in which it appeared that the deaths had been registered, but not the births: in this case, if the births had been noted, it would have led to a directly contrary conclusion; for, instead of showing three per cent. decrease, it would have given that amount of increase.

I have before stated, that Messrs. Pickering, Drayton, and Brackenridge were ordered to visit Maui. They embarked on board the native schooner Kahalia, and with them went Dr. Judd. They had a long and tedious passage, and instead of reaching Maui in a few hours, as they had expected, they were several days, owing to a strong south-west gale blowing. By this they were obliged to take shelter under the lee on the north side of Maui, where Dr. Judd and Mr. Drayton landed, for the purpose of passing over land to Lahaina.

The north coast of East Maui is a succession of deep ravines, which gradually diminish in breadth as they ascend, and are finally lost on the flanks of the mountains: travelling along the coast, in consequence, becomes almost impossible. Cascades are seen falling in these ravines several hundred feet in height, having little volume of water, however.

The face of Mauna Haleakala is somewhat like that of Mauna Kea: it is destitute of trees to the height of about two thousand feet; then succeeds a belt of forest, to the height of six thousand feet, and again, the summit, which is cleft by a deep gorge, is bare.

During their stay under the lee of the island, the king's schooner sought refuge there also, having been driven from the roads of Lahaina,

where it is impossible to lie during the prevalence of southwest gales, as vessels are then exposed both to the sea and wind.

The party who landed, and the schooner, arrived about the same time at Lahaina, where our gentlemen were very kindly received by the king and missionaries. They forthwith made preparations for a tour to East Maui. The Rev. Mr. Andrews, his son, and four students of the seminary, joined the party, together with six Kanakas to carry their food. The Kanakas were engaged at twenty-five cents a day, and twenty-five cents more was allowed for their food. The party first passed to Wailuku, where it was further increased by the accession of Mr. Baily.

In the evening they reached the sugar plantation of Messrs. Lane and Minor, which they found one thousand six hundred and ninety-two feet above the level of the sea. These are two very respectable white men, who have married native wives. They are natives of Boston, and have brought their Yankee enterprise with them. Here all the party were kindly received. The plantation of these gentlemen is of some extent, and although the cane grows more slowly here, it makes better sugar than that on the low grounds, which is said to be owing to the former not blossoming. The houses are partly of native construction, and seem well adapted for their uses. The sugar-mill is one of the largest on the island.

Crops of Irish potatoes are very productive here; and corn is abundant a thousand feet higher up the mountain.

The next day, the party set out at an early hour, in hopes of reaching the summit, but it began to rain violently, in consequence of which they took shelter in a large cave, at an altitude of eight thousand and ninety feet. Here many interesting plants were found, among which were two species of Pelargonium, one with dark crimson, the other with lilac flowers; the Argyroziphium began to disappear as they ascended, and its place was taken up by the silky species, which is only found at high altitudes. From the cave to the summit they found shrubby plants, consisting of Epacris, Vaccinium, Edwardsia, Compositæ, and various rubiaceous plants.

On their arrival at the edge of the crater, on the summit, the clouds were driving with great velocity through it, and completely concealed its extent. The height, as ascertained by the barometer, was ten thousand two hundred feet. The driving of the sleet before the strong gale soon affected the missionaries and native students, the latter of whom for the first time, felt the effects of cold. The limit-line of woods was ascertained to be at six thousand five hundred feet.

Some sandalwood bushes were noticed about five hundred feet above the cave. Above the cave the ground assumed a more stony appearance, and the rock became now and then more visible, which had not before been the case. Where the rock was exposed it was found to be lava more or less vesicular, but no regular stream was observed. The surface of the lava appeared to be more thickly covered with earth than that of Mauna Kea, and consequently a greater proportion of soil existed, as well as a thick coating of gravel. Near the summit, bullock-tracks were observed, and likewise those of wild dogs, but no other animals were seen except a few goats.

The crater of Haleakala, if so it may be called, is a deep gorge, open at the north and east, forming a kind of elbow: the bottom of it, as ascertained by the barometer, was two thousand seven hundred and eighty-three feet below the summit peak, and two thousand and ninety-three feet below the wall. Although its sides are steep, yet a descent is practicable at almost any part of it. The inside of the crater was entirely bare of vegetation, and from its bottom arose some large hills of scoria and sand: some of the latter are of an ochre-red colour at the summit, with small craters in the centre. All bore the appearance of volcanic action, but the natives have no tradition of an eruption. It was said, however, that in former times the dread goddess Pele had her habitation here, but was driven out by the sea, and then took up her abode on Hawaii, where she has ever since remained. Can this legend refer to a time when the volcanoes of Maui were in activity?

The gravel that occurred on the top was composed of small angular pieces of cellular lava, resembling comminuted mineral coal. The rock was of the same character as that seen below, containing irregular cavities rather than vesicles. Sometimes grains of chrysolite and hornblende were disseminated. In some spots the rock was observed to be compact, and had the appearance of argillite or slate: this variety occurred here chiefly in blocks, but was also seen in situ. It affords the whetstones of the natives, and marks were seen which they had left in procuring them.

Of the origin of the name Mauna Haleakala, or the House of the Sun, I could not obtain any information. Some of the residents thought it might be derived from the sun rising from over it to the people of West Maui, which it does at some seasons of the year.

Having passed the night at the cave, Mr. Baily and young Andrews preferred returning to the coast, rather than longer to endure the cold and stormy weather on the mountain.