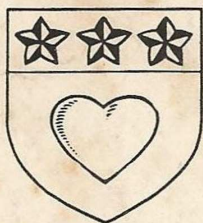




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Contents

	Page
Note by Compiler.	
Memoir of Life of David Douglas by Dr. W. J. Hooker, with additions by Compiler	7
Letters of Douglas to Dr. W. J. Hooker	19
A Glimpse of Douglas at Monterey, Cal.	21
Letter of Douglas to Dr. W. J. Hooker	24
Douglas's Journal of Ascent of Mauna Kea	25
do. do. of Visit to Kilauea Volcano	36
do. do. of Ascent of Mauna Loa	43
Douglas's Letter to Lady in Honolulu about his visit to Kilauea Volcano	58
Extract from Letter, Douglas to Dr. W. J. Hooker about his travels in Hawaii	61
Remarks by Dr. W. J. Hooker in the Companion to the Botanical Magazine	65
Letter from Revs. Joseph Goodrich and John Diell to Consul R. Charlton announcing Douglas's death	66
Letter Consul Charlton to James Bandinel	74
Inscription on Douglas Memorial Tablet, Kawaihau Church.....	76
Pickering and Brackenridge's Visit to scene of Douglas death....	78
The Silver Sword Plant—Argyrophyton Douglasii	81
Bibliography	82

Illustrations

1. Portrait of David Douglas.
 2. Douglas Monument, Scone Churchyard.
 3. Pacific House, Monterey, Cal.
 4. Mauna Kea, from Waimea Plains.
 5. Mauna Kea, from Hilo Bay.
 6. Halemaumau Pit at Kilauea Volcano. Day scene.
 7. Do. do. Night scene.
 8. Mokuaweoweo, Summit crater of Mauna Loa.
 9. Goodrich & Diell's Sketch of Bullock Pit.
 10. Douglas Memorial Tablet, Kawaihau Church.
 11. U. S. Exploring Expedition's Sketch of Bullock Pit.
 12. Silver Sword Plant, *Argyrophyton Douglasii*.
 13. The Three Big Mountains of the Island of Hawaii.
-

Tailpieces

1. Lehua Blossoms.
2. Douglas Crest.
3. Lei Palaoa.
4. Types of Poi Pounders.
5. Scottish Terrier.
6. "Bibliography."

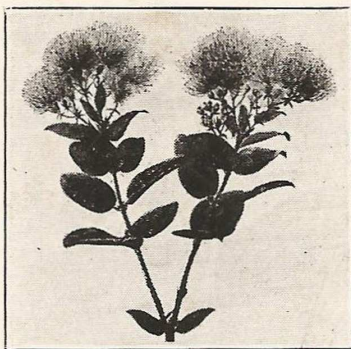
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Note by Compiler

An attempt is made in the following pages to bring together, under one cover, some of the interesting particulars that have already been published in different works—for the most part now out-of-print—regarding the life of David Douglas, the intrepid Scottish botanical explorer and mountain climber, and particularly that portion of same which treats of his two visits to the Sandwich Islands. A few explanatory notes and illustrations have been added by the compiler.

W. F. WILSON.

Honolulu, April 30, 1919.





DAVID DOUGLAS

From a life sketch, formerly
belonging to his brother James
Douglas. Now in Vancouver, B.C.,
Museum.

Permission of
Miss Edge,
Vancouver, B.C.

Extracts from A Brief Memoir of the
LIFE of DAVID DOUGLAS

By SIR WILLIAM JACKSON HOOKER,
Professor of Botany, Glasgow University.

“It is not willingly that the following record of the successful labors of Mr. David Douglas in the field of natural history, and of his lamented death, has been so long withheld from the public: a circumstance the more to be regretted, because his melancholy and untimely fate excited a degree of interest in the scientific world, which has been rarely equaled, especially towards one who had hitherto been almost unknown to fame as to fortune. But the writer of this article was anxious to satisfy public curiosity by the mention of some further particulars than what related merely to Mr. Douglas’s botanical discoveries; and this could scarcely be done but through the medium of those friends whose personal acquaintance was of long standing, and especially such as knew something of his early life. This has at length been accomplished, through the kindness of Mr. Douglas’s elder brother, Mr. John Douglas, and of Mr. Booth, the very skilful and scientific gardener at Carchew, the seat of Sir Charles Lemon, Bart. It is to Mr. Booth, indeed, that I am indebted for almost all that relates to the subject of this memoir, previous to his entering the service of the Horticultural Society, and for copies of some letters, as well as several particulars relative to his future career.

David Douglas was born at Scone¹, near Perth, in 1799, being the son of John Douglas and Jean Drummond, his wife. His father was a stone mason, possessed of good abilities and a store of general information, rarely surpassed by persons in his sphere of life. His family consisted of three daughters and as many sons, of whom, the subject of this notice was the second. At about three years of age he was sent to a school in the village, where the good old dame,

‘Gentle of heart, not knowing well to rule,’

soon found herself mastered by her high-spirited little scholar, who

‘Much had grieved on that ill-fated morn,

‘When he was first to school reluctant borne,’

and took every opportunity of showing his dislike to the restraint, by playing truant or defying the worthy lady’s authority.

At the parish school of Kinnoul, kept by Mr. Wilson, whither he was soon sent, David Douglas evinced a similar preference to fishing and bird-nesting over book learning; he was often punished for coming late, not knowing his lessons, and playing the truant; but no chastisement affected him so much as being kept in school after the usual hour of dismissal. His boyish days were not remarkable for any particular incidents. Like others at his time of life he was lively and active, and never failed of playing his part in the usual sports of the village. A taste for rambling, and much fondness for objects of natural history being, however, very strongly evinced. He collected all sorts of birds, though he often found it difficult to maintain some of these

¹Scone, pronounced by the natives Skoon, was the ancient capital of Pictavia, now Scotland, as early as 710, and the coronation place of Scottish kings from 1153 till 1488. Charles II. was also crowned there in 1651, being the last monarch to be crowned in Scotland. The ancient coronation seat of Scotland, the “Lia Fail” or “Stone of Destiny,” was formerly at Scone, but was stolen by Edward I of England, and carried to Westminster Abbey, where it has since formed part of the coronation chair of the kings and queens of England and Great Britain, occupying the space underneath the wooden seat.

favorites, especially the hawks and owls. For the sake of feeding a nest of the latter, the poor boy, after exhausting all his skill in catching mice and small birds, used frequently to spend the daily penny with which he should have procured bread for his own lunch, in buying bullock's liver for his owlets, though a walk of six miles to and from school might well have sharpened his youthful appetite. He was also much attached to fishing and very expert at it, and when he could not obtain proper tackle, had recourse to the simple means of a willow wand, string, and crooked pin, with which he was often successful.

From his earliest years nothing, it is said, gave Douglas so much delight as conversing about travelers and foreign countries, and the books which pleased him best were Sinbad the Sailor and Robinson Crusoe. The decided taste which he showed for gardening and collecting plants caused him to be employed at the age of ten or eleven years, in the common operations of the nursery ground, at Scone, under the superintendence of his kind friend and master, Mr. Beattie, with the ultimate view of his becoming a gardener. Here his independent, active and mischievous disposition sometimes led him into quarrels with the other boys, who on complaining of David to their master, only received the reply, "I like a deevil better than a dult," an answer which showed he was a favorite, and put a stop to further accusations. In the gardens of the Earl of Mansfield, he served a seven years' apprenticeship, during which time it is admitted by all who knew him, that no one could be more industrious and anxious to excell than he was, his whole heart and mind being devoted to the attainment of a thorough knowledge of his business. The first department in which he was placed was a flower garden, at that time under the superintendence of Mr. McGillivray, a young man who had received a tolerable education, and was pretty well acquainted with the names of plants and the rudiments of botany. From him Douglas gathered a great deal of in-

formation, and being gifted with an excellent memory, he soon became as familiar with the collection of plants at Scone as his instructor.

Here the subject of this notice found himself in a situation altogether to his mind, and here, it may be said, he acquired the taste for botanical pursuits which he so ardently followed in after life. He had always a fondness for books, and when the labor of the day was over, the evenings, in winter, invariably found him engaged in the perusal of such works as he had obtained from his friends and acquaintances, or in making extracts from them of portions which took his fancy, and which he would afterwards commit to memory. In summer again, the evenings were usually devoted to short botanical excursions, in company with such of the other young men as were of a similar turn of mind to himself, but whether he then had any intention of becoming a botanical collector, we have now no means of ascertaining. He had a small garden at home, where he deposited the living plants that he brought home. It may be stated that these excursions were never pursued on a Sabbath day, his father having strictly prohibited young Douglas so doing, and this rule he at no time broke. The hours which may be called his own, were spent in arranging his specimens, and in reading with avidity all the works on travels and natural history, to which he could obtain access. Having applied to an old friend for a loan of some books on these subjects, the gentleman (Mr. Scott), to David's surprise, placed a Bible in his hands, accompanied with the truly kind admonition, 'There, David, I cannot recommend a better or more important book for your perusal.'

It has frequently occurred to us, when admiring the many beautiful productions with which the subject of this memoir has enriched our gardens, that, but for his intercourse with two individuals, Messrs. R. and J. Brown, of the Perth Nursery, these acquisitions, in all probability, would have been

'The flowers on desert isle that perish.'

At this period of Douglas's life, these gentlemen were very intimate with Mr. Beattie, and their visits to Scone afforded opportunities to him to gain their acquaintance. Both were good British botanists, and so fond of the study, as annually to devote a part of the summer to botanizing in the Highlands; hence their excursions were often the subject of conversation, and it is believed, that from hearing them recount their adventures, and describe the romantic scenery of the places they had visited in search of plants, Douglas secretly formed the resolution of imitating their example.

Having completed the customary term in the ornamental department, he was moved to the forcing and kitchen garden, in the affairs of which he appeared to take as lively an interest as he had previously done in those of the flower garden. Lee's Introduction to Botany and Don's Catalogue, his former text books, if they may be so termed, were now laid aside, and Nicol's Gardener's Calendar taken in their stead. The useful publications of Mr. Loudon, which ought to be in the hands of every young gardener, had not then made their appearance; so that his means of gaining a *theoretical* knowledge of his business were very limited, when compared with the facilities of the present day; but, what was of more consequence to one in his situation, he had ample scope for making himself master of the *practical* part, and it is but justice to state that, when he had finished his apprenticeship, he only wanted age and experience in the management of men, to qualify him for undertaking a situation of the first importance.

His active habits and obliging disposition gained the friendship of Mr. Beattie, by whom he was recommended to the late Mr. Alexander Stewart, gardener at Valleyfield, near Culross, the seat of the late Sir Robert Preston, a place then celebrated for a very select collection of plants. Thither David Douglas went in 1818, after having spent the preceding winter months in a private school in Perth, revising espe-

cially such rules of arithmetic as he thought might be useful, and in which he either had found or considered himself deficient. He was not long in his new situation when a fresh impulse seized him. The kitchen garden lost its attraction, and his mind became wholly bent on botany, more especially as regarded exotic plants, of which we believe one of the very best private collections in Scotland was then cultivated at Valleyfield. Mr. Stewart finding him careful of the plants committed to his charge, and desirous of improvement, encouraged him by every means in his power. He treated him with kindness and allowed him to participate in the advantages which he himself derived from having access to Sir R. Preston's botanical library, a privilege of the utmost value to one circumstanced like Douglas, and endowed with such faculties of mind and memory as he possessed. He remained about two years at Valleyfield, being foreman during the last twelvemonth to Mr. Stewart, when he made application and succeeded in gaining admission to the Botanic Garden at Glasgow.

In this improving situation it is almost needless to say, that he spent his time most advantageously and with so much industry and application to his professional duties as to have gained the esteem of all who knew him, and more especially of the able and intelligent Curator of that establishment, Mr. Stewart Murray, who always evinced the deepest interest in Douglas's success in life. Whilst in this situation he was a diligent attendant at the botanical lectures given by the Professor of Botany in the hall of the garden, and was his (the Professor's) favorite companion in some distant excursions to the Highlands and Islands of Scotland, where his great activity, undaunted courage, singular abstemiousness, and energetic zeal, at once pointed him out as an individual eminently calculated to do himself credit as a scientific traveler.

It was our privilege and that of Mr. Murray, to recommend Mr. Douglas to Joseph Sabine, Esq., the Honorary

Secretary of the Horticultural Society, as a botanical collector; and to London he directed his course accordingly in the spring of 1823. His first destination was China, but intelligence having about that time been received of a rupture between the British and Chinese, he was despatched in the latter end of May, to the United States, where he procured many fine plants, including a large number of specimens of various oaks, and greatly increased the society's collection of fruit trees. He returned late in the autumn of the same year, and in 1824, an opportunity having offered through the Hudson's Bay Company of sending him to explore the botanical riches of the country in North-West America, adjoining the Columbia river, and southward towards California, he sailed in July for the purpose of prosecuting this mission.

We are now come to the most interesting period of Mr. Douglas's life, when he was about to undertake a long voyage, and to explore remote regions, hitherto untrodden by the foot of any naturalist. In these situations, far indeed from the abodes of civilized society, frequently with no other companion than a faithful dog, or a wild Indian as a guide, we should have known little or nothing of his adventures, were it not for a Journal which he kept with great care (considering the difficulties, not to say dangers, which so frequently beset him in his long and painful journeyings), and which has been deposited in the library of the Horticultural Society of London."

From this point onwards, Sir (then Dr.) W. J. Hooker in his memoir gives lengthy extracts from the Journal kept by Douglas during his wanderings in the North-West parts of America in the years 1824, 1825, 1826, and 1827. As the chief object in issuing this pamphlet is to give some particulars regarding Douglas's travels in Hawaii, it is not thought desirable to reproduce his Journal of travels and adventures covering the above-mentioned period. Those who are interested in botany and the early explorations of the North-

West Coast will find the Journal given at length, as also a condensed account of same, in the volume entitled "Douglas' Journal," edited by W. Wilks, Secretary of the Royal Horticultural Society, and published in London, 1914, by William Wesley & Son. Most of it will also be found in Vol. II. of the Hawaiian Spectator, published in 1839.

Suffice it to say here that Douglas sailed from the Thames by the Hudson's Bay Co. brig "William and Ann" on July 25th, 1824, touching at Madeira, Rio, Juan Fernandez, and the Galapagos Islands en route and reaching the Columbia River on April 7th, 1825. On his arrival he devoted his full time and energies down to March 20th, 1827, to the exploration of the Columbia River region. During his stay, he traveled over 7000 miles by canoe, on foot or on horseback, undergoing many hardships and dangers. He was often reduced to living on roots such as were used by the Indians, and as might be expected, his clothes were often worn to rags through traveling in the rough country found in that region. He discovered many new trees, plants, birds and mammals. Among the trees were the fir which will always bear his name, and several species of pine, e.g., *Pinus amabilis* (*Abies amabilis*), *Pinus grandis*, *P. insignis*, *P. Lambertiana*, *P. Menziesii*, *P. nobilis* (*Abies nobilis*), *P. ponderosa*, *P. Sabiana*, etc., many species of 'ribes,' or currants, now common in gardens, the California vulture, and the California sheep.

In March, 1827, in company with Dr. McLoughlin, of the Hudson's Bay Co., he left Fort Vancouver and traveled overland to York Factory, Hudson's Bay. On the way, he met Sir John Franklin at Norway House. It may be mentioned that owing to his own stock of clothes being worn out, before starting on his overland journey, the Hudson's Bay people at Fort Vancouver furnished him with a suit of bright red Royal Stewart tartan (coat, vest and pants) and it was in this gaudy outfit that Douglas made his way across the continent, much to the surprise, no doubt, of the Indians

whom he met on his way. Sailing from Hudson's Bay on Sept. 15th, Douglas reached Portsmouth on Oct. 11th, 1827.

From the great number of plants and seeds which Douglas had sent or brought home with him from the North-West Coast, the Royal Horticultural Society, according to Hon. Secretary W. Wilks, raised 210 distinct species in the Society's gardens, 80 of which being considered to be only "Botanical curiosities" were "abandoned" and 120 species were grown on and distributed to all parts of the world.

Douglas on his arrival in London was made much of in scientific circles, and was for some time a lion in fashionable society. He was elected a Fellow of the Linnean, Geological and Zoological Societies without payment of fees, and in 1828, Dr. Lindley dedicated to him the genus of *Douglasia* among the primrose tribe.

Notwithstanding the flattering attention with which he was received in England, Douglas was glad to accept the offer of the Horticultural Society to return once more on an exploration trip in the same general district of the North-West Coast of America as before. He left England for the last time in the autumn of 1829. On his arrival at the Columbia River he found that owing to the Indians being on the war path, he would not be able to extend his travels very far into the interior. He therefore left the Columbia River and went to California in the *Dryad*, and landed at Monterey in 1831. His intention was to return to the Columbia River in the autumn; being unable to find any ship or other means of transport, he was compelled to spend another season in California, making various excursions to the interior and to the south as far as Santa Barbara, and perhaps further down the coast to San Diego, the furthest south Mission station in California. Finally he sailed to the Sandwich Islands (now known as the Hawaiian Islands). In those days there were many vessels trading between the islands and the coast of California.

From Honolulu he despatched to England his California

collection of seeds and plants. On this his first visit to the Sandwich Islands, he wished to explore the high mountains of the group, but owing to being laid up with an attack of rheumatism, the result of hardships which he had undergone in the North-West Coast, he was unable to undertake any hill climbing. After a short stay at the Islands, he returned to the Columbia River, and explored the Fraser River district. His first experience of the Sandwich Islands made him desirous of more thoroughly investigating the botanical treasures that are to be found there. Accordingly he sailed from the Columbia River on October 18th, 1833, arriving at Honolulu, or Fair Haven, as it was then sometimes called, on the 23rd December, 1833, immediately leaving for the big island of Hawaii, which he reached on January 2nd, 1834.

Outside of the account of his ascent of Mauna Kea, Mauna Loa and visit to Kilauea volcano, given in the Journal which he forwarded to his brother John Douglas, little is known of David Douglas's wanderings in the Hawaiian group. If he visited the Island of Maui and ascended the extinct crater of Haleakala, it would have been very interesting for this generation to be able to read his experiences on such a trip. He at all events must have done considerable botanizing on the island of Oahu, where Honolulu, the capital, is situated, but of this no record has come down to our time.

On 12th July, 1834, while travelling along the upper edge of the forest in the Hamakua-Hilo district of the island of Hawaii, Douglas fell into a pit used for trapping wild cattle, and was gored to death by a bull. His mangled remains were brought to Honolulu and buried in the Kawaiahao Church Cemetery. The exact spot where he was interred is not now known. The Rev. Henry H. Parker, who was pastor of Kawaiahao Church, from June 28th, 1863, down to January, 1918, states that he does not know the site of Douglas's burial, as in former years no record was kept of the burials in Kawaiahao churchyard. In 1856, Mr. Julius L.

Plate 2.



DAVID DOUGLAS

The above portrait is substituted for the engraving of the Douglas Monument, New Scone Churchyard, mentioned on page 17.

Brenchley, M.A., F.R.G.S., author of "the cruise of H.M.S. Curacoa among the South Sea Islands," who had previously visited the islands in company with Jules Remy, editor of "Ka Mooolelo o Hawaii," forwarded from England a tombstone of white marble to Honolulu for the purpose of being erected over Douglas's burial place. The exact spot of burial being unknown, or for some other reason, the tombstone has been placed on the face of the south-west wall of Kawaiahao Native Church, on the right of the entrance door. Tropical sunshine and showers of many years have had their effect on the lettering of the tablet, and in a few more years from this date, the inscription will become illegible.

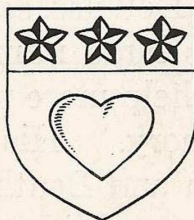
A monument to Douglas's memory was erected in the churchyard at New Scone, near his birthplace. It was erected, as the inscription on it states, 'by subscriptions among the botanists of Europe.' The compiler of this pamphlet on a visit to Scotland in 1903, paid a visit to New Scone and had a photograph taken of this monument, a copy thereof being printed herein. The monument stands in the burying ground attached to the old parish church, wherein took place the coronation of Charles II., the last monarch to be crowned in Scotland.

In the "Douglas Journal," published by the Royal Horticultural Society in 1914, there is given a list, drawn up by Mr. W. Wilks, Hon. Secretary, of some two hundred varieties of plants introduced by Douglas, and as Professor G. S. Boulger has remarked, this large number of trees, shrubs and herbaceous plants will help more than any stone monument to perpetuate his memory. His dried plants are divided between the Hookerian and Bentham herbaria at Kew, the Lindley herbarium at Cambridge, and that of the British Museum. Original portraits of Douglas are to be found at Kew, at the Linnean Society, London, and at the Vancouver, B.C., Museum. In the Royal Society's catalogue, Douglas is credited with fourteen papers, which are in the transactions and journals of the Royal, Linnean, Geographical, Zoo-

logical and Horticultural Societies. The only one of these which specially interests residents of the Hawaiian Islands is that on the Volcanoes in the Sandwich Islands, which appeared in the Geographical Society's Journal IV., 1834, pp. 333-343. This paper has been republished in booklet form.

In the Flora of Hawaii, Douglas has been remembered by his fellow botanists through names given to the following plants, viz.:

1. *Cyathodes Douglasii*—Gray.
native name Maieli or Puakeawe.
2. *Pandanus Douglasii*—Gaudichaud.
native name Hala or Lauhala.
3. *Argyrophyton Douglasii*—Hooker.
native name Ahinahina, the Silver Sword plant of the foreigner, and now usually styled *Argyroxiphium Sandwicense* DC.
4. *Gymnotheca Douglasii*—T. Moore.
Marattia Douglasii—Baker.
Stibasias Douglasii—Bresl.
different synonyms given to the fern known as the "Pala."



"Of sculpture rude a stony shield,
The bloody heart was in the field,
And on the chief three mullets stood,
The cognizance of Douglas blood."—

—Scott.

EXTRACT FROM A LETTER OF DAVID DOUGLAS'S TO DR. W. J. HOOKER, written previous to his departure from Monterey on his first visit to the Sandwich Islands.

Monterey, Upper California, Nov. 23, 1831.

. "I am in daily expectation of a vessel from the Columbia, in which I shall embark to renew my labors in the north. Should she not arrive before the 10th of December, I will take my passage in an American vessel for the Sandwich Islands, where I shall not fail to endeavor to scale the lofty peaks of Mauna Roa or Mauna Kea (the White or Snowy Mountain) in quest of Flora's treasures, and proceed to the North-West Coast in the ensuing spring."



EXTRACT FROM A LETTER OF DAVID DOUGLAS'S TO DR. W. J. HOOKER, written at the Columbia River after his return from his first visit to the Sandwich Islands.

River Columbia, October 23, 1832.

"Your welcome and highly prized letter of Oct. 10, 1830 I had the pleasure to receive from Capt. Charlton, our Consul at the Sandwich Islands, on my arrival at that place from the Coast of California, in August last."

.
From the Sandwich Islands I shipped on board the Sarah and Elizabeth, a South Seaman of London, and bound for that port, nineteen large bundles of dry plants, into two chests, together with seeds, specimens of timber, etc.² The captain, a very worthy little man, placed these articles in his own cabin, which gives great relief to my mind as to their safety.

. At the Sandwich Islands a violent rheumatic fever prevented me from venturing at all to the hills, during my short stay, and I sat and fretted enough about it! I have indeed had some hard work since I quitted England of which I occasionally feel the effects, particularly in cold weather. Anxious that no time should be lost, I sailed from Monterey for those islands, in an American vessel of forty-six tons burden! and had a passage of only nineteen days. What could have been thought, forty years ago, of passing over more than half the great basin of the Pacific in such a craft? If steamboats and railroads are not in our way, we, poor wanderers, must take what offers, sometimes good and sometimes bad."

²His California collections.

A Glimpse of Douglas at Monterey

In the work entitled "Sixty Years in California 1831 to 1889," by William Heath Davis, occurs the following reference to David Douglas, who is styled "Dr. Douglass"

"Shortly after arriving at Monterey in the bark 'Louise' in 1831, I was playing about the deck one day with Louis Vigne, he having come from Honolulu in the same vessel. The main hatch being uncovered for the discharge of the cargo, in running about the opening, I slipped, lost my balance and fell into the hold. Taken up insensible, I remained so for many hours, having broken my arm. Our consul at Honolulu, Mr. J. C. Jones,³ was a stepfather of mine. He came over on the same trip and was on shore. Word having been sent to him, he brought aboard Dr. Douglass, who set my arm carefully, and treated me very kindly. This doctor was a Scotchman, of learning and extensive scientific acquirements; a naturalist, who also gave attention to botany, and was a collector of rare and curious specimens from the animal and vegetable kingdoms. He had traveled all about the world; had come recently from South America, and was making the tour of California. He was a grand, good man.

"At Monterey the doctor was the guest of David Spence,⁴ his countryman. Having visited the various Missions, and made the acquaintance of the padres, for whom he had the greatest respect and attachment, he spoke of their learning and of the great good being done by them in

³ United States Consul, who was then engaged in trading between Boston and ports in the Sandwich Islands and the Pacific Coast.

⁴ David Spence, one of the earliest residents of Monterey, the former capital of California. He was a merchant there and owner of the Rancho Buena Esperanza. Although Davis mentions that Douglas stayed with David Spence whilst at Monterey, yet Douglas himself states that he resided with W. D. P. Hartnell, an Englishman, who, with his partner, Hugh McCulloch, a Scotsman, established at Mon-

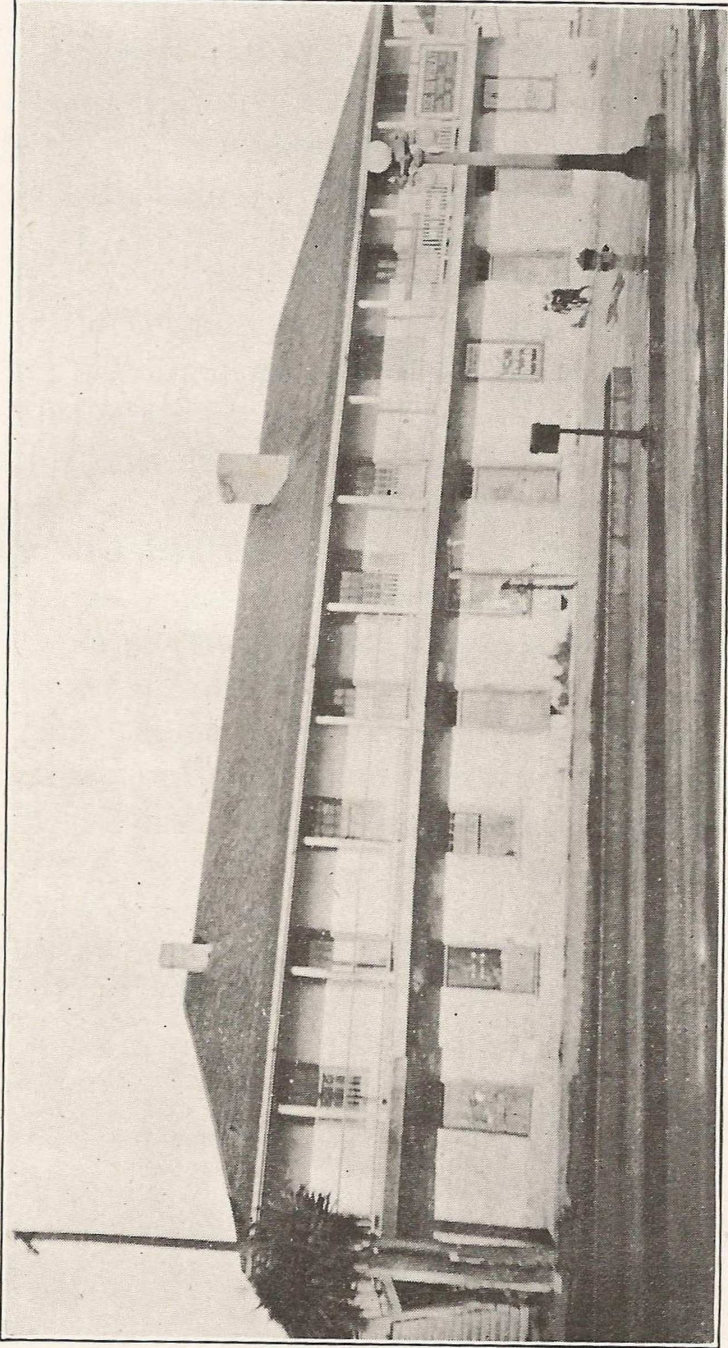
this wild and unsettled territory, and commended the missionary work, with the limited means at command, not only in Christianizing and educating the Indians in schools and churches, but in teaching various useful trades.

“Dr. Douglass, being brave and fearless, usually traveled on foot through the country, and refused the services of guides or vaqueros whom the good fathers or rancheros would urge him to take with him.” Mr. Davis, the writer, continues on to give an account of the death of Douglas on the Island of Hawaii, but as what he knew was only hearsay, it need not be given here.

terey in 1823 the first commercial house in California, as a branch of a firm at Lima, Peru. This firm was therefore started three years ahead of that of Henry A. Pierce, Honolulu, which afterwards in 1843 became the firm of C. Brewer & Co. Among other prominent Scotsmen then residing in California or trading along that coast was James McKinley, a leading trader of Monterey, and afterwards a partner of the firm of Paty, McKinley and Fitch, the Paty of the house being the well-known Captain John Paty, of Honolulu. The large adobe building erected by McKinley in Monterey, known as the Pacific House, still stands at the junction of Main and Alvarado Streets. A snapshot of this building taken in 1918 is given here.

Another fellow countryman, whom Douglas probably met, was Capt. John Wilson, a Dundee man, who arrived on the California coast in 1827, and who must have visited in previous years at the Sandwich Islands. He figures as the owner and crack seaman of the “Ayacucho” in Dana’s “Two Years Before the Mast.” The name of the vessel was taken from the battle of Ayacucho (9th July, 1824), which finally secured the liberties of Chili and Peru. It was at this battle that General William Miller, afterwards British Consul at Honolulu, performed one of his most gallant exploits by charging at the head of the Husares de Juria. General Miller lived on Beretania (Britain) Street, on the premises immediately east of the late Queen Liliuokalani’s residence. His name is perpetuated by Miller Street, which runs alongside his former dwelling. The crew of the Ayacucho were Sandwich Islanders. Captain John Wilson married Dona Ramona, widow of Don Francisco Pacheco, and thus became the stepfather of the young man who subsequently was Governor Romualdo Pacheco of California. It was doubtless through Captain Wilson’s knowledge of Honolulu that he sent his young stepson, the future governor, to Honolulu to be educated.

Further, Douglas in his travels in southern California very likely met Hugh or Hugh Reid, the Scottish merchant and former sea-captain, settled at Santa Anita, who, it is believed, was the prototype of the Scotsman Angus Phail, the father of Helen Hunt Jackson’s heroine “Ramona.” Readers of that popular book are apt to forget that by virtue of her father’s nationality, Ramona was a “Scots’ lassie.”



W. F. Wilson, photo

PACIFIC HOUSE, MONTEREY, CAL.

From "LIFE IN CALIFORNIA," by Alfred Robinson⁵ (S.F. ed., p. 117).

"I found a new resident at Monterey, David Douglas, Esq., a naturalist from Scotland, who had been indefatigable in his researches throughout the northern regions of America, and was adding to his treasures the peculiar productions of California. I was told he would frequently go off attended only by his little dog, and with rifle in hand search the wildest thicket in hopes of meeting a bear; yet the sight of a bullock grazing in an open field was to him more dreadful than all the terrors of the forest. He once told me that this was his only fear, little thinking what a fate was in reserve for him. He went afterwards from Monterey to the Sandwich Islands. One morning he was found at the bottom of a pit which had been prepared as a trap for wild bulls. It is supposed that from curiosity he had approached too near to get a sight of the furious animal that had been ensnared, and the earth giving way precipitated him below. The merciless brute had gored him to death. His faithful little dog was found near the spot watching a basket of his collections."

⁵Alfred Robinson, an early settler in California, whose marriage at Santa Barbara is described by Dana in "Two Years Before the Mast."

EXTRACT FROM A LETTER OF DAVID DOUGLAS'S TO DR. W. J. HOOKER, written at the Columbia River, previous to starting out on his second visit to the Sandwich Islands.

Columbia River, Oct. 24, 1832.

“ I have a great desire to become better acquainted with the vegetation of the Sandwich Islands, as I am sure much remains to be done there, and before quitting that country I made conditional arrangements with Capt. Charlton, our Consul, to aid me, should I return. This I shall earnestly endeavor to do. The Consul is a most aimable and excellent person. In *Ferns* alone I think there must be five hundred species.”

In a sort of postscript to the above letter, but addressed to a young member of Dr. Hooker's family, who had often listened with delight to Mr. Douglas's well-told tales of his previous adventures in North-West America, and had caught something of the spirit of adventure from the narrator, appears the following sentence:

“You may tell your little brother (who wondered that I could bear to go to sea, as there were cockroaches in all ships), that I feel now a mortal antipathy, more even than he, if possible, to these insects; for having made a great number of observations in the Sandwich Islands, the vile cockroaches ate up all the paper, and as there was a little oil on my shoes, very nearly demolished them too!”⁶

⁶ For Prof. W. T. Brigham's experiences with Hawaiian cockroaches see “The Ancient Hawaiian House,” page 97.

Extracts from David Douglas's Journal
of a
Second Expedition to the Sandwich
Islands in 1833-4

WHICH JOURNAL WAS SENT TO HIS BROTHER
JOHN DOUGLAS.

Dr. W. T. Hooker writes that the only Journal of Mr. Douglas's second expedition which has reached England is that commencing with his departure from the Columbia, including the voyage to the Sandwich Islands and the ascent of Mauna Kea and Mauna Loa. From this, which was lent by the possessor, Mr. John Douglas, the following extracts are made:

Leaves the Columbia River and sails for the Sandwich Islands.

"On Friday the 18th of October, 1833, we quitted Cape Disappointment, in the Columbia River, and after encountering much variety of weather and many heavy, baffling gales, anchored off Point de los Reyes on the 4th of November, and remained there till the 28th of the same month, our attempt to beat out of the harbor of Sir Francis Drake, having proved several times ineffectual. On the 29th I accompanied Mr. Finlayson in a small boat to Whalers' Harbor⁷ near the neck of the bay, which leads up to the hill of San Rafael⁸, the highest peak in the immediate vicinity of the

⁷ Now Sausalito.

⁸Mount Tamalpais.

port. We landed at Mr. Read's farmhouse, placed on the site of an old Indian camp, where small mounds of marine shells bespeak the former existence of numerous aboriginal tribes. A fine small rivulet of good water falls into the bay at this point. Returning the same afternoon, we cleared the Punta de los Reyes on the 30th, and descrying the mountain of St. Lucia, south of Monterey, at a distance of forty or fifty miles, steered southward for the Sandwich Islands. The Island of Maui was indistinctly seen, at sunset, of the 21st of December, forty-two miles off, and on the 22nd Oahu lay ten miles due west of us.

Arrives at Fairhaven, or Honolulu, and leaves for Island of Hawaii.

Having quitted the harbor of Fairhaven, in Woahu, on Friday, the 27th, in an American schooner, of sixty tons, she proved too light for the boisterous winds and heavy seas of these channels, and we were accordingly obliged to drop anchor at Rahaina⁹ Roads, for the purpose of obtaining more ballast. An American missionary, Mr. Spaulding¹⁰ having come on board, I accompanied him on shore, to visit the school¹¹, situated on the hill side, about five hundred feet from the shore, and returned to the ship at night. On Tuesday, the 31st December, we stood in for the Island of Hawaii, and saw Mauna Kea very clearly, a few small stripes of snow lying only near its summit, which would seem to indicate an altitude inferior to that which has been commonly assigned to this mountain.

1834.

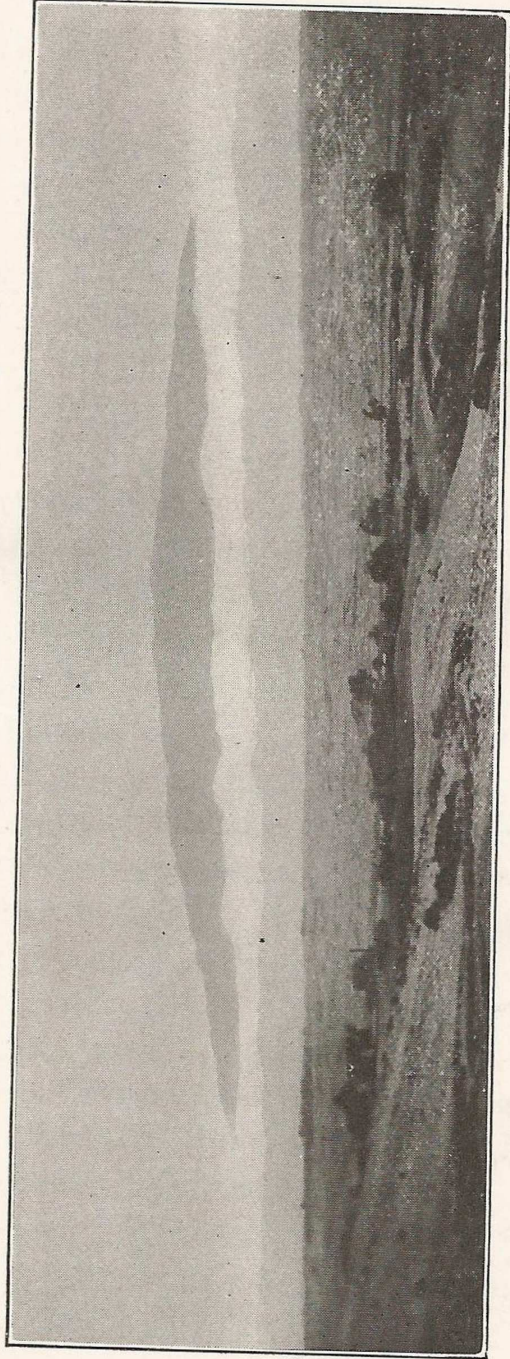
Ascent of Mauna Kea.

My object being to ascend and explore Mouna Keah, as soon as possible, I started on the 7th January, 1834, and after passing for more than three miles over plain country,

⁹Now Lahaina.

¹⁰Rev. Ephraim Spaulding.

¹¹Lahainaluna.



W, F. Wilson, photo

MAUNA KEA (13,825 ft.)
From the Waimea Plains (elevation 2,000 ft.)

commenced the ascent, which was however gradual, by entering the wood. Here the scenery was truly beautiful. Large timber trees were covered with creepers and species of *Tillandsia*, while the tree ferns gave a peculiar character to the whole country. We halted and dined at the Saw Mill, and made some barometrical observations, of which the result is recorded, along with those that occupied my time daily during the voyage, in my journal. Above this spot the banana no longer grows, but I observed a species of *Rubus* among the rocks. We continued our way under such heavy rain as, with the already bad state of the path, rendered walking very difficult and laborious; in the chinks of the lava, the mud was so wet that we repeatedly sank in it, above our knees. Encamping at some small huts, we passed an uncomfortable night, as no dry wood could be obtained for fuel, and it continued to rain without intermission. The next day we proceeded on our way at eight o'clock, the path becoming worse and worse. The large tree ferns, and other trees that shadowed it, proved no protection from the incessant rain, and I was drenched to the skin the whole day, besides repeatedly slipping into deep holes, full of soft mud. The number of species of *Felices* is very great, and towards the upper end of the wood, the timber trees, sixty or seventy feet high, and three to ten inches¹² in circumference, are matted with mosses, which, together with the *Tillandsias* and Ferns, betoken an exceedingly humid atmosphere. The wood terminates abruptly, but as the lodge of the cattle hunter was still about a mile and a half farther up the clear flank of the mountain, situated on the bank of a craggy lava stream, I delayed ascertaining the exact spot where the woody region ends (a point of no small interest to the botanist), until my return, and sate down to rest myself awhile, in a place where the ground was thickly carpeted with species of *Fragaria*¹³, some of which were in blossom, and a few of them in fruit.

¹² ? feet. ¹³ *Fragaria chilensis*.

Here a Mr. Miles, part owner of the sawmill that I had passed the day before, came up to me; he was on his way to join his partner, a Mr. Castles, who was engaged in curing the flesh of the wild cattle near the verge of the wood, and his conversation helped to beguile the fatigues of the road, for though the distance I had accomplished this morning was little more than seven miles, still the laborious nature of the path, and the weight of more than 60 lbs. on my back, where I carried my barometer, thermometer, book, and papers, proved so very fatiguing, that I felt myself almost worn out. I reached the lodge at four, wet to the skin, and benumbed with cold, and humble as the shelter was, I hailed it with delight. Here a large fire dried my clothes, and I got something to eat, though unluckily, my guides all lingered behind, and those who carried my blanket and tea kettle were the last to make their appearance. These people have no thought or consideration for the morrow; but sit down to their food, smoke, and tell stories, and make themselves perfectly happy. The next day my two new acquaintances went out with their guns and shot a young bull, a few rods from the hut, which they kindly gave me for the use of my party. According to report, the grassy flanks of the mountain abound with wild cattle, the offspring of the stock left by Captain Vancouver, and which now prove a very great benefit to this island. A slight interval of better weather this afternoon afforded a glimpse of the summit between the clouds, it was covered with snow. At night, the sky became quite clear, and the stars, among which I observed Orion, Canis minor and Canopus, shone with intense brilliancy.

“The next day the atmosphere was perfectly cloudless, and I visited some of the high peaks which were thinly patched with snow. On two of them, which were extinct volcanos, not a blade of grass could be seen, nor anything save lava, mostly reddish, but in some places of a black colour. Though on the summit of the most elevated peak,

the thermometer under a bright sun stood at 40°, yet when the instrument was laid at an angle of about fifteen degrees, the quicksilver rose to 63°, and the blocks of lava felt sensibly warm to the touch. The wind was from all directions, East and West, for the great altitude and the extensive mass of heating matter completely destroy the Trade Wind. The last plant that I saw on the mountain was a gigantic species of the Compositae¹⁴ with a column of imbricated, sharp-pointed leaves, densely covered with a silky clothing. I gathered a few seeds of the plants which I met with, among them a remarkable *Ranunculus*¹⁵ which grows as high as there is any soil. One of my companions killed a young cow just on the edge of the wood, which he presented me with, for the next day's consumption. Night arrived only too soon, and we had to walk four miles back to the lodge across the lava, where we arrived at eight o'clock, hungry, tired and lame, but highly gratified with the result of the day's expedition.

"The following morning proved again clear and pleasant, and everything being arranged, some of the men were despatched early, but such are the delays which these people make, that I overtook them all before eight o'clock. They have no idea of time, but stand still awhile, then will walk a little, stop and eat, smoke and talk, and thus loiter away a whole day. At noon we came up to the place where we had left the cow, and having dressed the meat, we took a part and left the rest hanging on the bushes. We passed to the left of the lowest extinct volcano, and again encamped on the same peak as the preceding night. It was long after dark before the men arrived, and as this place afforded no wood, we had to make a fire of the leaves and dead stems of the species of Compositae mentioned before, and which, together with a small *Juncus*¹⁶, grows higher up the moun-

¹⁴Silver sword plant, *Argyrophyton Douglasii* (Hooker Ic. Plant. p. 75).

¹⁵*Ranunculus Mauiensis* or *R. Hawaiiensis*, Gray.

¹⁶? *Luzula campestris* DC.

tain than any other plant. The great difference produced on vegetation by the agitated and volcanic state of this mountain is very distinctly marked. Here there is no line between the Phenogamous and Cryptogamous plants, but the limits of vegetation itself are defined with the greatest exactness, and the species do not gradually diminish in number and stature, as is generally the case on such high elevations.

“The line of what may be called the Woody Country, the upper verge of which the barometer expresses 21,450 inch; therm. 46° at 2 p.m., is where we immediately enter on a region of broken and uneven ground, with here and there lumps of lava, rising above the general declivity to a height of three hundred to four hundred feet, intersected by deep chasms, which show the course of the lava when in a state of fluidity. This portion of the mountain is highly picturesque and sublime. Three kinds of timber, of small growth, are scattered over the low knolls, with one species of *Rubus*¹⁷ and *Vaccinium*¹⁸, the genus *Fragaria* and a few Gramineae, Felices, and some alpine species. This region extends to bar. 20,620 inch; air 40° , dew-point 30° . There is a third region, which reaches to the place where we encamped yesterday, and seems to be the great rise or spring of the lava, the upper part of which, &at the foot of the first extinct peak, is bar. 20,010 inch; air, 39° .

At six o'clock the next morning, accompanied by three islanders and two Americans, I started for the summit of the mountain; bar. at that hour indicated 20,000 inch., therm. 24° , hygr. 20° , and a keen west wind was blowing off the mountain, which was felt severely by us all, and especially by the natives, whom it was necessary to protect with additional blankets and greatcoats. We passed over about five miles of gentle ascent, consisting of large blocks of lava, sand, scoriae, and ashes, of every shape, size, and colour, demonstrating all the gradations of calcination, from the mild-

¹⁷*R. Macraei* Gray or *R. Hawaiiensis*, Gray. ¹⁸Several varieties.

est to the most intense. This may be termed the Table Land or Platform, where spring the great vent-holes of the subterranean fire, or numerous volcanos. The general appearance is that of a great river, heaped up. In some places the round boulders of lava are so regularly placed, and the sand is so washed in, around them, as to give the appearance of a causeway, while in others, the lava seems to have run like a stream. We commenced the ascent of the great peak at nine o'clock, on the N.E. side, over a ridge of tremendously rugged lava, four hundred and seventy feet high, preferring this course to the very steep ascent of the South side, which consists entirely of loose ashes and scoriae, and we gained the summit soon after ten. Though exhausted with fatigue before leaving the Table Land, and much tried with the increasing cold, yet such was my ardent desire to reach the top, that the last portion of the way seemed the easiest. This is the loftiest of the chimneys; a lengthened ridge of two hundred and twenty one yards two feet, running nearly straight N.W. To the North, four feet below the extreme summit of the Peak, the barometer was instantly suspended, the cistern being exactly below, and when the mercury had acquired the temperature of the circumambient air, the following register was entered: at 11 hrs. 20 min.; bar. 18,362 inch; air 33°; hydr. 0"5. At twelve o'clock the horizon displayed some snowy clouds; until this period, the view was sublime to the greatest degree, but now every appearance of a mountain storm came on. The whole of the low S.E. point of the island was throughout the day covered like a vast plain of snow, with clouds. The same thermometer, laid on the bare lava, and exposed to the wind at an angle of 27°, expressed at first 37, and afterwards at twelve o'clock, 41, though when held in the hand, exposed to the sun, it did not rise at all.

"It may well be conjectured that such an immense mass of heating material, combined with the influence of internal fire, and taken in connection with the insular position of

Mauna Kea, surrounded with an immense body of water, will have the effect of raising the snow line considerably; except on the northern declivity, or where sheltered by large blocks of lava, there was no snow to be seen; even on the top of the cairn, where the barometer was fixed, there were only a few handfuls. One thing struck me as curious, the apparent non-diminution of sound; not as respects the rapidity of its transmission, which is, of course, subject to a well-known law. Certain it is, that on mountains of inferior elevation, whose summits are clothed with perpetual snow and ice, we find it needful to roar into one another's ears, and the firing of a gun, at a short distance, does not disturb the timid antelope on the high snowy peaks of N.W. America. Snow is doubtless a non-conductor of sound, but there may be also something in the mineral substance of Mauna Kea which would effect this.

"Until eleven o'clock, the horizon was beautifully defined on the whole N.W. of the island. The great dryness of the air is evident to the senses, without the assistance of the hygrometer. Walking with my trousers rolled up to my knees, and without shoes, I did not know there were holes in my stockings till I was apprised of them by the scorching heat and pain in my feet, which continued throughout the day; the skin also peeled from my face. While on the summit I experienced violent headache, and my eyes became bloodshot, accompanied with stiffness in their lids.

"Were the traveller permitted to express the emotions he feels when placed on such an astonishing part of the earth's surface, cold indeed must his heart be to the great operations of Nature, and still colder towards Nature's God, by whose wisdom and power such wonderful scenes were created, if he could behold them without deep humility and reverential awe. Man feels himself as nothing, as if standing on the verge of another world. The death-like stillness of the place, not an animal nor an insect to be seen, far removed from the din and bustle of the world, impresses on his mind with

double force the extreme helplessness of his condition, an object of pity and compassion, utterly unworthy to stand in the presence of a great and good, and wise and holy God, and to contemplate the diversified works of His hands!

"I made a small collection of geological specimens, to illustrate the nature and quality of the lavas of this mountain, but being only slightly acquainted with this department of Natural History, I could do no more than gather together such materials as seemed likely to be useful to other and more experienced persons. As night was closing and threatening to be very stormy, we hastened towards the camp, descending nearly by the same way as we came, and finding my guide Honori and the other men all in readiness, we all proceeded to the edge of the woody region, and regained the lodge, highly gratified with the result of this very fatiguing day's excursion. Having brought provision from the hill, we fared well.

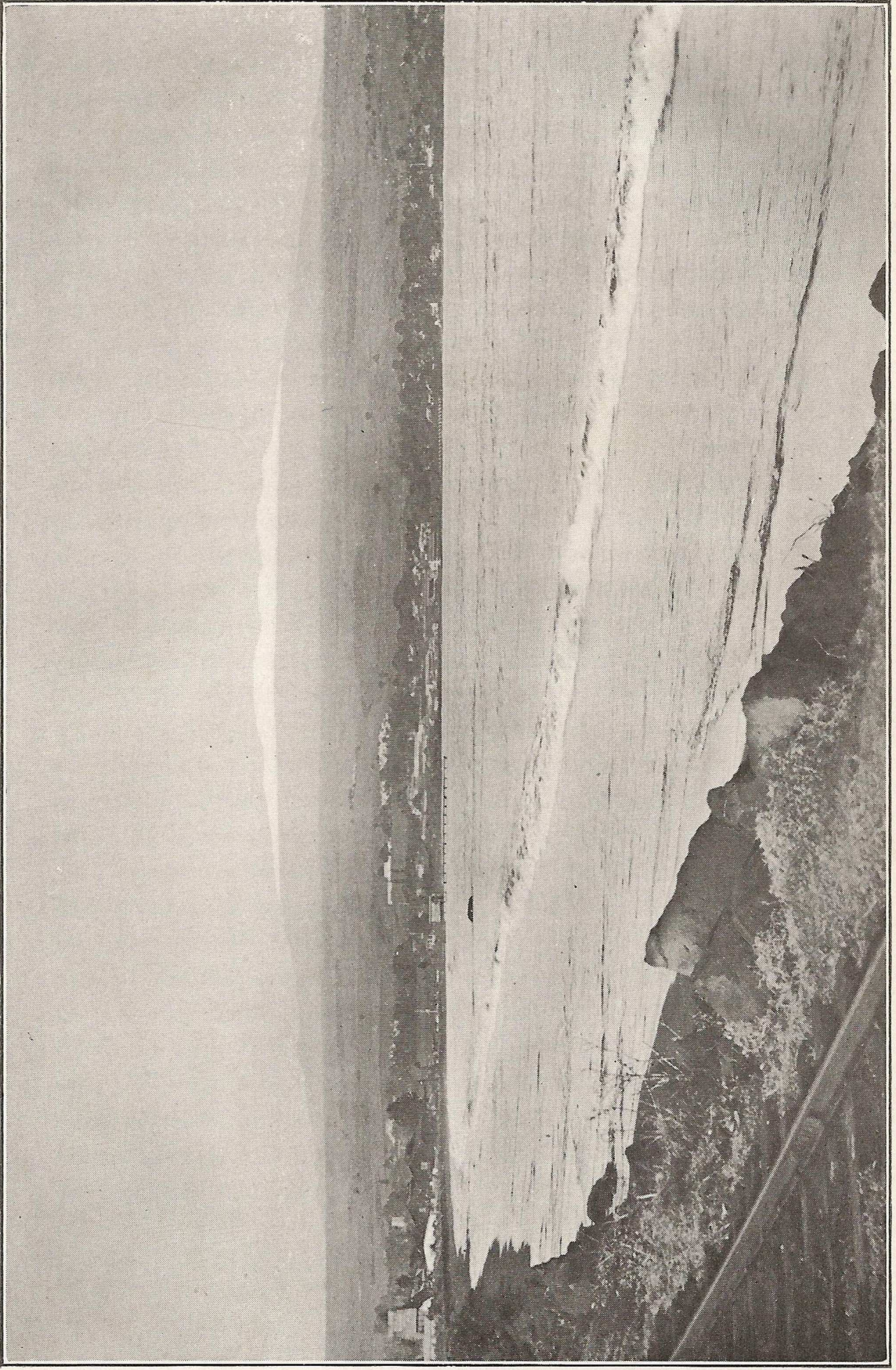
"January the 13th—The rain fell fast all night, and continued, accompanied by a dense mist, this morning, only clearing sufficiently to give us a momentary glimpse of the mountain, covered with snow down to the woody region. We also saw Mouna Roa, which was similarly clothed for a great part of its height. Thankful had we cause to be that this heavy rain, wind, and fog did not come on while we were on the summit, as it would have caused us much inconvenience and perhaps danger.

"The same weather continued till the 15th. I packed up all the baggage, and prepared to return. It consisted of several bundles of plants, put into paper and large packages tied up in Coa¹⁹ baskets, which are manufactured from a large and beautiful tree, a species of Acacia, of which the timber resembles mahogany, though of a lighter color, and is beautiful, and said to be durable; also some parcels of geological specimens, my instruments, etc. At seven a.m. I started,

¹⁹Acacia Koa.

having sent the bearers of my luggage before me, but I had hardly entered the wood by the same path as I took on my ascent, when the rain began to fall, which continued the whole day without the least intermission; but as there was no place suitable for encamping, and the people, as usual, had straggled away from one another, I resolved to proceed. The path was in a dreadful state, numerous rivulets overflowed it in many places, and, rising above their banks, rushed in foam through the deep glens, the necessity for crossing which impeded my progress in no slight degree. In the low places the water spread into small lakes, and where the road had a considerable declivity, the rushing torrent which flowed down it gave rather the appearance of a cascade than a path. The road was so soft that we repeatedly sunk to the knees, and supported ourselves on a lava block, or the roots of the trees. Still, violent as was the rain and slippery and dangerous the path, I gathered a truly splendid collection of ferns, of nearly fifty species, with a few other plants, and some seeds, which were tied up in small bundles, to prevent fermentation, and then protected by fresh Coa bark. Several beautiful specimens of mosses and lichens were also collected; and in spite of all the disadvantages and fatigue that I underwent, still the magnificence of the scenery commanded my frequent attention, and I repeatedly sate down, in the course of the day, under some huge spreading Tree-fern, which more resembled an individual of the Pine than the Fern tribe, and contemplated with delight the endless variety of form and structure that adorned the objects around me. On the higher part of the mountain I gathered a fern identical with the *Asplenium viride* of my own native country, a circumstance which gave me inexpressible pleasure, and recalled to my mind many of the happiest scenes of my early life.

“In the evening I reached the saw-mill, when the kind welcome of my mountain friend, Mr. Mills, together with a rousing fire, soon made me forget the pain and fatigues of



Morihiro, photo

MAUNA KEA (13,825 ft.),
from Hilo Bay.

the day. Some of the men had arrived before me, others afterwards, and two did not appear till the following day, for having met with some friends, loaded with meat, they preferred a good supper to a dry bed. My guide, friend and interpreter, Honori, an intelligent and well-disposed fellow, arrived at seven, in great dismay, having, in the dark, entered the river a short distance above a chain of cataracts, and to avoid these he had clung to a rock till extricated by the aid of two active young men. Though he escaped unhurt, he had been exposed to the wet for nearly ten hours. A night of constant rain succeeded, but I rested well, and after breakfast, having examined all the packages, we quitted the saw-mill for the bay, and arrived there in the afternoon, the arrangement and preservation of my plants affording me occupation for two or three days. It was no easy matter to dry specimens and papers during such incessantly rainy weather. I paid the whole of the sixteen men who had accompanied me, not including Honori and the king's man, at the rate of two dollars, some in money and some in goods: the latter consisted of cotton cloth, combs, scissors and thread, etc.; while to those who had acquitted themselves with willingness and activity, I added a small present in addition. Most of them preferred money, especially the lazy fellows. The whole of the number employed in carrying my baggage and provisions was five men, which left eleven for the conveyance of their own tapas and food. Nor was this unreasonable, for the quantity of Poe which a native will consume in a week, nearly equals his own weight! a dreadful drawback on expedition. Still, though the sixteen persons ate two bullocks in a week, besides what they carried, a threatened scarcity of food compelled me to return rather sooner than I should have done, in order that the calabashes might be replenished. No people in the world can cram themselves to such a degree as the Sandwich Islanders; their food is, however, of a very light kind, and easy of digestion.

Trip to Kilauea Volcano.

"On the 22nd day of January (1834), the air being pleasant, and the sun occasionally visible, I had all my packages assorted by nine a.m., and engaged my old guide, Honori, and nine men to accompany me to the volcano and Mouna Roa. As usual, there was a formidable display of luggage, consisting of Tapas, Calabashes, Poe, Taro, etc., while each individual provided himself with the solace of a staff of sugar cane, which shortens with distance, for the pedestrian, when tired and thirsty, sits down and bites off an inch or two from the end of his staff. A friend accompanied me as far as his house on the road, where there is a large church, his kind intention being to give me some provision for the excursion, but as he was a stout person, I soon outstripped him. On leaving the bay, we passed through a fertile spot, consisting of taro patches in ponds, where the ground is purposely overflowed, and afterwards covered with a deep layer of fern leaves to keep it damp. Here were fine groves of breadfruit and ponds of mullet and ava-fish²⁰; the scenery is beautiful, being studded with dwellings and little plantations of vegetables and of *Morus papyrifera*²¹ of which there are two kinds, one much whiter than the other. The most striking feature in the vegetation consists in the tree-fern, some smaller species of the same tribe, and a curious kind of Compositae, like an *Eupatorium*.²² At about four miles and a half from the bay, we entered the wood, through which there is a tolerably cleared path, the muddy spots being rendered passable by the stems or trunks of tree-ferns, laid close together crosswise. They seemed to be the same species as I had observed on the ascent of Mouna Keah. About an hour's walk brought us through the wood, and we then crossed another open plain of three miles and a half,

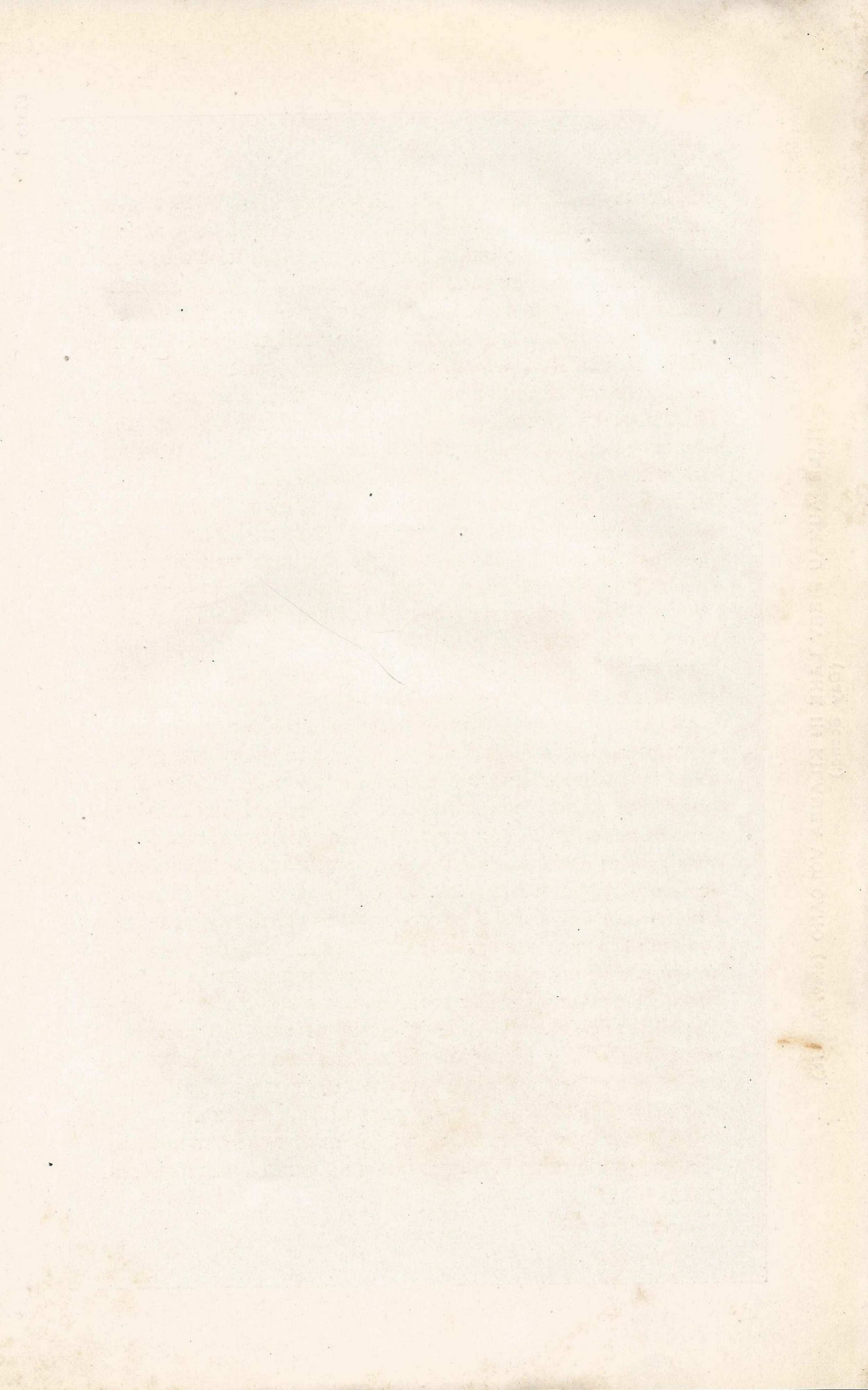
²⁰Waiakea fish ponds. ²¹The cloth plant used in manufacture of tapa or kapa. ²²? *Adenostemma viscosum*, Forst., D.C. Prod. native name, "Kamanamana."

at the upper end of which, in a most beautiful situation, stands the church, and close to it the chief's house. Some heavy showers had drenched us through; still, as soon as our friend arrived, and the needful arrangements were made, I started and continued the ascent over a very gently rising ground, in a southerly direction, passing through some delightful country, interspersed with low timber. At night we halted at a house, of which the owner was a very civil person, though remarkably talkative. Four old women were inmates of the same dwelling, one of them, eighty years of age, with hair white as snow, was engaged in feeding two favorite cats with fish. My little terrier disputed the fare with them, to the no small annoyance of their mistress. A well-looking young female amused me with singing, while she was engaged in the process of cooking a dog on heated stones. I also observed a handsome young man, whose very stiff, strong black hair was allowed to grow to a great length on the top of his head, while it was cut close over the ears and falling down on the back of his head and neck, had the appearance of a Roman helmet.

"January the 23rd. This morning the old lady was engaged in feeding a dog with fox-like ears, instead of her cats. She compelled the poor animal to swallow Poe by cramming it into his mouth, and what he put out at the sides, she took up and ate herself; this she did, as she informed me, by way of fattening the dog for food. A little while before day-break my host went to the door of the lodge, and calling over some extraordinary words which would seem to set orthography at defiance, a loud grunt in response from under the thick shade of some adjoining tree-ferns, was followed by the appearance of a fine, large black pig, which coming at his master's call, was forthwith caught and killed for the use of myself and my attendants. The meat was cooked on heated stones, and three men were kindly sent to carry it to the volcano, a distance of twenty-three miles, tied up in the large leaves of Banana and Ti-tree. The morning was deli-

ciously cool and clear, with a light breeze. Immediately on passing through a narrow belt of wood, where the timber was large, and its trunks matted with parasitic ferns I arrived at a tract of ground over which there was but a scanty covering of soil above the lava, interspersed with low bushes and ferns. Here I beheld one of the grandest scenes imaginable: Mouna Roa reared his bold front, covered with snow, far above the region of verdure, while Mouna Kuah (Kea), was similarly clothed to the timber line on the South side, while the summit was cleared of the snow that had fallen on the nights of the 12th and two following days. The district of Hido, 'Byron's Bay,' which I had quitted the previous day, presented, from its great moisture, a truly lovely appearance, contrasting in a striking manner with the country where I then stood, and which extended to the sea, whose surface, bore evident signs of having been repeatedly ravaged by volcanic fires.

In the distance, to the South-West, the dense black cloud which overhangs the great volcano attests, amid the otherwise unsullied purity of the sky, the mighty operations at present going on in that immense laboratory. The lava throughout the whole district appeared to be of every colour and shape, compact, bluish, and black, porous or vesicular, heavy and light. In some places it lies in regular lines and masses, resembling narrow horizontal basaltic columns; in others, in tortuous forms, or gathered into rugged humps of small elevation; while, scattered over the whole plain, are numerous extinct, abrupt, generally circular craters, varying in height from one hundred to three hundred feet, and with about an equal diameter at their tops. At the distance of five miles from the volcano, the country is more rugged, the fissures in the ground being both larger and more numerous, and the whole tract covered with gravel and lava, etc., ejected at various periods from the crater. The steam that now arose from the cracks bespoke our near approach to the summit, and at two p.m., I arrived at its north-





Morihiro, photo

HALEMAU MAU FIERY LAKE IN KILAUEA VOLCANO (elev. 4,000 ft.)
(Day Scene.)

ern extremity, where finding it nearly level, and observing that water was not far distant, I chose that spot for my encampment. As, however, the people were not likely to arrive before the evening, I took a walk around the west side, now the most active part of the volcano, and sat down there, not correctly speaking, to enjoy, but to gaze with wonder and amazement on this terrific sight, which inspired the beholder with a fearful pleasure.

“From the descriptions of former visitors, I judge that Mouna Roa²³ must now be in a state of comparative tranquillity. A lake of liquid fire, in extent about a thirteenth part of the whole crater, was boiling with furious agitation; not constantly, however, for at one time it appeared calm and level, the numerous fiery red streaks on its surface alone attesting its state of ebullition, when again, the red hot lava would dart upwards and boil with terrific grandeur, spouting to a height which, from the distance at which I stood, I calculated to be from forty to seventy feet, when it would dash violently against the black ledge, and then subside again for a few moments. Close by the fire was a chimney, above forty feet high, which occasionally discharges its steam, as if all the steam engines in the world were concentrated in it. This preceded the tranquil state of the lake, which is situated near the South-West or smaller end of the crater. In the center of the Great Crater, a second lake of fire, of circular form, but smaller dimensions, was boiling with equal intensity; the noise was dreadful beyond all description.

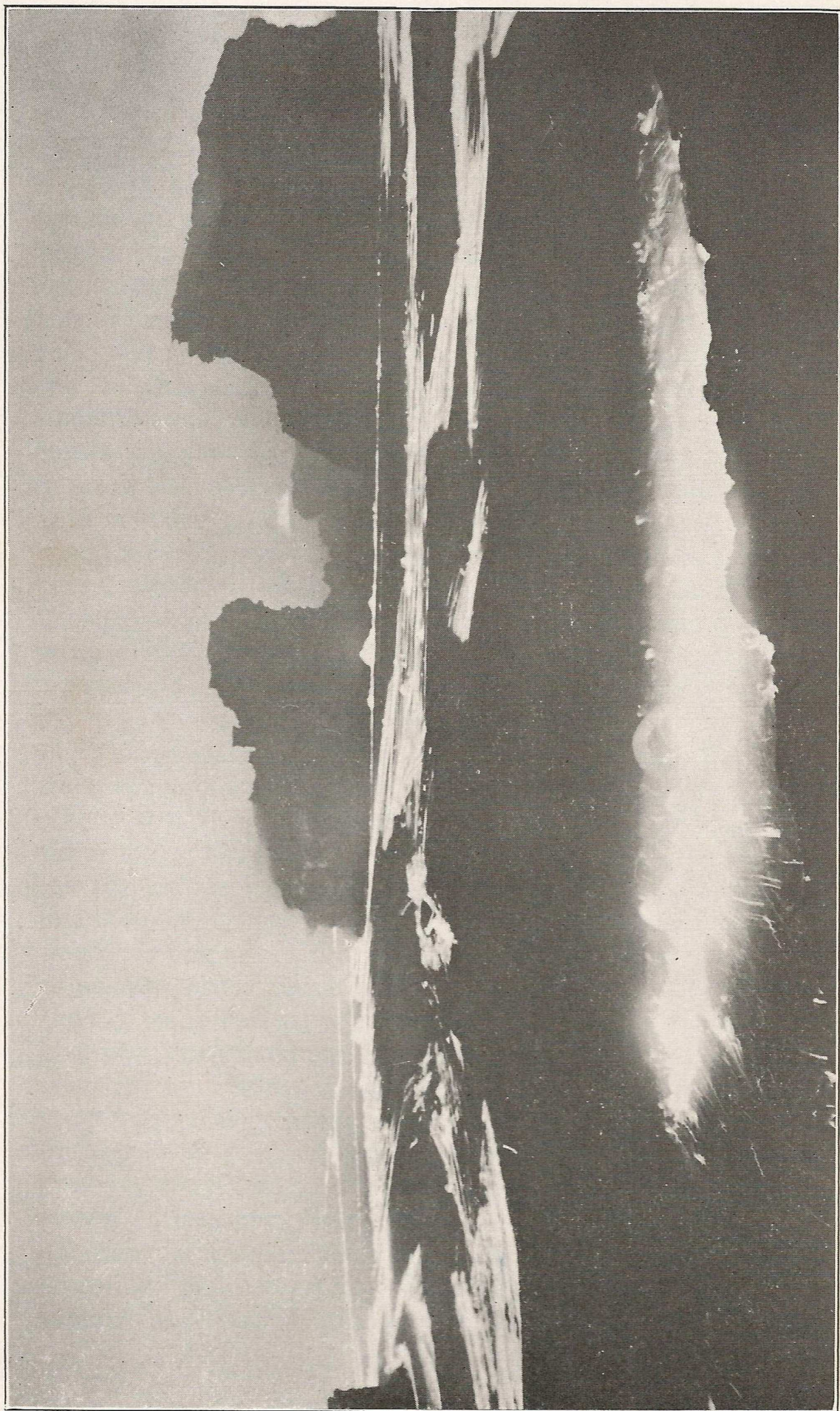
The people having arrived, Honori last, my tent was pitched twenty yards back from the perpendicular wall of the crater; and as there was an old hut of Ti-leaves on the immediate bank, only six feet from the extreme verge, my people soon repaired it for their own use. As the sun sank behind the western flank of Mouna Roa, the splendour of the scene increased; but when the nearly full moon rose in a cloudless sky, and shed her silvery brightness on the fiery

²³Slip of pen, Kilauea.

lake, roaring and boiling in fearful majesty, the spectacle became so commanding that I lost a fine night for making astronomical observations by gazing on the volcano, the illumination of which was but little diminished by a thick haze that set in at midnight.

“On Friday, January the 24th, the air was delightfully clear, and I was enabled to take the bearings of the volcano and adjoining objects with great exactness. To the north of the crater are numerous cracks and fissures in the ground, varying in size, form, and depth, some long, some straight, round or twisted, from whence steam constantly issued, which in two of them is rapidly condensed, and collects in small basins or wells, one of which is situated at the immediate edge of the crater, and the other four hundred and eighty yards to the north of it. The latter, fifteen inches deep, and three feet in diameter, about thirteen feet north of a very large fissure, according to my thermometer, compared with that at Greenwich and at the Royal Society, and found without error, maintains a temperature of 65° . The same instrument, suspended freely in the above mentioned fissure, ten feet from the surface, expressed by repeated trials, 158° ; and an equal temperature was maintained when it was nearly level with the surface. When the Islanders visit this mountain they invariably carry on their cooking operations at this place. Some pork and a fowl that I had brought, together with taro roots and sweet potatoes were steamed here to a nicety in twenty-seven minutes, having been tied up in leaves of banana. On the sulphur bank are many fissures, which continually exhale sulphurous vapours, and form beautiful prisms, those deposited in the inside being the most delicate and varied in figure, encrusting the hollows in masses, both large and small, resembling swallows' nests on the wall of a building. When severed from the ground, they emit a crackling noise by the contraction of the parts in the process of cooling. The great thermometer, placed in the holes, showed the temperature to be 195.5° , after re-

Plate 7.



Morihiro, photo

HALEMAUMAU FIERY LAKE IN KILAUEA VOLCANO (elev. 4000 ft.)
(Night Scene.)

peated trials which all agreed together, the air being then 71°.

“I had furnished shoes for those persons who should descend into the crater with me, but none of them could walk when so equipped, preferring a mat sole, made of tough leaves, and fastened round the heel and between the toe, which seemed indeed to answer the purpose entirely well. Accompanied by three individuals, I proceeded at 1 p.m. along the north side, and descended the first ledge over such rugged ground as bespoke a long state of repose, the fissures and flanks being clothed with verdure of considerable size: thence we descended two hundred feet to the level platform that divides the great and small volcanos. On the left, a perpendicular rock, three hundred feet above the level, shows the extent of the volcano to have been originally much greater than it is at present. The small crater appears to have enjoyed a long period of tranquillity, for down to the very edge of the crust of the lava, particularly on the East side, there are trees of considerable size, on which I counted from sixty to one hundred and twenty-four annual rings or concentric layers. The lava at the bottom flowed from a spot, nearly equidistant from the great and small craters, both uniting into a river, from forty to seventy yards in breadth, and which appeared comparatively recent. A little south of this stream, over a dreadfully rugged bank, I descended the first ledge of the crater, and proceeded for three hundred yards over a level space, composed of ashes, scoriae and large stones that had been ejected from the mouth of the volcano. The stream formerly described is the only fluid lava here. Hence, to arrive at the black ledge, is another descent of about two hundred and forty feet, more difficult to be passed than any other, and this brings the traveller to the brink of the black ledge, where a scene of all that is terrific to behold presents itself before his eyes. He sees a vast basin, recently in a state of igneous fusion, now, in cooling, broken up, somewhat in the

manner of the great American lakes when the ice gives way, in some places level in large sheets, elsewhere rolled in tremendous masses, and twisted into a thousand different shapes, sometimes even being filamentose, like fine hair²⁴, but all displaying the mighty agency still existing in this immense depository of subterraneous fire. A most uncomfortable feeling is experienced when the traveller becomes aware that the lava is hollow and faithless beneath his tread. Of all sensations in nature, that produced by earthquakes or volcanic agency is the most alarming: the strongest nerves are unstrung and the most courageous mind feels weakened and unhinged, when exposed to either. How insignificant are the operations of man's hands, taken in their vastest extent, when compared with the magnitude of the works of God!

“On the black ledge, the thermometer, held in the hand, five feet from the ground, indicated a temperature of 89°, and when laid on the lava, if in the sun's rays, 115°; and 112° in the shade; on the brink of the burning lava, at the South end, it rose to 124°. Over some fissures in the lava, where the smoke was of a greyish rather than a bluish tinge, the thermometer stood at 94°. I remained for upwards of two hours in the crater, suffering all the time an intense headache, with my pulse strong and irregular, and my tongue parched, together with other symptoms of fever. The intense heat and sulphurous nature of the ground had corroded my shoes so much, that they barely protected my feet from the hot lava. I ascended out of the crater at the South-west, or small crater and over two steep banks of scoriae and two ledges of rock, and returned by the west side to my tent, having thus walked quite round this mighty crater. The evening was foggy; I took some cooling medicine and lay down early to rest.

“Saturday, January the 25th. I slept profoundly till

²⁴Pele's hair, Lauoho o Pele.

2 a.m., when, as not a speck could be seen on the horizon, and the moon was unusually bright, I rose with the intention of making some lunar observations, but though the thermometer stood at 41° , still the keen mountain breeze affected me so much, of course mainly owing to the fatigue and heat I had suffered the day before, that I was reluctantly obliged to relinquish the attempt, and being unable to settle again to sleep, I replenished my blazing stock of fuel, and sat gazing on the roaring and agitated state of the crater, where three new fires had burst out since ten o'clock the preceding evening. Poor Honori, my guide, who is a martyr to asthma, was so much affected by their exhalations (for they were on the north bank, just below my tent), that he coughed incessantly the whole night, and complained of cold, though he was wrapped in my best blanket, besides his own tapas and other articles which he had borrowed from my Woahu man. The latter slept with his head toward the fire, coiled up most luxuriously, and neither cold, heat, nor the roaring of the volcano at all disturbed his repose.

Ascent of Mouna Loa, via Kapapala.

“Leaving the charge of my papers and collections under the special care of one individual, and giving plenty of provisions for twelve days to the rest, consisting of one quarter of pork, with poe and taro, I started for Kapupala²⁵, soon after eight a.m. The path struck off for two miles in a north-west direction, to avoid the rugged lava and ashes on the west flank of Mouna Roa, still it was indescribably difficult in many places, as the lava rose in great masses, some perpendicular, others lying horizontal, in fact with every variation of form and situation. In other parts the walking was pretty good, over grassy undulating plains, clothed with a healthy sward, and studded here and there with Maurarii trees²⁶ in full blossom, a beautiful tree, much re-

²⁵Kapapala.

²⁶Mamane, *Sophora chrysophylla*.

sembling the English laburnum. As I withdrew from the volcano in order to obtain a good general view of the country lying south and betwixt me and the sea, I ascertained the western ridge or verge of the volcano to be decidedly the most elevated of the table land; and a narrow valley lies to the west of it. A low ridge runs from the mountain, southward to the sea, terminating at the south end in a number of craters, of various form and extent. West of this low ridge between the gentle ascent of grassy ground on Mouna Roa there is a space of five to seven miles in breadth to the Grand Discharge from the Great Volcano, where it falls into the ocean at Kapupala. The present aspect of the crater leads me to think that there has been no overflowing of the lava for years: the discharge is evidently from the subterranean vaults below. In 1822, the Islanders say that there was a great discharge in this direction. Among the grassy undulating ground are numerous caves, some of great magnitude, from forty to sixty-five feet high, and from thirty to forty feet broad, many of them of great length like gigantic arches, and very rugged. These generally run at right angles with the dome of Mouna Roa and the sea. Some of these natural tunnels may be traced for several miles in length, with occasional holes of different sizes in the roofs, screened sometimes with an overgrowth of large trees and ferns, which renders walking highly dangerous. At other places, the tops of the vaults have fallen in for the space of one hundred or even three hundred yards, an occurrence which is attributable to the violent earthquakes that sometimes visit this district, and which, as may readily be imagined from the number of these tunnels, is not well supplied with water. The inhabitants convert these caverns to use in various ways, employing them occasionally as permanent dwellings, but more frequently as cool retreats where they carry on the process of making native cloth from the bark of the mulberry tree, or where they fabricate and shelter their canoes from the violent rays of

the sun. They are also used for goat-pens and pig-styes, and the fallen-in places where there is a greater depth of decomposed vegetable matter, are frequently planted with tobacco, Indian corn, melons and other choice plants. At a distance of ten miles north of Kapupala, and near the edge of the path, are some fine caverns, above sixty feet deep. The water, dripping from the top of the vault, collected into small pools below, indicated a temperature of 50°, the air of the cave itself 51°, while in the shade on the outside the thermometer stood at 82. The interior of the moist caverns are of a most beautiful appearance; not only from the singularity of their structure, but because they are delightfully fringed with ferns, mosses and *Jungermanniae*, thus holding out to the botanist a most inviting retreat from the overpowering rays of the tropical sun.

“Arrived at Kapupala, at 3 p.m., I found that the chief or head man had prepared a house for me, a nice and clean dwelling, with abundance of fine mats, etc., but as near it there stood several large canoes filled with water, containing mulberry bark in a state of fermentation and highly offensive, as well as a large pig-fold, surrounded with a lava wall, and shaded with large bushes of *Ricinus communis*, altogether forming an unsuitable station for making observations, to say nothing of the din and bustle constantly going on when strangers were present, besides the annoyance from fleas, I caused my tent to be pitched one hundred yards beyond the house. The chief would have been better pleased if I had occupied his dwelling, but through Honori I had this matter explained to his satisfaction. He sent me a fowl, cooked on heated stones underground, some baked taro, and sweet potatoes, together with a calabash full of delicious goat's milk, poured through the husk of a cocoanut in lieu of a sieve.

“As strangers rarely visit this part of the island, a crowd soon assembled for the evening. The vegetation in this district can hardly be compared with that of Hido, nor are the

natives so industrious; they have no fish ponds, and cultivate little else than taro, which they call dry taro, no bananas, and but little sugar cane or other vegetables. Flocks of goats brouse over the hills, while fowls, turkeys and pigs are numerous, and occupy the same dwellings as their owners.

Sunday at Kapapala.

“Honorī,²⁷ my guide, interpreter, purveyor, and, I may say, friend (for in every department of his omnifarious capacity he is a good sort of fellow), preached today, Sunday, the 26th, in his own language, to an assembly of both sexes, old and young, of nearly two hundred in number, both morning and evening. I did not see him, but from my tent door I could hear him in the school-house, a low small edifice, expounding and exhorting with much warmth. Having made so bold afterwards as to ask him where he took his text, he readily replied, that he ‘chose no text, but had taken occasion to say a few good words concerning Paul when at Rome.’ He was evidently well pleased himself with his sermon, and seemed to please his audience also. I visited the school in the interval, when Honorī had retired to compose his second sermon, and found the assemblage under the direction of the chief, who appears to be a good man, though far from an apt scholar; they were reading the second chapter of the Epistle to the Galatians, and proceeded to the third, reading verse and verse, all around. The females were by far the most attentive, and proved themselves the readiest learners. It is most gratifying to see, far beyond the pale of what is called civilization, this proper sanctification

²⁷This John Honorī, or Honolī, was evidently one of the four Hawaiian youths who came out with the first contingent of American missionaries from Boston in 1820. From his being able to act as an interpreter, he was well adapted for a luna’s or overseer’s job, and we thus find him in charge of the natives that accompanied the Rev. C. S. Stewart in his trip to Kilauea volcano in 1829, and also in the same capacity with Dr. Judd when the latter attempted to ascend Mauna Kea in 1830.

of the Lord's Day, not only consisting in a cessation from the ordinary duties, but in reading and reflecting upon the purifying and consolatory doctrines of Christianity. The women were all neatly dressed in the native fashion, except the chief's wife, and some few others who wore very clean garments of calico. The hair was either arranged in curls or braided on the temples, and adorned with tortoise-shell combs of their own making, and chaplets of balsamic flowers, the pea-flowering racemes of the Maurarii-tree²⁷ and feathers, etc. The men were all in the national attire and looked tolerably well dressed, except a few of the old gentlemen.

"The schoolmaster, a little hump-backed man, about thirty years old, little more than three feet high, with disproportionately long legs, and having a most peculiar cast in his right eye, failed not to prompt and reprove his scholars when necessary, in a remarkably powerful tone of voice, which when he read, produced a trumpet-like sound, resembling the voice of a person bawling into a cask.

"Honori 'had the people called together' by the sound of a conch-shell, blown by a little imp of a lad, perched on a block of lava, in front of the school house, when as in the morning, he 'Lectured' on the third chapter of St. John. The congregation was thinner than in the morning, many who lived at a distance having retired to their homes.

"I spent the Monday (January the 27th) in making observations and arranging matters for ascending Mauna Roa: my men cooked a stock of Taro, and I purchased a fine large goat for their use.

"Tuesday, the 28th. I hired two guides, the elder of whom a short stout man, was particularly recommended to me by the chief, for his knowledge of the mountain. By profession he is a bird-catcher, going in quest of that particular kind of bird which furnishes the feathers of which the ancient cloaks, used by the natives of these islands, are

²⁸Mamane, *Sophora chrysophylla*.

made. The other guide was a young man. Three volunteers offered to accompany me; one a very stout, fat dame, apparently about thirty, another not much more than half that age, a really well-looking girl, tall and athletic; but to the first, the bird-catcher gave such an awful account of the perils to be undergone, that both the females finally declined the attempt, and only the third person, a young man, went with me. My original party of ten, besides Honori and the two guides, set out at eight, with as usual, a terrible array of taro, calabashes full of Poe, Sweet Potatoes, dry Poe tied up in Ti-leaves, and goat's flesh, each bearing a pole on his shoulder with a bundle at either end. Of their vegetable food a Sandwich Islander cannot carry more than a week's consumption, besides what he may pick up on the way. One, whose office it was to convey five quires of paper for me, was so strangely attired in a double-milled grey great coat, with a spencer of still thicker materials above it, that he lamented to his companions that his load was too great, and begged their help to lift it on his back. I had to show the fellow, who was blind of one eye, the unreasonableness of his grumbling, by hanging the parcel, by the cord on my little finger. He said, 'Ah! the stranger is strong,' and walked off.

Among my attendants was one singular looking personage, a stripling, who carried a small package of instruments, and trotted away, arrayed in a 'Cutty-Sark' of most 'scanty longitude,' the upper portion of which had once been white, and the lower of red flannel. Honori brought up the rear, with a small telescope slung over his shoulder, and an umbrella, which, owing perhaps to his asthmatic complaint, he never fails to carry with him, both in fair and foul weather. We returned for about a mile and a half along the road that led to the Great Volcano, and then struck off to the left in a small path that wound in a northerly direction up the green grassy flank of Mouna Roa. I soon found that Honori's cough would not allow him to keep up with the

rest of the party, so leaving one guide with him, and making the bird-catcher take the lead, I proceeded at a quicker rate. This part of the island is very beautiful; the ground, though hilly is covered with a tolerably thick coating of soil, which supports a fine sward of grass, ferns, climbing plants, and in some places timber of considerable size²⁹, Coa, Tutui, Mamme trees. Though fallen trees and brushwood occasionally intercepted the path, still it was by no means so difficult as that by which I had ascended Mouna Keah. To avoid a woody point of steep ascent, we turned a little eastward, after having travelled about five miles and a half, and passed several deserted dwellings, apparently only intended as the temporary abodes of bird-catchers and sandalwood cutters. Calabashes and pumpkins, with tobacco, were the only plants that I observe growing near them. At 11 a.m. we came to a small pool of fresh water, collected in the lava, the temperature of which was 55°. Here my people halted for a few minutes to smoke. The barometer stood at 26 inch., the air 62°, and the dew point at 58°. The wind was from the south, with a gentle fanning breeze and a clear sky. Hence the path turns North-West, for a mile and a half, becoming a little steeper, till it leads to a beautiful circular well, three feet deep, flowing in the lava, its banks fringed with strawberry vines and shaded by an acacia tree grove. Here we again rested for half an hour. We might be said here to have ascended above the woody country; the ground became more steep and broken, with a thinner soil and trees of humbler growth, leading towards the South-East ridge of Mouna Roa, which, judging from a distance, appeared the part to which there is the easiest access. I would recommend to any naturalists who may in future visit this mountain, to have their canteens well filled at the well just mentioned, for my guide, trusting to one which existed in a cave further up, and which he was unable to find, declined to provide himself with this indispensable article at

²⁹Koa, Kukui and Mamane.

the lower well, and we were consequently put to the greatest inconvenience. Among the brushwood was a strong kind of raspberrybush, destitute of leaves; the fruit, I am told, is white.

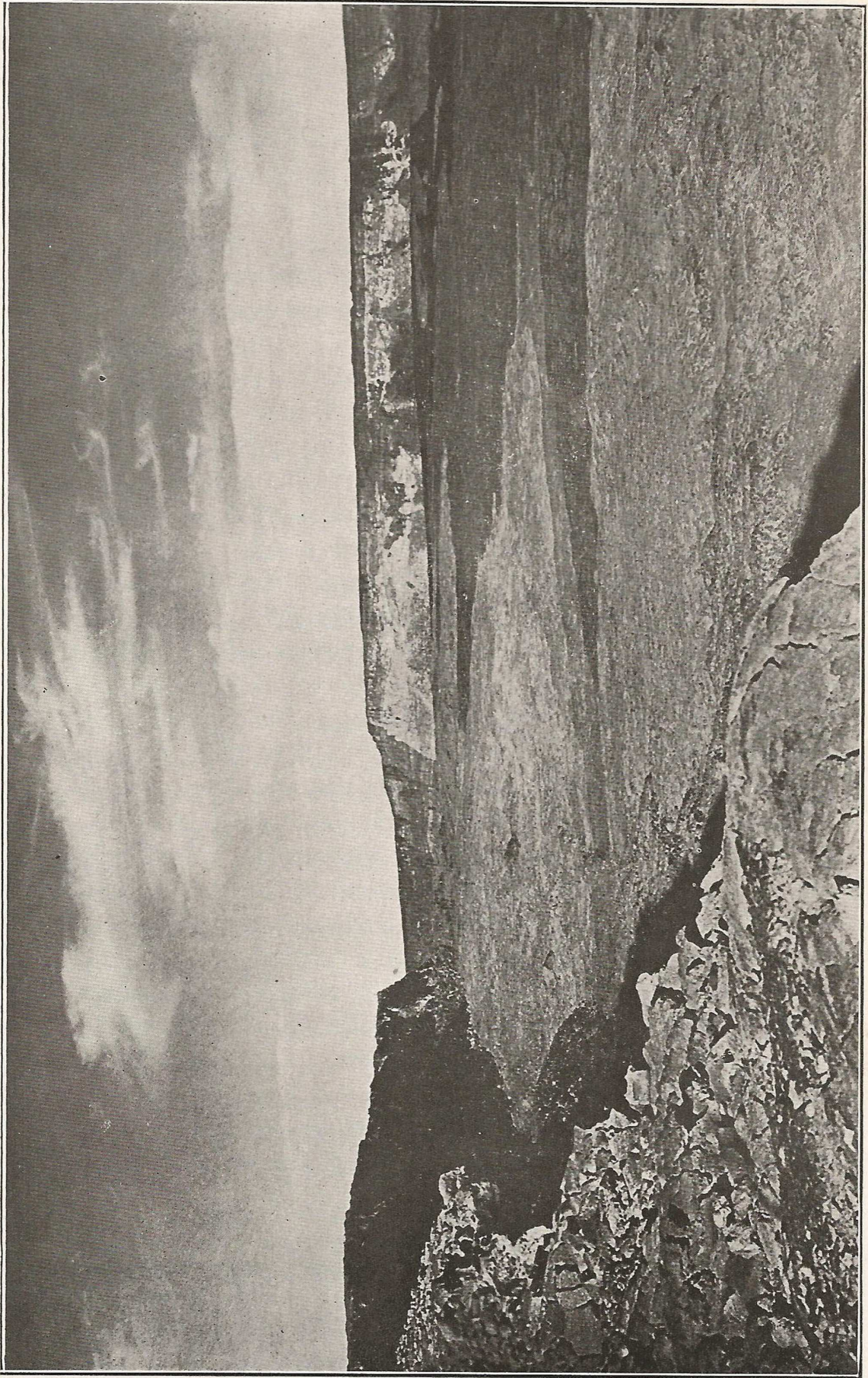
At 4 p.m. we arrived at a place where the lava suddenly became very rugged, and the brushwood low, where we rested, and chewed sugar cane, of which we carried a large supply, and where the guides were anxious to remain all night. As this was not very desirable, since we had no water, I proceeded for an hour longer to what might be called the line of shrubs, and at two miles and a half further on, encamped for the night. We collected some small stems of a heath-like plant, which, with the dried stalks of the same species of Compositae which I observed on Mouna Keah, afforded a tolerably good fire. The man who carried the provisions did not make his appearance: indeed, it is very difficult, except by literally driving them before you, to make the native keep up with an active traveller. Thus I had to sup on taro roots. Honori, as I expected, did not come up. I had no view of the surrounding country, for the region below, especially over the land, was covered with a thick layer of fleecy mist, and the cloud which always hovers over the great volcano, overhung the horizon and rose into the air, like a great tower. Sunset gave a totally different aspect to the whole, the fleecy clouds changed their hue to a vapoury tint, and the volume of mist above the volcano, which is silvery bright during the prevalence of sunshine, assumed a fiery aspect, and illumined the sky for many miles around. A strong North-West mountain breeze sprung up, and the stars, especially Canopus and Sirius, shone with unusual brilliancy. Never, even under a tropical sky, did I behold so many stars. Sheltered by a little brushwood, I lay down on the lava beside the fire, and enjoyed a good night's rest, while my companions swarmed together in a small cave, which they literally converted into an oven by the immense fire they kindled in it.

“Wednesday, January the 29th.—The morning rose bright and clear, but cold, from the influence of a keen mountain breeze. As the man who carried the provisions was still missing, the preparation of breakfast occupied but little time, so that, accompanied by the bird-catcher and Cutty-Sark, I started at half past six for the summit of the mountain, leaving the others to collect fuel and to look for water. Shortly before daybreak the sky was exceedingly clear and beautiful, especially that part of the horizon where the sun rose, and above which the upper limb of his disc was visible like a thread of gold, soon to be quenched in a thick haze, which was extended over the horizon. It were difficult, nay, almost impossible, to describe the beauty of the sky and the glorious scenes of this day. The lava is terrible beyond description, and our track lay over ledges of the roughest kind, in some places glassy and smooth like slag from the furnace, compact and heavy like basalt; in others, tumbled into enormous mounds, or sunk in deep valleys, or rent into fissures, ridges and clefts. This was at the verge of the snow; not twenty yards of the whole space could be called level or even.

In every direction vast holes or mounds were seen, varying in size, form, and colour from ten to seventy feet high. The lava that has been vomited forth from these openings presents a truly novel spectacle. From some, and occasionally indeed from the same mouth, the streams may be seen, pressed forth transversely, or in curved segments, while other channels present a floating appearance; occasionally the circular tortuous masses resemble gigantic cables, or are drawn into cords, or even capillary threads, finer than any silken thread, and carried to a great distance by the wind. The activity of these funnels may be inferred from the quantity of slag lying around them, its size, and the distance to which it has been thrown. Walking was rendered dangerous by the multitude of fissures, many of which are but slightly covered with a thin crust, and everywhere

our progress was exceedingly laborious and fatiguing.

As we continued to ascend, the cold and fatigue disheartened the Islanders, who required all the encouragement I could give to induce them to proceed. As I took the lead it was needful for me to look behind me continually, for when once out of sight, they would pop themselves down, and neither rise nor answer to my call. After resting at the last station, I proceeded about seven miles further, over a similar kind of formation, till I came to a sort of low ridge, the top of which I gained soon after 11 p.m., the thermometer indicating 37° , and the sky very clear. This part was of gradual ascent, and its summit might be considered the southern part of the dome. The snow became very deep, and the influence of the sun melting its crust, which concealed the sharp points of the lava, was very unfavorable to my progress. From this place to the North towards the centre of the dome, the hill is more flattened. Rested a short time, and a few minutes before noon, halted near the highest black shaggy chimney to observe the sun's passage. In recording the following observations, I particularly note the places, in order that future visitors may be able to verify them. To the S.W. of this chimney, at the distance of one hundred and seventy yards, stands a knoll of lava, about seventy feet above the gradual rise of the plain. The latitude was $104^{\circ} 52' 45''$. This observation was made under highly favorable circumstances, on a horizon of mercury, without a roof it being protected from the wind by a small oil-cloth; bar. 18,953 inch.; term. 41° ; in the sun's rays, $43^{\circ} 5'$; and when buried in the snow, 31° ; the dew point at 7° ; wind S.W. The summit of this extraordinary mountain is so flat that from this point no part of the island can be seen, not even the high peaks of Mouna Keah, nor the distant horizon of the sea, though the sky was remarkably clear. It is a horizon of itself, and about seven miles in diameter. I ought ere now to have said that the bird-catcher's knowledge of the volcano did not rise above the woody re-



Courtesy of Hawaiian Volcano Research Ass'n.

MOKUAWEO, WEO,
Active Crater at Summit of Mauna Loa (13,675 ft.)

gion, and now he and my two other followers were unable to proceed further. Leaving these three behind, and accompanied by only Calipio, I went on about two miles and a half, when the Great Terminal Volcano or Cone of Mouna Roa burst on my view; all my attempts to scale³⁰ the black ledge here were ineffectual, as the fissures in the lava were so much concealed, though not protected by the snow, that the undertaking was accompanied with great danger. Most reluctantly was I obliged to return, without being able to measure accurately its extraordinary depth.

From this point I walked along upon the brink of the high ledge, along the East side, to the hump, so to speak, of the mountain, the point which, as seen from Mouna Keah, appears the highest. As I stood on the brink of the ledge, the wind whirled up from the vacuity with such furious violence that I could hardly keep my footing within twenty paces of it. The circumference of the black ledge of the nearly circular crater, described as nearly as my circumstances would allow me to ascertain is six miles and a quarter. The ancient crater has an extent of about twenty-four miles.³¹ The depth of the ledge, from the highest part (perpendicular station on the East side) by an accurate measurement with a line and plummet, is twelve hundred and seventy feet. It appears to have filled up considerably all round; that part to the North of the circle seeming to have, at no very remote period, undergone the most violent activity, not by boiling and overflowing, nor by discharging underground, but by throwing out stones of immense size to the distance of miles around its opening, together with ashes and sand. Terrible chasms exist at the bottom, appearing, in some places, as if the mountain had been rent to its very roots; no termination can be seen to their depth, even when the eye is aided with a good glass, and the sky is

³⁰ ? descend into. ³¹In Douglas's manuscript this probably read "two to four" miles." Mr. J. M. Alexander, of the Haw. Govt. Survey, gives the area as 3 6/10 miles.

clear of smoke, and the sun shining brightly. Fearful indeed must the spectacle have been, when this volcano was in a state of eruption. The part to the south of the circle, where the outlet of the lava has evidently been, must have enjoyed a long period of repose. Were it not for the dykes on the West end, which show the extent of the ancient cauldron, and the direction of the lava, together with its proximity to the existing volcano, there is little to arrest the eye of the naturalist over the greater portion of this huge dome, which is a gigantic mass of slag, scoriae and ashes. The barometer remained stationary during the whole period spent on the summit, nor was there any change in the temperature nor in the dew-point today.

While passing, from eight to nine o'clock, over the ledges of lava of a more compact texture, with small but numerous vesicles, the temperature of the air being 36° - 37° , and the sun shining powerfully, a sweet musical sound was heard, proceeding from the cracks and small fissures, like the faint sound of musical glasses, but having at the same time, a kind of hissing sound, like a swarm of bees. This may perhaps be owing to some great internal fire escaping, or is it rather attributable to the heated air on the surface of the rocks, rarified by the sun's rays? In a lower region, this sound might be overlooked, and considered to proceed, by possibility, from the sweet harmony of insects, but in this high altitude it is too powerful and remarkable not to attract attention. Though this day was more tranquil than the 12th, when I ascended Mouna Keah, I could perceive a great difference in sound; I could not now hear half so far as I did on that day when the wind was blowing strong. This might be owing to this mountain being covered with snow, whereas, on the 12th, Mouna Keah was clear of it. Near the top I saw one small bird, about the size of a common sparrow, of a light mixed grey colour, with a faintly yellow beak, no other living creature met my view above the woody region. This little creature, which was perched on a block

of lava, was so tame as to permit me to catch it with my hand, when I instantly restored it to liberty. I also saw a dead hawk in one of the caves. On the East side of the black ledge of the Great Terminal Crater, is a small conical funnel of scoriae, the only vent-hole of that substance that I observed in the crater. This mountain appears to be differently formed from Mouna Keah; it seems to be an endless number of layers of lava, from different overflowings of the great crater. In the deep caves of Kapupala, two thousand feet above the level of the sea, the several strata are well defined, and may be accurately traced, varying in thickness with the intensity of the action, and of the discharge that has taken place. Between many of these strata are layers of earth, containing vegetable substances, some of two feet to two feet seven inches in thickness, which bespeak a long state of repose between the periods of activity in the volcano. It is worthy of notice that the thickest strata are generally the lowest, and they become thinner towards the surface. In some places I counted twenty-seven of these layers, horizontal, and preserving the declination of the mountain. In the caves which I explored near my camp, which are from forty to seventy feet deep, thin strata of earth intervene between the successive beds of lava, but none is found nearer the surface than thirteen layers. No trace of animal, shell or fish, could I detect in any of the craters or caves, either in this mountain or Mouna Keah.

At 4 p.m. I returned to the centre of the dome, where I found the three men whom I had left all huddling together to keep themselves warm. After collecting a few specimens of lava, no time was to be lost in quitting this dreary and terrific scene. The descent was even more fatiguing, dangerous and distressing than the ascent had proved, and required great caution in us to escape unhurt; for the natives, benumbed with cold, could not walk fast. Darkness came on all too quickly, and though the twilight is of considerable duration, I was obliged to halt, as I feared, for the night in

a small cave. Here, though sheltered from the N.W. breeze, which set in more and more strongly as the sun had set below the horizon, the thermometer fell to 19° , and as I was yet far above the line of vegetation, unable to obtain any materials for a fire, and destitute of clothing except the thin garments soaked in perspiration in which I had travelled all day, and which rendered the cold most intense to my feelings, I ventured, between 10 and 11 p.m. to make an effort to proceed to the camp. Never shall I forget the joy I felt when the welcome moon, for whose appearance I had long been watching, first showed herself above the volcano. The singular form which this luminary presented was most striking. The darkest limb was uppermost, and as I was sitting in darkness, eagerly looking for its appearance on the horizon, I described a narrow silvery belt, 4° to 5° high, emerging from the lurid, fiery, cloud of the volcano. This I conceived to be a portion of the light from the fire, but a few moments showed me the lovely moon shining in splendour in a cloudless sky, and casting a guiding beam over my rugged path. Her pale face actually threw a glow of warmth into my whole frame, and I joyfully and thankfully rose to scramble over the rough way, in the solitude of the night, rather than await the approach of day in this comfortless place.

Not so thought my followers. The bird-catcher and his two companions would not stir, so with my trusty man Calipio, who follows me like a shadow, I proceeded in the descent. Of necessity we walked slowly, stepping cautiously from ledge to ledge, but still having exercise enough to excite a gentle heat. The splendid constellation of Orion, which had so often attracted my admiring gaze in my own native land, and which had shortly passed the meridian, was my guide. I continued in a South-East direction until 2 o'clock, when all at once I came to a low place, full of stunted shrubs, of more robust habit, however, than those at the camp. I instantly struck a light, and found by the examination of my

barometer that I was nearly five hundred feet below the camp. No response was given to our repeated calls; it was evident that no human being was near, so by the help of the moon's light we shortly collected plenty of fuel, and kindled a fine fire. No sooner did its warmth and light begin to diffuse themselves over my frame, than I found myself instantly seized with violent pain and inflammation in my eyes, which had been rather painful on the mountain, from the effect of the sun's rays shining on the snow; a slight discharge of blood from both eyes followed, which gave me some relief, and which proved that the attack was as much attributable to violent fatigue as any other cause. Having tasted neither food nor water since an early hour in the morning, I suffered severely from thirst; still I slept for a few hours, dreaming the while of gurgling cascades, overhung with sparkling rainbows, of which the dewy spray moistened my whole body, while my lips were all the time glued together with thirst, and my parched tongue almost rattled in my mouth. My poor man, Calipio, was also attacked with inflammation in his eyes, and gladly did we hail the approach of day.

"The sun rose brightly on the morning of Thursday, January 30th, and gilding the snow over which we had passed, showing our way to have been infinitely more rugged and precarious than it had appeared by moonlight. I discovered that by keeping about a mile and a half too much to the East, we had left the camp nearly five hundred feet above our present situation; and returning thither over the rocks we found Honori engaged in preparing breakfast. He had himself reached the camp about noon on the second day. He gave me a calabash full of water, with a large piece of ice in it, which refreshed me greatly. A few drops of opium in the eyes afforded instant relief both to Calipio and myself. The man with the provisions was here also, so we shortly made a comfortable meal, and immediately after, leaving one man behind with some food for the bird-catcher and his

two companions, we prepared to descend, and started at 9 a.m., to retrace the path by which we had come. Gratified though one may be at witnessing the wonderful works of God in such a place as the summit of the mountain presents, still it is with thankfulness that we again approach a climate more congenial to our natures, and welcome the habitations of our fellow men, where we are refreshed with the scent of vegetation, and soothed by the melody of birds. When about three miles below the camp, my three companions of yesterday appeared like mawkins,³² on the craggy lava, just at the very spot where I had come down. A signal was made to them to proceed to the camp, which was seen and obeyed, and we proceeded onwards, collecting a good many plants by the way. Arriving at Strawberry Well, we made a short halt to dine, and ascertained the barometer to be 25.750'; air 57°, and the well 51°, dew 56°. There were vapoury light clouds in the sky, and a S.W. wind. We arrived at Kapupala at 4 p.m. The three other men came up at 7, much fatigued, like myself. Bar. at Kapupala at 8 p.m., 27.936'; air, 57°; and the sky clear."

This is the closing sentence of Douglas's Journal. In the Hawaiian Spectator, Vol. 1, pp. 98 et seq. (April, 1839), appears the following letter written by Douglas at Hilo, immediately after his return from the ascent of Mauna Kea. It is addressed to a lady residing in Honolulu, probably Mrs. Charlton, wife of Capt. R. Charlton, the British Consul at that port.

┌ Byron's Bay, Hawaii, Feb. 7, 1834.

"As I have just about an hour returned from Mauna Loa, the volcano, etc., and having enjoyed a bath and an excellent cup of tea, with a willing pleasure I sit down to tell you the story of a traveler.

³²Mawkin, Scots for a hare.

A sight of the volcano fills the mind with awe—a vast basin in a state of igneous fusion, throwing out lava in a thousand forms, from tortuous masses like large cables to the finest filamentose thread. Some places in large sheets, some in terrible rolled masses, like the breaking up of a large river with ice, of all colors and forms, showing the mighty agency ever existing in its immense laboratory. The strongest man is unstrung, the most courageous heart is daunted in approaching this place. How insignificant are the works of man in their greatest magnitude and perfection, compared with such a place. I have exhausted both body and mind, examining, measuring and performing various experiments, and *now, I learn that I know nothing*; but this much I know, that volcanos are the irregular, secondary, results of great masses of matter obeying the primary laws of atomic action, that they differ in their intensity, are interrupted in their period, and are aggravated or constrained by an endless number of causes, external, and purely mechanical. Of all modes of material combination volcanos are the most complicated; to assume, then, that volcanic forces have not been called into action at all times in the natural history of our globe, but also, that in each period they have acted with equal intensity, seems to be a merely gratuitous hypothesis, unfounded on any of the great analogies of nature, and I believe also, unsupported by the direct evidence of fact. This confounds the immutable and primary laws of matter, with the mutable results arising from their irregular combination. It assumes that in the laboratory of nature, no elements have ever been brought together, which we ourselves have not seen combined, and that no forces have been developed by their combination, of which we have not witnessed the effects. And what does this all amount to, but to limit the riches of the kingdom of nature by the poverty of our own knowledge, and to surrender ourselves to the mischievous, but not uncommon philosophical scepticism, which makes us deny the reality of what we have not seen, and doubt the truth of what we do not comprehend.

I assure you, madam, that these islands offer rewards to the naturalist, over all others. I rejoice, in common with others, to know that man seems no longer to be a worshipper at the portal of nature's temple, but is allowed to pass within, and to be so far a partaker of her mysteries as to see with his intellectual eye the past revolutions of our globe, and to offer reasonable speculations on the future. The dogmas of geology find here a stumbling block of which it is needless to speak.

I regret having no companion; the soothing words of a friend stimulate us to exertion, and make our labor light. Labor I will, but if I thought that the imagination, the feelings, the high capacities of our nature were blunted or impaired by such, I should then regard it as little better than a moral sepulchre, in which, like the strong man, I was burying myself in view of my own destiny. But I believe too firmly in the inscrutable attributes of the Being, in whom all truth, of whatever kind, finds its proper lasting place, to think what we in our ignorance call the discordances of nature, will be in everlasting collision. All will be reconciled, and we shall see no longer as 'through a glass darkly,' the infinitude, the beauty, the harmony of nature. I must return to the volcano, if it is only to look—to look and admire.

I should give you a note on Mauna Roa, but the time will not permit. I shall tell you verbally. Suffice it to say that I reached the culminant point after immense labor, fatigue, anxiety and some degree of danger. The cold was intense. You may pledge my name for saying that the very summit of Mauna Roa³³ at present is in an active state. One day there, madam, is worth one year of common existence. This is twenty-seven miles round and 1274 feet deep. I rested from 12 midday till 12 at night, on the mountain, when the wane moon presented herself in silvery brightness, reflecting a glare on the ragged lava like Gothic turrets.

With thankfulness and joy, the beautiful constellation of Orion being my guide, I rose to descend to a climate more congenial to my nature, and the habitations of men, the land of flowers and the melody of birds."

³³Mauna Kea in the original, but evidently meant for Mauna Roa (Mauna Loa).

LETTER FROM DOUGLAS TO DR. W. J. HOOKER,
written from Honolulu, Oahu, on May 6th, 1834.

Probably the last letter that Douglas wrote to any of his friends in Europe is that which he sent to Dr. W. J. Hooker, and dated from Woahu, Sandwich Islands, May 6, 1834. It was written at Honolulu about three months after the date of his ascent of Mauna Kea. He speaks in this letter of his intention of returning to the island of Hawaii to continue his botanical explorations there. This he did, and was engaged in his investigation on that island when he met his untimely end on 12th July of the same year. The letter is as follows:

Woahoo, Sandwich Islands, May 6, 1834.

"I sailed from the Columbia in November (1833) last, in the Hudson's Bay Company's vessel which visited these islands, touching on the way at San Francisco, where I made a short stay, but did nothing in the way of botany. I arrived here on the 23rd of December, and after spending Christmas Day with the English ladies, the wife of our Consul, Mr. Charlton, and her sister, I started on the 27th for the island of Hawaii, which I reached on the 2nd of January, 1834. You know I have long had this tour in contemplation, and having spent three years³⁴ in botanizing there, I proceed to give you a short account of my proceedings.

"The view of this most interesting island from the sea is sublime indeed; containing the grand, sweet and beautiful in a most remarkable degree. For two thousand five hundred feet above the level of the sea, the banana, sugar cane, coffee, pandanus, breadfruit, etc., grow in the greatest perfection.

³⁴ ? Three months.

Then comes a thickly timbered country as high as eight thousand feet, and for three thousand seven hundred feet more, a space covered with short verdure; after which the reign of Flora terminates. I made a journey to the summit of Mauna Kea, which occupied fourteen days, and found it only thirteen thousand eight hundred and fifty-one English feet above the sea; a height, you may observe, much less than has been ascribed to this mountain by early travelers. In this expedition I amassed a most splendid collection of plants, principally ferns and mosses; many, I do assure you, truly beautiful, and worthy to range with the gigantic species collected by Dr. Wallich. Of ferns alone, I have fully two hundred species, and half as many mosses; of other plants comparatively few, as the season is not good for them, nor will be so until after the rains. On my return I must consult with you on the best mode of publishing the plants of these islands.

"I also visited the summit of Mauna Roa, the Big or Long Mountain, which afforded me inexpressible delight. This mountain with an elevation of thirteen thousand five hundred and seventeen feet,³⁶ is one of the most interesting in the world. I am ignorant whether the learned and versatile Menzies ascended it or no, but I think he must have done so, and the natives assert that this was the case.

"The red-faced man, who cut off the limbs of men and gathered grass,' is still known here; and the people say that he climbed Mauna Roa.³⁷ No one, however, has since done so,

³⁵Douglas made the height of Mauna Kea to be 13,851 ft.; the Hawaiian Government Survey Dept. makes it 13,825 ft.; a small difference of but 25 feet.

³⁶Douglas estimated the height of Mauna Loa at 13,517 ft.; the Haw. Govt. Survey places it at 13,675ft., a difference of 158 feet, probably owing to Douglas having measured the height at east side of summit crater, and the Haw. Gov't Survey on the west side of crater.

³⁷Dr. Archibald Menzies, surgeon with the Vancouver Expedition, was an ardent botanist and explorer like his fellow-countryman Douglas. Menzies commanded the party from Vancouver's ship, which included the first white man to ascend to the extreme point of Mauna Loa, i.e., to the west side of the summit crater called Mokuaweoweo.

until I went up a short while ago. The journey took me seventeen days. On the summit of this extraordinary mountain is a volcano, nearly twenty-four miles in circumference, and at present in terrific activity. You must not confound this with the one situated on the flanks of Mauna Roa, and spoken of by the missionaries and Lord Byron, and which I visited also. It is difficult to attempt describing such an immense place. The spectator is lost in terror and admiration at beholding an enormous sunken pit (for it differs from all our notions of volcanos, as possessing cone shaped summits with terminal openings), five miles square of which is a lake of liquid fire, in a state of ebullition, sometimes tranquil, at other times rolling its blazing waves with furious

This was on Feb. 16th, 1794. Accompanying Menzies on this trip were Messrs. Mackenzie, Baker and a ship's servant. A Mr. Howell and several natives gained the south side of the summit platform, but were too exhausted to go round the summit crater pit to reach the extreme highest point of the mountain, situated on the west side of the pit. Menzies also headed the party of white men who were the first to reach the top of the neighboring mountain Mauna Hualalai, on January 20th, 1794. Menzies with his imperfect barometer made the height of this mountain to be 8,062 feet; the Haw. Govt. Survey makes it to be 8,275 feet.

It has been stated (Bryan's Natural History of Hawaii, p. 153) that "the first recorded ascent of Mauna Loa was made by the famous traveler, John Ledyard, in 1779, who visited Hawaii as a member of Capt. Cook's party on his last voyage. He made a fairly accurate, though necessarily fragmentary, record of the general features of the mountain." This is hardly correct, as in Ledyard's *Life and Travels*, edited by Jared Sparks, London, 1828, page 132, Ledyard says "by six o'clock reached the tents (i.e. got back to the beach at Kealakekua), having penetrated about twenty-four miles, and, we supposed, within eleven miles of the peak." So that by his own account, Ledyard, who by the way was not the leader of the expedition on this occasion, did not get within eleven miles of the top of the mountain; in fact, he never cleared the zone of vegetation, as he says in the account of the attempted trip to the top (p. 131), "We went in this manner about four miles further, finding the way even more steep and rough, than we had yet experienced, but above all impeded by such impenetrable thickets, as rendered it impossible for us to proceed any further. We therefore abandoned our design, etc."

Prof. W. T. Brigham in his work on the Volcanoes of Kilauea and Mauna Loa, pages 47 and 63 gives credit to David Douglas for having made "the first ascent of Loa by a foreigner (if not by any human being)," but he must have overlooked the very clear and circumstantial account given by Menzies of the ascent made in 1794.

agitation, and casting them upwards in columns of from thirty to one hundred and seventy feet high. In places, the hardened lava assumes the form of gothic arches in a colossal building, piled one above another in terrific magnificence, through and among which the fiery fluid forces its way in a current that proceeds three miles and a quarter per hour or loses itself in fathomless chasms at the bottom of the cauldron. This volcano is one thousand two hundred and seventy-two feet deep. I mean down to the surface of the fire; its chasms and caverns can never be measured.

“Mauna Roa appears, indeed, more like an elevated table-land than a mountain. It is a high broad dome formed by an infinitude of layers of volcanic matter, thrown out from the many mouths of its craters. Vegetation does not exist higher than eleven thousand feet; there is no soil whatever and no water. The lava is so porous, that when the snow melts it disappears a few feet from the verge, the ground drinking it up like a sponge. On the higher parts grow some species of *Rubus*, *Fraseria*, *Vaccinium* and some *Junci*.

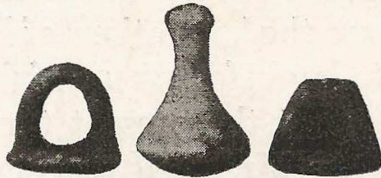
“I visited also the volcano of Kirauea, the lateral volcano of Mauna Roa; it is nearly nine miles around, one thousand one hundred and fifty seven feet deep, and is likewise in a state of furious activity.

“I go immediately to Hawaii to work on these mountains. May God grant me a safe return to England. I cannot but indulge the pleasing hope of being soon able, in person, to thank you for the signal kindness you have ever shown me, and really were it only for the letters you have bestowed upon me during my voyage, you should have a thousand thanks from me. I send this under cover to Capt. Beaufort, to whom I have written respecting some of my astronomical observations; as also to Capt. Sabine.”³⁸

³⁸Douglas's letter to Capt. Sabine, R.A., F.R.S., is dated Woahoo, 3rd May 1834, and was published in the *Journal and Proceedings of the Royal Geographical Society*, and afterwards re-printed in pamphlet form.

EXTRACTS FROM REMARKS BY DR. W. J. HOOKER
IN THE COMPANION TO THE BOTANICAL
MAGAZINE.

“The first knowledge of his decease, which reached one of the members of the family in this country, was in a peculiarly abrupt and painful manner. It was seen in a number of the Liverpool Mercury, by his brother, Mr. John Douglas, when looking for the announcement of the marriage of a near relative. He immediately set out for Glasgow, to communicate the unwelcome tidings to me; and in a few days they were confirmed on more unquestionable authority, by a letter from Richard Charlton, Esq., H.B.M. Consul at the Sandwich Islands, to James Bandinel, Esq., including a most affecting document, relative to the event, from two missionaries, the Rev. Joseph Goodrich and the Rev. John Diell, both of which I am anxious to record here in testimony of the deep interest felt by these gentlemen in the fate of our deceased friend; a feeling which assuredly extends to all who knew him.”



LETTER FROM MESSRS. JOSEPH GOODRICH AND
JOHN DIELL, MISSIONARIES ON THE ISLAND
OF HAWAII, TO RICHARD CHARLTON, ESQ.,
HIS BRITANNIC MAJESTY'S CONSUL AT THE
SANDWICH ISLANDS.

Hido, Hawaii, July 15th, 1834.

Dear Sir: Our hearts almost fail us when we undertake to perform the melancholy duty which devolves upon us, to communicate the painful intelligence of the death of our friend, Mr. Douglas, and such particulars as we have been able to gather respecting this distressing providence. The tidings reached us when we were every moment awaiting his arrival, and expecting to greet him with a cordial welcome, but alas! He whose thoughts and ways are not as ours, saw fit to order it otherwise; and instead of being permitted to hail the *living* friend, our hearts have been made to bleed while performing the offices of humanity to his mangled corpse. Truly we must say, that the 'ways of the Lord are mysterious, and His judgments past finding out!' but it is our unspeakable consolation to know, that those ways are directed by infinite wisdom and mercy, and that though 'clouds and darkness are around about Him, yet righteousness and judgment are the habitations of His throne!

But we proceed to lay before you as full information as it is in our power to do at the present time, concerning this distressing event. As Mr. Diell was standing in the door of Mr. Goodrich's house yesterday morning, about eight o'clock, a native came up, and with an expression of countenance which indicated but too faithfully that he was the bearer of sad tidings, inquired for Mr. Goodrich. On seeing him, he communicated the dreadful intelligence, that the

body of Mr. Douglas had been found on the mountains, in a pit excavated for the purpose of taking wild cattle, and that he was supposed to have been killed by the bullock which was in the pit, when the animal fell in. Never were our feelings so shocked, nor could we credit the report, till it was painfully confirmed as we proceeded to the beach, whither his body had been conveyed in a canoe, by the native who informed us of his death. As we walked down with the native, and made further inquiries of him, he gave for substance the following relation: That on the evening of the 13th instant, the natives who brought the body down from the mountain came to his house at Laupashoohei (Laupahoe), about twenty-five or thirty miles distant from Hido, and employed him to bring it to this place in his canoe. The particulars which he learned from them were as follows: That Mr. B. left Rohala (Kohala) Point last week, in company with a foreigner, an Englishman, as a guide, and proceeded to cross Mouna Kea on the North side; that on the 12th he dismissed his guide, who cautioned him, on parting, to be very careful lest he should fall into the pits excavated for the purpose mentioned above; describing them as near the place where the cattle resorted to drink; that soon after Mr. D. had dismissed his guide, he went back a short distance to get some bundle which he had forgotten, and that as he was retracing his steps, at some fatal moment he tumbled into one of the pits in which a bullock had previously fallen; that he there was found dead by these same natives, who, ignorant of the time of his passing, were in pursuit of cattle, and observed a small hole in one end of the covering of the pit. At first they conjectured that a calf had fallen in; but on further examination they discerned traces of a man's footsteps, and then saw his feet, the rest of his body being covered with dust and rubbish. They went in pursuit of the guide, who returned, shot the beast in the hole, took out the corpse, and hired the natives at the price of four bullocks, which he killed immediately, to con-

vey the body to the sea-shore. He himself accompanied them, and procured the native who related the affair, to bring the corpse to this place, promising to come himself immediately, and that he would bring the compass, watch (which was somewhat broken, but still going), some money found in Mr. D's pocket, and the little dog, that faithful companion of our departed friend. Thus far the report of the native who brought the corpse in his canoe, and who professes to relate the facts to us as he learned them from the natives who came down from the mountain. We do not stop, at present, to examine how far it is consistent or inconsistent with itself, as we have not the means of making full investigation into the matter. On reaching the canoe, our first care was to have the remains conveyed to some suitable place, where we could take proper care of them, and Mr. Dibble's family being absent, it was determined to carry the body to his house. But what an affecting spectacle was presented, as we removed the bullock's hide in which he had been conveyed!

We will not attempt to describe the agony of feeling which we experienced at that moment: can it be he? can it be he? we each exclaimed—can it be the man with whom we parted but a few days before, and who was then borne up with so high spirits and expectations, and whom, but an hour previously, we were fondly anticipating to welcome to our little circle. The answer was but too faithfully contained in the familiar articles of dress, in the features, and in the noble person before us. They were those of our friend. The body, clothes, etc., appeared to be in the same state they were in when taken from the pit: the face was covered with dirt, the hair filled with blood and dust; the coat, pantaloons, and shirt, considerably torn. The hat was missing. On washing the corpse, we found it in a shocking state: there were ten to twelve gashes on the head, a long one over the left eye, another, rather deep, just above the left temple, and a deep one behind the right ear; the left cheek bone ap-

peared to be broken, and also the ribs on the left side. The abdomen was also much bruised, and also the lower parts of the legs. After laying him out, our first thought was to bury him within Mr. Goodrich's premises; but after we had selected a spot, and commenced clearing away the ground, doubts were suggested by a foreigner who was assisting us, and who has for some time been engaged in taking wild cattle, whether the wounds on the head could have been inflicted by a bullock. Mr. G. said that doubts had similarly arisen in his mind while examining the body. The matter did not seem clear; many parts of the story were left in obscurity. How had Mr. Douglas been left alone, without any guide, foreign or native? Where was John, Mr. Diell's coloured man, who left Honolulu with Mr. Diell, and who, on missing a passage with him from Lahaina, embarked with Douglas, as we are informed by the captain of the vessel in which Mr. D. sailed from Lahaina to Rohala Point, and then left the vessel with Mr. D. on the morning of the 9th instant, in order to accompany him across the mountain to Hido? How was it that Mr. D. should fall into a pit when retracing his steps, after having once passed it in safety? And if a bullock had already tumbled in, how was it that he did not see the hole necessarily made in its covering? These difficulties occurred to our minds, and we deemed it due to the friends of Mr. D. and to the public, whom he had so zealously and so usefully served, that an examination should be made by medical men. The only way by which this could be done was by preserving his body, and either sending it to Oahu or keeping it till it could be examined. The former method seemed most advisable; accordingly we had the contents of the abdomen removed, the cavity filled with salt, and the whole enclosed in a box of brine. Some fears are entertained whether the captain of the native vessel will convey the body: this can be determined in the morning. After the corpse was laid in the coffin, the members of the Mission family and several foreigners assembled at the house

of Mr. Dibble, to pay their tribute of respect to the mortal remains of the deceased, and to improve this affecting providence to their own good. Prayers were offered, and a brief address made; and we trust that the occasion may prove a lasting blessing to all who were present. After the services were concluded, the body was removed to a cool native house, where it was enclosed in the box.

16th. As neither the guide nor any natives have arrived, we have employed two foreigners to proceed to the place where the body was received on the sea-shore, with directions to find the persons who discovered it, and to go with them to the pit, and after making as full inquiries as possible, to report to us immediately. So far as we can ascertain, the guide is an Englishman, a convict from Botany Bay, who left a vessel at these islands some years ago. He has a wife and one child with him, and to this circumstance in part may be attributed his delay. There are two native vessels in port, besides the one about to sail today. By these vessels we shall apprise you of all the information we can obtain, and yet hope that the darkness which involves the subject may be removed. Mr. G. has just returned from the vessel about to sail today. The application to convey the remains of Mr. D. to Honolulu will, we fear, prove unsuccessful, as the cargo is already taken in, consisting of wood, canoes, food, etc. It is barely possible that a consent may yet be obtained; but if not, you must be so kind as to dictate what course is to be pursued. Should you deem it advisable to come up in person, we think that the body will be in such a state of preservation, as will admit of its being examined upon your arrival. Meanwhile, we shall take all possible pains to procure information. The principal part of Mr. D's baggage, his trunks, instruments, etc., are in Mr. Goodrich's possession, who will take care of them, subject to your order.

Three o'clock p.m. Edward Gurney, the Englishman spoken of before, has arrived, and our minds are greatly relieved,

as to the probable way in which the fatal event was brought about. He states that on the 12th instant, about ten minutes before six in the morning, Mr. D. arrived at his house in the mountain, and wished him to point out the road, and go a short distance with him. Mr. D. was then alone, but said that his man had gone out the day before (this man was probably John, Mr. Diell's coloured man). After taking breakfast, Ned accompanied Mr. D. about three quarters of a mile, and after directing him in the path, and warning him of the traps, went on about half a mile further with him. Mr. D. then dismissed him after expressing an anxious wish to reach Hido by evening, thinking he could find out the way himself. Just before Ned left him, he warned him particularly of three bullock traps, about two miles and a half ahead, two of them lying directly in the road the other on one side, as exhibited in the following rude sketch:

"Ned then parted with Mr. D. and went back to skin some bullocks which he had previously killed. About eleven o'clock, two natives came in pursuit of him, and said that the European was dead; that they had found him in the pit where a bullock was. They mentioned that as they were approaching the pit, one of them, observing some of the clothing on the side, exclaimed *Lole*³⁹ but in a moment afterwards discovered Mr. D. in the cave, tramped under the beast's feet. They immediately hastened back for Ned, who, leaving his work, ran into the house for a musket, ball, and hide; and on arriving at the pit, found the bullock standing upon poor Douglas's body, which was lying on the right side. He shot the animal, and after drawing it to one side of the pit, succeeded in extricating the corpse. Douglas's cane was there, but not his dog and bundle. Ned knowing that he had the latter with him, asked for it. After a few moments' search the dog was heard to bark, at a little distance ahead on the road to Hido. On coming up to the spot, indicated by No. 4, the dog and bundle were

³⁹Hawaiian for "clothes."

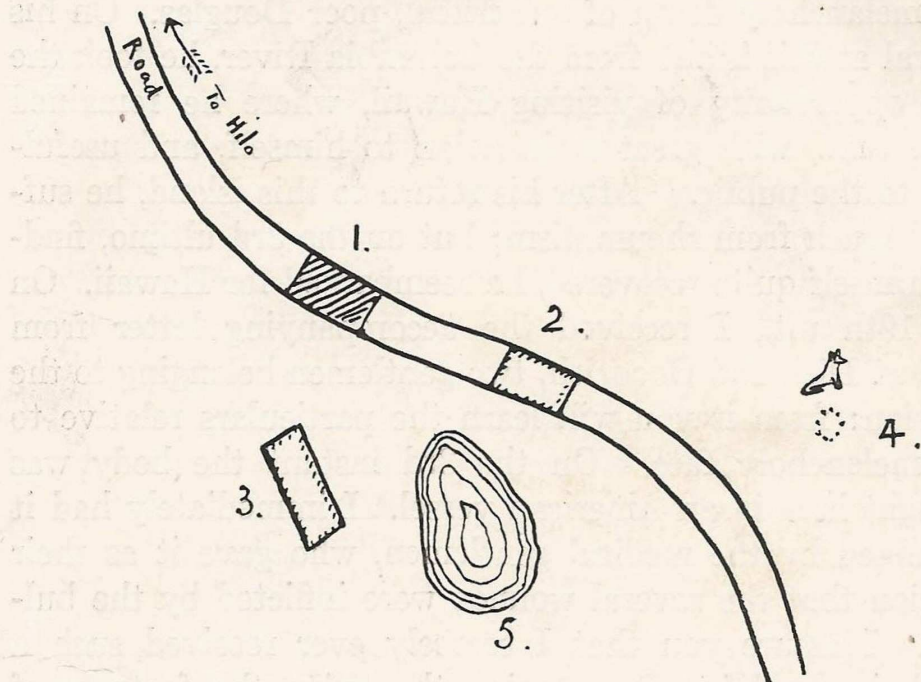
found. On further scrutiny it appeared that Mr. D. had stopped for a minute and looked at the empty pit, No. 1, and also at that where the cow was; and that after proceeding about fifteen fathoms up the hill, he had laid down his bundle and returned to the side of the pit where the bullock was entrapped, No. 3, and which is situated on the side of the pond opposite to that along which the road runs; and that while looking in, by making a false step, or some other fatal accident, he fell into the power of the infuriated animal, which speedily executed the work of death. The body was covered in part with stones, which probably prevented its being entirely crushed. After removing the corpse, Ned took charge of the dog and bundle, also of his watch and chronometer (which is injured in some way), his pocket compass, keys, and money, and after hiring the natives to convey the body to the shore, a distance of about twenty-seven miles, came directly to this place. This narrative clears up many of the difficulties which rested upon the whole affair, and perhaps affords a satisfactory account of the manner in which Mr. D. met his awful death. We presume that it would be agreeable to you that the body should be sent down, and as the vessel is still delayed by a calm, we hope to receive a favourable answer from the captain. If we should not, it may perhaps be well to inter the body, which can easily be disinterred for examination, if desirable.

We have thus, dear sir, endeavoured to furnish you with all the particulars we have been able to gather concerning this distressing event. It is no common death which has thus called our tears and sympathies; it presents a most affecting comment on the truth, that 'in the midst of life we are in death!' How forcible, then, is the admonition to all of us, whose privilege it was to be acquainted with him who is thus snatched from us, to 'prepare to meet our God,' 'for the Son of Man cometh at any hour that we know not of.' You will be pleased, dear, sir, to accept for yourself and family, the expression of our kindest sympathies under this afflicting dispensation, and allow us to

subscribe ourselves, with sincere regard, your friends and obedient servants,

JOSEPH GOODRICH.
JOHN DIELL.

P.S.—The bearer, Mr. Martin, will take charge of the little dog. There are several matters of expenses, incurred for conveying the body to this place, paying the natives, etc., which Mr. Goodrich will meet, so far as can be done, with the clothes, etc. Of these and of Mr. D.'s other things he will present a full statement.



EXPLANATION ACCOMPANYING SKETCH WITH GOODRICH AND DIELL'S LETTER.

1. Trap empty, covered.
2. ditto, cow in, open.
3. ditto, bullock in, open.
4. The place where Mr. Douglas's dog and bundle were found.
5. Water.

Note.—The spot where Douglas was killed in the upper edge of the Laupahoehoe forest is now known to the natives as "Luakauka," i.e., "the doctor's pit." It is about 1000 feet from the Keahuaai gulch, and about 1000 feet below the present Humuula-Waimea trail, which runs at an elevation of about 6,000 feet. Mr. Donald S. Macalister, manager of the Kukaiau Ranch, who lives not very far off, reports (March, 1919) that the cattle pits are so obliterated that they are hardly recognizable these days.

COPY OF A LETTER FROM MR. CHARLTON TO
JAMES BANDINEL, ESQ.⁴⁰

Woahoo, August 6th, 1834.

My Dear Sir: It has devolved on me to inform you of the melancholy death of our friend, poor Douglas. On his arrival at this island from the Columbia River, he took the first opportunity of visiting Hawaii, where he remained some time, with great satisfaction to himself, and usefulness to the public. After his return to this island, he suffered much from rheumatism; but on the 3rd ultimo, finding himself quite recovered, he reembarked for Hawaii. On the 19th ult., I received the accompanying letter from Messrs. Diell and Goodrich, two gentlemen belonging to the Mission: from it you will learn the particulars relative to his melancholy fate. On the 3rd instant the body was brought here in an American vessel. I immediately had it examined by the medical gentlemen, who gave it as their opinion that the several wounds were inflicted by the bullock. I assure you that I scarcely ever received such a shock in my life. On opening the coffin the features of our poor friend were easily traced, but mangled in a shocking manner, and in a most offensive state. The next day I had his remains deposited in their last resting place; the funeral was attended by Capt. Seymour and several of the officers of His Majesty's Ship Challenger, and the whole of the foreign residents. I have caused his grave to be built over with brick, and perhaps his friends may send a stone to be placed (with an inscription) upon it. As I am about

⁴⁰ James Bandinel, one of the chief clerks in the British Foreign Office.

to embark in the Challenger tomorrow for Otaheite, I have left all his effects in the hands of my friend, Mr. Rooke, with a request to sell his clothing and forward his collections, books, papers, and instruments, to the Secretary of the Horticultural Society. One of his chronometers, reflecting circle, and dipping needle, are on board the Challenger, in charge of Capt. Seymour. As I do not know the address of the friends or relations of Mr. Douglas, I shall feel much obliged to you to forward the copy of Messrs. Goodrich's and Diel's letter to them.

I remain, my dear sir, yours etc.,

RICHARD CHARLTON.

The inscription on the tablet erected to the memory of Douglas on the front wall of Kawaiahao Church is as follows:

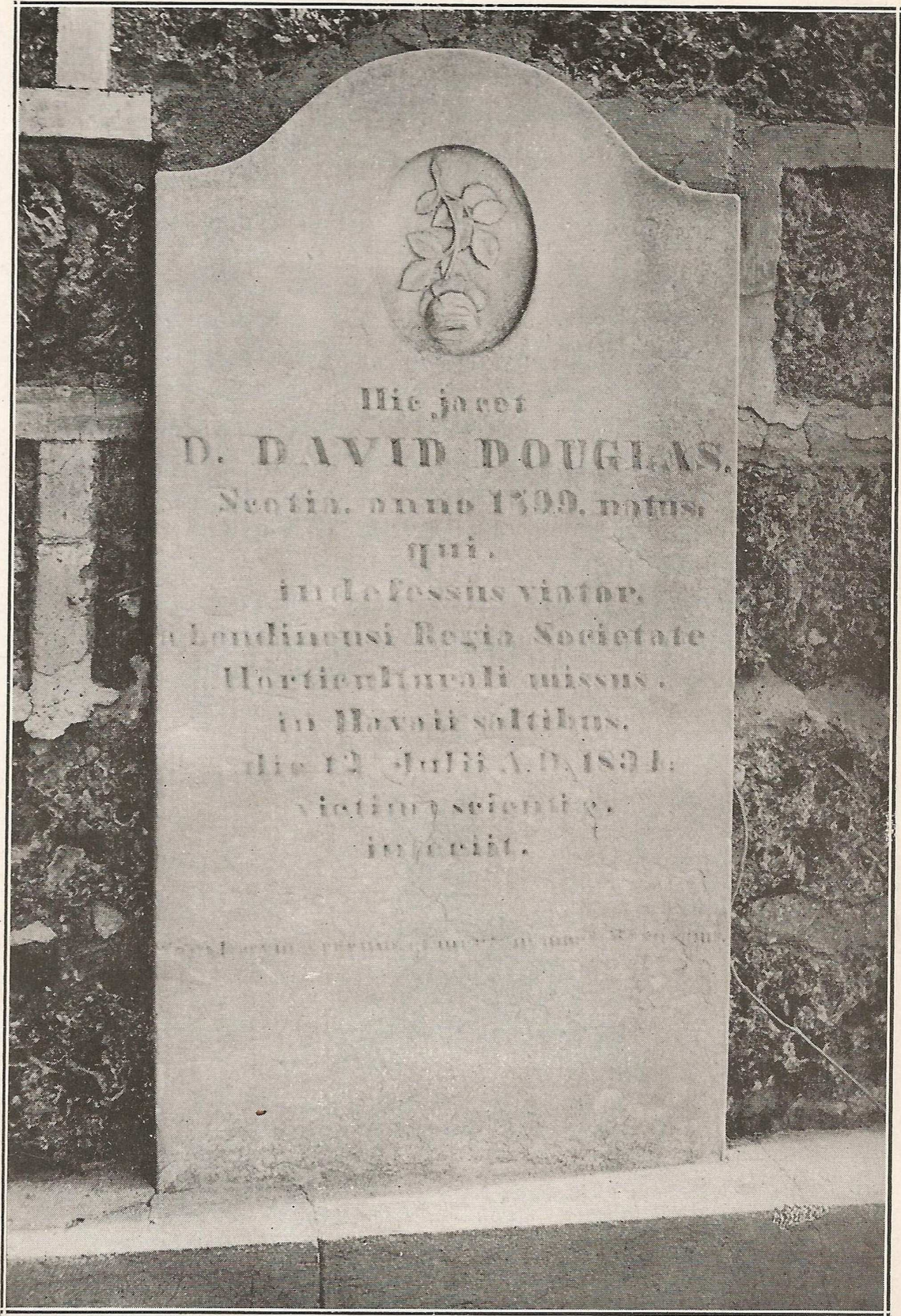
Hic jacet
 D. David Douglas,
 Scotia, anno 1799, natus;
 Qui,
 Indefessus viator,
 A Londinensi Regia Societate Horticulturali missus,
 In Havaii saltibus
 Die 12a Julii, A.D. 1834,
 Victima scientiae
 Interiit.

"Sunt lachrymae rerum et mentem mortalia tangunt."—Virgil.

The above may be translated as follows:

Here lies
 Master David Douglas,
 born in Scotland in 1799,
 who, being an indefatigable traveller,
 was sent out by the
 Royal Horticultural Society of London,
 and fell a victim to science
 in the wilds of Hawaii,
 on the 12th day of July, 1834.

"Tears are due to wretchedness, and mortal woes touch the heart."—
 Virgil.



DOUGLAS MEMORIAL TABLET AT KAWAIAHAO CHURCH,
HONOLULU.

REMARKS BY SIR W. J. HOOKER IN THE COMPANION TO THE BOTANICAL MAGAZINE.

“The little dog (a Scottish terrier) safely reached this country, and was given, we believe, to Mr. Bandinel. There have come also a box of birds; and besides the Californian collection already mentioned, several seeds and roots; a small herbarium, chiefly formed, it would appear, in New Caledonia⁴⁰, and another from the Sandwich Islands, consisting of not more than three hundred species. These it is our intention to publish with all convenient speed. A subscription is now in progress for the purpose of erecting a monument to his memory in his native place; and we are sure that his name and his virtues will long live in the recollection of his friends.”



“He was a gash and faithful tyke,
As ever lap a sheugh or dyke.”—Burns.

⁴¹This is not the island of that name situated in the South Seas, but the mainland portion of what is now called British Columbia. The name British Columbia was given in 1858 at the direction of the late Queen Victoria in order to satisfy the objections made in France to the name of New Caledonia as being already borne by an island then claimed by the French.

VISIT MADE BY PICKERING AND BRACKEN-
RIDGE ON 15th JANUARY, 1841, TO THE
SCENE OF DOUGLAS'S DEATH.

About six and a half years after the date of Douglas's death, the place where he met his untimely end was visited by Dr. Charles Pickering and Mr. J. D. Brackenridge, two of the members of the scientific staff attached to the Wilkes' U. S. Exploring Expedition, and the account of same, taken from the Narrative of the Expedition, may be here reproduced:

"They (Dr. Pickering and Mr. Brackenridge) then went towards 'Ned's House' (now deserted), and took the path leading in a south-east direction, along the margin of the woods. This was the route that Douglas 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. The locality of these pits is in a dell, with banks sloping on both sides; the one to the north-west is about twenty feet high, while that to the south-east is about thirty feet. On each side, 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.

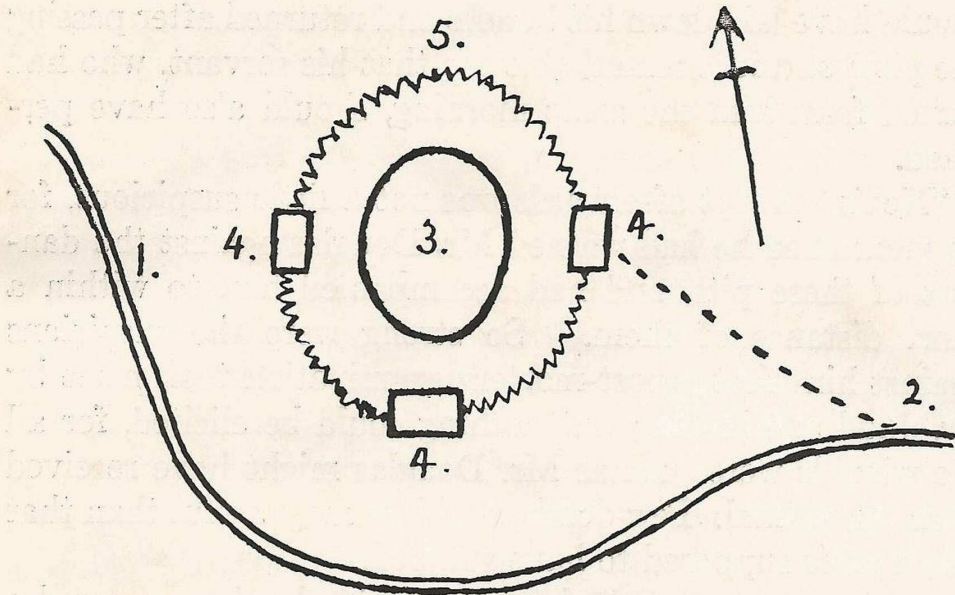
"There were many circumstances attendant upon the death of Douglas, leading to the suspicion that he had been

murdered by Ned, at whose house he had breakfasted. The general character of Ned gave rise to a feeling that such was a fact, he having been a runaway convict from New South Wales. It seems somewhat singular that Mr. Douglas 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. Douglas 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 Dr. Judd and Rooke; but nothing could be elicited, for all the wounds were such as Mr. Douglas might have received from the animal. Few deaths could be more awful than that which he is supposed to have suffered.

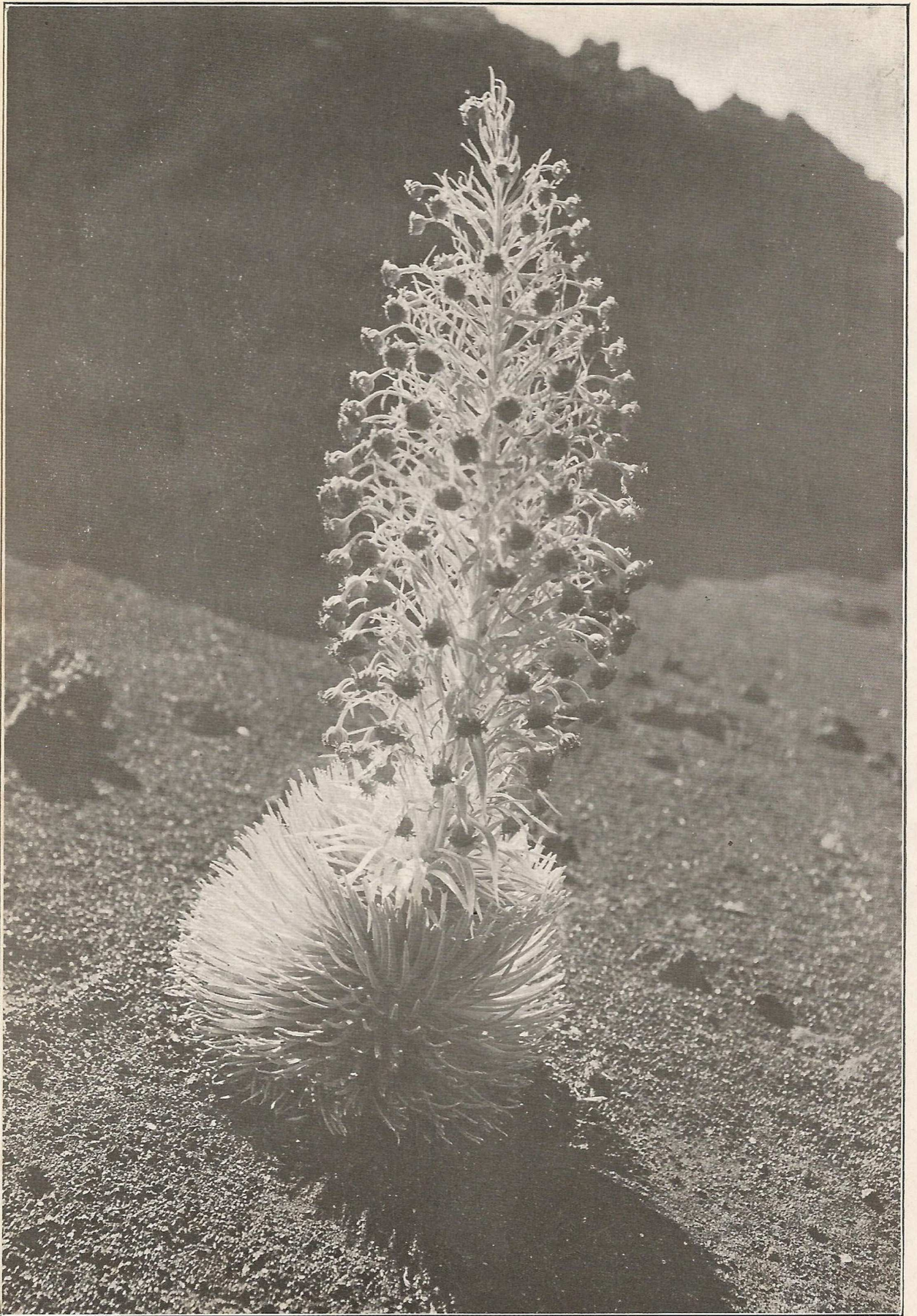
“A story was related of a native, who, having prepared a pit, succeeded in entrapping a large bull, but became so excited at his success, that he slipped and fell in himself; however, being armed with a knife, he succeeded in killing the animal. When discovered both were dead.”

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SKETCH OF CATTLE PITS

1. Path leading from Ned's House.
2. Place where Mr. Douglas 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.



R. K. Bonine photo

Argyrophyton Douglasii (Hooker), or *Argyroxiphium*
Sandwicense (DC).

THE SILVER SWORD PLANT OF HAWAII

SILVER SWORD PLANT OF HAWAII.

One of the Hawaiian plants which Douglas was the means of bringing to the knowledge of the botanical world, through his friend, Dr. W. J. Hooker, then Professor of Botany, University of Glasgow, was the "Silver Sword," the "Ahinahina," or "gray plant" of the natives.

It is found on the upper slopes of the high mountains of Hawaii, viz., Mauna Kea, where Douglas first gathered specimens, Mauna Loa and Hualalai, and also on the upper slope and in the inner floor of the huge extinct crater of Haleakala on the island of Maui.

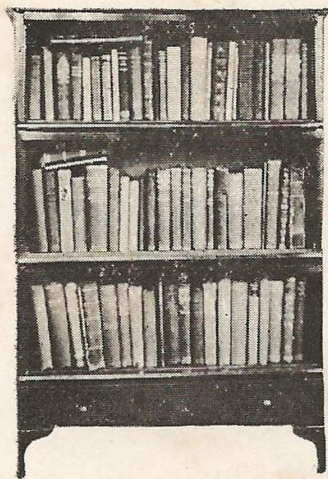
Dr. W. J. Hooker describes it in Hooker's Companion to the Botanical Magazine II.: 163, and figures it in Hooker's Icones Plantarum tab. 75. He named the plant *Argyrophyton Douglasii* (the silver plant of Douglas) after its discoverer, but as very often happens among botanists, the name given to it by Hooker did not satisfy another eminent botanist, and when DeCandolle got a specimen to describe, he called it *Argyroxiphium sandwicense* (the Sandwich Islands Silver Sword), and it is by the latter synonym that this herbaceous perennial is now quoted by modern botanists.

Two other varieties of the plant are found on Haleakala, island of Maui, viz., *A. Macrocephalum* or "Big-headed Silver Sword," and *A. virescens* or "Silver sword that turns green." They are found at an elevation of 7,000 to 12,000 feet, and may be regarded as the Edelweiss of Hawaii. The specimen figured herein is that of *A. Macrocephalum* and is from a picture taken in the crater of Haleakala by Mr. R. K. Bonine of Honolulu.

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