Gulick (L. H.)

THE

CLIMATE,

Diseases, and Materia Medica

OF

THE HAWAIIAN ISLANDS.

BY

LUTHER H. GULICK, M. D.

[From the New York Journal of Medicine for March, 1855.]

NEW YORK:
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INTRODUCTION.

The following Thesis, dedicated to Kamehameha III., King of the Hawaiian Islands, was composed in the winter of 1849–50 for the degree of Doctor of Medicine of the University of New York.

My labors upon it since that date have consisted in condensation, in a careful recomposition of the article on the venereal disease, and in several additions to the department of Materia Medica.

I have not attempted to post up the Medical History of the Sandwich Islands to a date any later than to the period of the first composition of the essay, though fully aware of the topics of interest which have since arisen.

The auspicious establishment of steam communication between the various Islands of the group on the 16th of November, 1853, will rapidly hasten, if it has not already ushered in, the anticipated period when those Islands are to become a favorite resort for pleasure and health.

I leave my original remark unchanged regarding the protection afforded the Hawaiians by vaccination, for nothing I have yet learned concerning the results of the recent introduction of the disease disproves the supposition; though, doubtless, the preparation might have been better, could the people at an earlier day have been stimulated to greater anxiety on the subject.

I take pleasure in acknowledging my authorities:—*Journal of* Tyerman *and* Bennet; *Polynesian Researches*, by Ellis; Jarvis' *History of the Sandwich Islands; Narrative of the United States' Exploring Expedition; Report of the Physicians of the Sandwich Islands Mission*, in June, 1839; *Meteorological Observations*, by T. C. B. Rooke, Esq., in *Hawaiian Spectator*, Vols. I. and II.; *Meteorological Observations*, by Rev. E. Johnson, from *The American*

Journal of Sciences and Arts, and found in BINGHAM'S *Sandwich Islands;* Rev. A. BISHOP, on *The Decrease of the Population of the Sandwich Islands*, *Hawaiian Spectator*, Vol. I., p. 52; *Climate of the Sandwich Islands*, by G. P. JUDD, M. D., *Hawaiian Spectator*, Vol. I., No. 2; *Decrease of Population on the Hawaiian Islands*, by DAVID MALO, *Hawaiian Spectator*, Vol. II., p. 121; Rev. HENRY T. CHEEVER'S *Sandwich Islands;* Hon. R. C. WYLLIE'S "*Notes*" *on the Hawaiian Islands; Transactions of the Royal Hawaiian Agricultural Society*, Vol. I., Nos. 1 and 2.

In addition to the above works and essays, which have been directly quoted, the following may also be named as having lent more fullness and accuracy to my statements regarding the climate and causes of depopulation:—DIBBLE'S *History of the Sandwich Islands;* BINGHAM'S *Sandwich Islands;* SIMPSON'S *Sandwich Islands;* and CHEEVER'S *Island World.*

The following acknowledgments, which I am happy to make, exhibit my especial indebtedness to Dr. CHAPIN'S publications and to his personal kindness, in furnishing me facts not otherwise accessible:—No. 39 of *The American Journal of the Medical Sciences*, republished in *The Hawaiian Spectator*, Vol. I., p. 243; *Boston Medical and Surgical Journal*, Vol. XLII., Nos. 3 and 5; *Letters to the Writer, of January and February*, 1850.

These form an array of names one may be proud to mention. They certainly demonstrate that my native Islands are as favorable for the development of mental as of physical health and vigor. Nor is there any rashness in affirming, that the "literary capabilities" of the Hawaiian Islands have not yet been fully developed—a fact most gratifying to every Hawaiian.

Regarding this essay, it is most palpable that its only merits can be those of selection and inference. The author will be most happy if this mere outline sketch shall be but the precursor of extended original researches and publication by others, on each of these fruitful and interesting themes.

ASCENSION ISLAND, MICRONESIA, March 1st, 1854.

THE

Climate, Diseases, and Materia Medica

OF

THE HAWAIIAN ISLANDS.

This first attempt to collect and arrange systematically all the facts of medical interest connected with the Hawaiian or Sandwich Islands, is necessarily imperfect, but will, it is hoped, be not an unworthy contribution to the department of Medical Topography.

We will first notice the important elements of that which, Dr. T. C. B. Rooke remarks, "yet remains a parodox," viz.:

THE CLIMATE OF THE HAWAIIAN ISLANDS.

Before studying diseases themselves, we investigate their causes, and it is self-evident that a thorough apprehension of the producing and modifying agents of disease in any locality cannot be fully attained prior to a familiar acquaintance with the climate, for under this term are included several most potent predisposing and exciting causes.

The *Locality* of the Hawaiian Islands, geographically expressed, is from 18° 50′ to 22° 20′ north latitude, and from

154° 53′ to 160° 15′ west longitude. Situated so far both from the eastern and western continents, the group is most effectually removed from their immediate controlling influences so far as climate is concerned. The group lays on the northern boundary of the torrid zone—once each year the sun arrives at the zenith of its meridian. Its climate, so far as affected by relative position, ought, therefore, to be mild, equable, and salubrious—and such it may unhesitatingly be pronounced.

The *Geological character* of the Hawaiian Islands is strictly volcanic, the coraline element being very insignificant. Each island is emphatically rugged and mountainous. On Kauai, Maui, Oahu, and Hawaii, many of the elevations are of considerable altitude. On Maui, Mauna Haleakela is over 10,000 feet high, and on Hawaii, Mauna Loa is 13,760 feet, and Mauna Kea 13,950 feet in height. The arable and habitable parts of the land are in detached portions, thrown in among the hills or on their seaward slopes. The great body of the population occupy positions near the sea, which have an elevation above its level varying from ten to perhaps an hundred feet. In the central portions of East Maui and of Hawaii much higher localities are inhabited. Waimea on Hawaii, the highest village of the group, is about 4,000 feet above the ocean's level. The southern slopes of the islands are exposed to solar influences under much more favorable conditions for warmth than the northern, the rays of light and heat during most of the year striking them in lines nearer vertical, and therefore more favorable for absorption, which, combined with the fact that the most important winds are from the northeast, from which the southern aspects are sheltered by the central mountain heights, conspires to render the southern or leeward aspects of islands generally the warmer and dryer, and the northern aspects the cooler and more humid.

The *Soil* is peculiarly volcanic, consisting of the débris of the primitive rock, light and porous, hence readily parched and apt to take on the form of dust, yet incapable of long

retaining acquired heat. The climate is therefore readily affected, so far as it is influenced by the calorific capacities of the soil.

The *Streams* and so-called rivers, though redolent of poetry, are such insignificant bodies of water as to here deserve scarce a passing notice—from the necessities of the case, they are short and small. From what has been said, lakes would not be expected.

The *Winds* of the islands are important in their relations to the climate, and may, perhaps, be referred to four classes: 1. The Trade Winds. 2. The Land and Sea Breezes. 3. The Southwest Winds or Gales. 4. The Variable Winds.

The *Trade Winds* are most efficient agents for good in the climate of these islands. Situated as the group is, near the northern limits of the trade wind zone, when the trades, with the sun, have made their farthest advances northward, it is brought under their full action; but when the sun is in southern declension, and when the trades, following it, have made their farthest oscillation southward, the group is beyond their limits and under the action of that cloud-zone, under which there is a constant precipitation of moisture, and which ever hangs over that oscillating line just north of the trade wind zone, where, as by Lieut. Maury, we are taught that the northeast and southwest currents of the upper air meet. The trade winds blow steadily from the northeast about six months. They give way during the months of November, December, and January. October, February, and March, are debated months, during which, however, the trades generally predominate. Having fairly secured their ascendancy in the spring, they blow with remarkable uniformity, and often with "considerable violence, almost amounting to a gale." These breezes, pure and cool, arrive from their ocean voyage with much of humidity adhering to their unseen wings, from whence it is precipitated in frequent showers that fertilize the whole windward coast. They are the equalizers of torrid heat, and the correctives of all miasmatic exhalations. Their influence is felt on all parts; but

from what has been remarked of the high midland elevations, it will be readily seen that the southern and southwestern aspects are, in greater or less degree, protected from their direct effects. We therefore find two varieties of climate during the season of their prevalence. The one, on the northern and northeastern shores, cooler and more humid, for here the trades first kiss the green-clad isle, and drop their dewy tears of joy; the other, on the southern and southwestern coasts, dryer and hotter. The whole is expressed by the terms "windward" and "leeward."

These notices of the trade winds must be somewhat modified in reference to Hawaii, the largest and most southern of the group, which is so large (being 88 miles long and 68 wide, having an area of about 4,000 square miles) that it interferes with the force of the trades, and with their regularity, and allows the *Land and Sea Breezes*, in obedience to their own laws, on all its leeward border, and "in some degree even on its northeast coast, where the trades are usually freshest." The trades, in their passages over the comparatively small areas of the northern individuals of the group, are perfectly competent to effecting an equilibrium between it and the surrounding seas, and so, in the main, prevent the series of actions and reactions productive of the diurnal currents. But on Hawaii, the area being much greater, an equilibrium of temperature is not effected by the trades, especially on the southern coast, and immediately the land and sea breezes arise.

Of the *Southwest Winds*, which are the rainy winds, and which, being coincident in time with the superposition of the cloud-zone, produce the rainy season, it must be remarked that they are intermittent, blowing continuously for several days and weeks, and then giving place to the finest of inter-tropic weather, again to return. I quote from Mr. Jarvis' *History of the Sandwich Islands*:—"The southwest wind brings heavy rain, and is usually loaded with a briny vapor, which is deposited upon vegetation and causes it to wither as if touched with frost. Its effects are equally

disagreeable to the human system. Headaches, catarrhs, rheumatisms, and kindred diseases prevail during their continuance. Upon foreigners its influence is very obvious, causing a compression about the head, and an enervation which greatly incapacitates the body for all active business; the atmosphere is thick, raw, and at times feels like the heated air of a furnace. The miasms, arising from the lagoons, which exist to some extent near Honolulu on the sea side, are blown back upon the land. By the natives it is known as 'the sick wind,' and with great propriety."

The *Variable Winds* occur during the same part of the year with the southwestern, viz.: during the winter. The following table exhibits the number of days of the prevalence of each wind.

	Trade Winds.	Southerly Winds.	Variable Winds.
At Honolulu.....1837	295	44	26
" " 1838	258	71	36
At Waioli 1845-6	220	146	

Hurricanes and tornadoes, by virtue, perhaps, of the group's remote position from neighboring lands, are unknown, and thunder-storms are rare and mild, which indicates that the electric conditions are subject to no great or sudden alternations—a circumstance favorable to health.

Such *Udometric*, *Barometric*, and *Thermometric* facts as I have been able to collect, shall be presented, together with a few additional details regarding the winds. I very much regret my inability to secure all such tables which I know to be published.

Com. Wilkes, in speaking of the same place, remarks:—"It rains nearly nine months in the year, and, from the rainbows formed by these passing showers, it has obtained its name, which signifies the land or place of rainbows—'Halelea.' A few days of dry weather are quite unusual. During three months, included in the above nine, rain fell on fifty-two days; fourteen were cloudy. During the remaining twenty-four the weather was clear, but it rained occasionally at night."

Rev. Mr. Johnson's Meteorological Table for 1845–6, at Waioli, on Kauai, is interesting, as being the only one I have of a locality on the windward side of any of the islands. This table was first publised in *The American Journal of Sciences and Arts.* I copy it from Mr. Bingham's "*Sandwich Islands.*"

Month and date.	Fah. Thermometer.						Winds.				Weather.										
	Average at 6½ a.m.	Average at 1 p.m.	Average at 6½ p.m.	Maximum.	Minimum.	Mean.	N.E. Trades a.m.	N.E. Trades p.m.	Var. a.m.	Var. p.m.	Rain in inches.	Fair a.m.	Fair p.m.	Cloudy a.m.	Cloudy p.m.	Show. a.m.	Show. p.m.	Rain a.m.	Rain p.m.	R'n at night.
April, 1845.	66·0	75·0	70·0	82 0	62·0	70·2	21	20	10	11	14·0	9	4	4	11	10	9	7	6	17
May, "	69·6	80·3	74·0	85·0	66·0	74·6	27	27	4	4	6·0	11	10	5	4	14	15	1	2	10
June, "	71·6	82·6	75·0	90·0	66·0	76·4	25	27	5	3	4·0	16	17	2	1	10	10	3	3	12
July, "	72·0	82·0	75·8	86·0	69·0	76·3	30	30	1	1	8·0	9	7	7	6	9	16	6	2	21
August, "	71·6	83·2	76·9	89·0	67·0	77·2	29	29	2	2	5·5	9	15	2	5	7	8	3	3	12
Sept., "	71·4	82·6	76·6	87·0	68·0	76·8	28	27	2	3	5·4	16	12	3	4	11	13	0	1	14
October, "	69·6	78 5	73·8	84·0	64·0	74·0	18	16	13	15	18·4	11	10	5	3	9	10	6	8	22
Nov., "	66·7	78·3	72·0	82·0	57·0	72·3	4	4	26	26	5·2	22	19	2	4	4	4	2	3	10
Dec., "	65·2	75·0	69·0	82·0	57·0	69·7	7	7	24	24	5·0	18	10	6	5	6	6	1	1	11
January, 1846.	62·0	71·8	67·9	79·0	54·0	67·2	3	3	28	28	4·6	18	7	8	8	1	4	4	3	10
Feb., "	63·3	73·5	68·4	78·0	57·0	68·4	10	10	18	18	3·0	16	14	10	10	0	1	2	3	10
March, "	63·4	75·8	69·5	80·0	56·0	69·5	18	18	13	13	6·6	15	14	16	8	4	4	6	5	16

"At *Koloa*, on Kauai, the thermometer varies from 50° to 90°." (Jarvis' *History of Sandwich Islands.*)

The following most valuable and complete "General Table of Meteorological Observations at *Honolulu*, from January 1st, 1837, to January 1st, 1839," was prepared for the *Hawaiian Spectator* by T. Chas. Byde Rooke, F. R. C. S. Honolulu is on the south side of Oahu, and is by far the most important town of the Islands.

1837.	Barometer.			Fah. Therm.			Winds.			Weather.			
	Aver. height at 7 a.m.	Aver. height at 2 p.m.	Aver. height at 10 p.m.	Average at 7 a.m.	Average at 2 p.m.	Average at 10 p.m.	Trades days.	Southerly days.	Variable days.	Fine days.	Rainy days.	Var. days.	Rain during the month in inches.
January	29·970	30·006	30·043	67·9	76·6	71·3	10	14	7	24	3	4	2·0
February ...	30·076	30·030	30·060	71·1	71·7	72·7	22	4	2	19	3	6	1·7
March	30·098	30·057	30·087	69·6	76·6	72·4	19	6	6	22	2	7	2·5
April	30·128	30·092	30·117	72·1	78·4	73·7	30	0	0	25	4	1	1·2
May	30·109	30·085	30·097	73·4	80·2	75·0	30	1	0	29	1	1	0·9
June	30·093	30·061	30·085	76·1	81·9	77·5	29	0	1	21	3	6	1·4
July	30·115	30·095	30·107	76·4	81·5	77·3	28	1	2	21	7	3	2·8
August.....	30·077	30·066	30·087	76·9	82·8	78·1	30	0	1	22	3	6	2·0
September..	30·095	30·060	30·097	76·5	83·0	77·0	29	1	0	29	1	0	0·7
October	30·116	30·076	30·120	74·8	80·6	76·0	26	4	1	28	1	2	0·4
November ..	30·070	30·029	30·071	72·7	77·9	73·8	19	7	4	18	8	4	4·5
December ..	30·124	30·072	30·115	69·9	76·5	71·1	23	6	2	27	1	3	1·0
Average..	30·128	30·060	30·090	73·1	79·5	74·8	295	44	26	285	37	43	21·1

1838.	Barometer.			Fah. Therm.			Winds.			Weather.			Rain during the month in inches.
	Aver. height at 7 a. m.	Aver. height at 2 p. m.	Aver. height at 10 p. m.	Aver. at 7 a. m.	Aver. at 2 p. m.	Aver. at 10 p. m.	Trades days.	South. days.	Var'ble days	Fine days.	Rainy days.	Var'ble days	
January...	30·060	30·028	30·054	69·3	75·6	71·5	21	5	5	25	3	3	0·8
February..	30·016	29·970	30·005	71·2	75·3	72·1	20	3	5	18	6	4	8·5
March.....	30·105	30·064	30·095	72·0	75·1	72·5	22	3	6	21	4	6	2·1
April.....	30·127	30·095	30·140	71·5	76·7	72·8	29	1	0	27	1	2	1·0
May.....	30·149	30·139	30·162	73·2	80·3	75·5	25	5	1	28	1	2	0·5
June	30·085	30·040	30·090	75·5	81·7	77·1	20	7	3	17	3	10	2·5
July.....	30·091	30·068	30·092	76·4	82·5	77·9	26	3	2	24	3	4	1·5
August....	30·078	30·052	30·078	77·2	83·2	78·4	30	1	0	28	1	2	1·2
September.	30·073	30·035	30·068	76·7	82·6	78·4	27	2	1	25	3	2	2·5
October....	30·040	30·021	30·042	75·0	80·1	76·9	16	7	8	20	5	6	12·0
November.	30·041	30·008	30·044	72·3	76·6	73·7	18	9	3	19	5	6	6.7
December..	29·978	29·876	29·993	71·5	76·3	73·3	4	25	2	23	6	2	7.5
Aver. of year	30·087	30·033	30·072	73·5	78·8	75·1	258	71	36	275	41	49	46·8

Of *Waialua*, on the western side of Oahu, Com. Wilkes affirms, on the authority of residents:—"The thermometer ranges from 75° to 80°, and has not fallen below 55° for several years, and rarely below 60°."

The temperature of *Lahaina*, on the south of Maui, as given by Dr. Chapin (*Amer. Jour. of Sci. and Arts*), corresponds with that of the above-mentioned places. He was guided by Rev. Mr. Richards' tables, kept for ten years, which exhibit "the highest thermometric elevation at 86°, the lowest at 54°, the extreme difference 32°, and no day during the whole period exhibits a difference of more than 19°. June has the highest range, January the lowest." "Lahaina is one of the most arid districts of the group, and has seldom rain sufficient to moisten the soil through its whole depth, except in the winter or rainy season. For months in succession the sun is scarcely obscured by clouds, and its exemption from the direct influence of the trades might lead us to expect several degrees of the thermometer above the more wet and windy portions; but so far as my observation has extended, and I have visited every portion of the island, it is not the case."

Of *Kailua*, on the west or lee side of Hawaii, Capt. Wilkes states:—"During the winter the thermometer ranges, at sunrise, from 64° to 78°; at mid-day, from 76° to 85°; at sunset, 70° to 80°. In summer the range is 68° to 80° at sunrise; at mid-day, 78° to 86°; and at sunset, 72° to 81°."

Of *Kaawaloa*, on the lee coast of Hawaii, Capt. Wilkes states:—"The thermometer ranges between 62° and 76° in the winter, and from 70° to 86° in the summer, and seldom above 86° or below 62°."

"The average temperature of *Waimea*, Hawaii, situated in the interior at an elevation of about 4,000 feet, is nearly 64° Fahrenheit, 48° being the lowest extreme." (Jarvis' *History of the Sandwich Islands.*)

It is to be regretted we have no greater number of statistics regarding the falls of *Rain*, but we shall probably state the truth with sufficient accuracy, if we allow the average annual amount on the windward shores to be seventy-five inches, and on the leeward, twenty-five.

The climate of the Hawaiian Islands is one of the most equable possible. A few comparative statements, principally deduced from the preceding tables and statements, will be of interest.

The *daily range* of thermometer is:—at Penzance, 6½°; at Nice, 8½°; at Rome, 11°; and at Honolulu, 12°.

The *mean difference of successive months* is:—at St. Augustine (Florida), 3° 68′; at Penzance, 3° 05′; at Key West, 2° 44′; at Madeira, 2° 41′; and at Honolulu, in 1837, 1.59°, in 1838, 1.77°; and at Waioli in 1845–6, 1.77°.

The *mean annual range* (I quote from Dr. Lee, in Dr. Copland's *Dictionary of Prac. Med.*) is:—at St. Augustine, 53°; at Penzance, 49°; at Key West, 37°; and at Madeira, 23°. At Honolulu, the extremes, during twelve years, were 90° and 53°, the range being 37°; during 1837 the maximum was 85°, the minimum was 61°, the range 24°; and during 1839 the maximum was 86°, the minimum 62°, the range 24°. At Lahaina, during a period of ten successive years, the extreme points of thermometric elevation and depression were 86° and 54°, making a range of only 32°. At Waioli, in 1845–6, the maximum was 90°, the minimum 54°, the range 36°. It is palpable that these statements regarding Lahaina, Honolulu, and Waioli, are by no means as comparatively favorable as they might be, for they either refer to individu-

al years, or embrace periods of ten and twelve years, and give the absolute extremes, rather than the mean annual ranges, as given for St. Augustine, Penzance, Key West, and Madeira. It is my impression that the mean annual range of many Sandwich Islands localities will yet be proved less than even that of Madeira.

The *mean annual temperature* of the West Indies is 79° to 81°, on the leeward side of the Hawaiian Islands about 75°, and on the windward about 72°.

On our present subject Dr. Chapin remarks:—"The climate will be found extremely pleasant and equable, and not surpassed in salubrity by any in the world. Indeed, what place can be found more uniform—the thermometer, during a space of ten years, not having varied more than thirty-two degrees; and where no day during the same period had a variation of more than nineteen degrees; where the same clothing is found comfortable the whole year, and where no other regulator of the temperature is needed than simply to open or close a window."

Dr. Judd, in noticing the amusing observations on the weather one will hear in the course of a half-hour's walk, says:—"One will tell you the weather is very pleasant; another, who, perhaps, has taken a little more exercise than usual, will say it is hot; another, at ease in the shade, will remark it is cool; while another will ascribe to the weather any other quality which his own dullness or buoyancy of spirits may suggest. The fact, most probably, will be, that there is nothing unusual or noticeable in the weather, and it would not be a subject of remark, but for our early habits in a land of sudden and severe changes. The natives seldom speak of the weather; indeed, there is no word in their language to express that general idea, and it is only the occurrence of a storm or something unusual, that attracts sufficient attention to make it a subject of remark."

The Hawaiian Islands have been spoken of as well suited to persons of phthisical tendencies; and, in many respects, they are admirably adapted. Such uniformity of mild tem-

perature is only equaled by few far-famed localities. The period will, probably, soon arrive when consumptives will resort there for health, as they now visit the West Indies or the Canaries. Not every season is equally favorable, however. The dry or trade wind season, from April to September inclusive, will, probably, be found the best, as may be inferred from the following table deduced from those already given:—

	April to September.				October to March.			
	Max. Therm	Min. Therm.	Range Therm.	Inches Rain.	Max. Therm.	Min. Therm.	Range Therm.	Inches Rain.
Honolulu.....1837	85°	71°	14°	12·6	83°	61°	22°	9 5
" 1838	86°	68°	18°	11·3	82°	62°	20°	35·5
Waioli.....1845-6	90°	62°	28°	42·9	84°	56°	28°	42·9

Nor are all parts of the Islands equally favorable. Selections must be made, and they can be, though neither Honolulu nor Lahaina, the two most populous and important seaports, is to be most highly recommended.

As the Islands are populated by a race of higher civilization, and as the luxuries of life are multiplied and diffused so that the best adapted localities shall furnish the essentials for an invalid life, and as the facilities for communication are increased and multiplied, the reputation of their most romantic and varied scenery, and their almost unparalleled salubrity, will rapidly make them a noted resort for the united objects of pleasure and health.

THE DISEASES OF THE HAWAIIAN ISLANDS.

With such a climate as just described, it will be asked, what of aggravated disease is to be expected. I reply, that the greatest number and worst aggravations of diseases among the native Hawaiians are due to their miserable modes of living. Did they live physiologically, they themselves would secure the same immunity from acute and destructive diseases that the natives of foreign lands among them enjoy, and might multiply, in contradiction of the nonsensical gibberish which speaks of "the *inevitable fate* of the Indian race

before the foot of the Anglo-Saxon." Though in very many particulars improved, they still, as a nation, require medical reform. The effort would be an interesting one, to attempt, more directly and systematically than any of their benefactors have yet been able to do, the medical education of the islanders. This must, perhaps, be effected mainly through medical men of their own nation, educated by foreign physicians. And as such men, if of proper moral character, will be of eminent service in the civilization of other Pacific Ocean islanders, we may hope the attempt will soon be systematically commenced.

Their diseases are principally dependent on sudden variations of temperature (this, too, in a climate emphatically uniform)—on irregularity in diet,—and (though it involves a second paradox) on defective cleanliness, though habitually a nation of bathers—"causes which, it is believed, owing to general improvements, are annually less active in their nature, and in time will mostly be checked." (Jarvis.) The Hon. Mr. Wyllie, in his *Notes on the Hawaiian Islands*, remarks:—"Dr. Chapin considers that most of the diseases, to which the natives are subject, arise from cold, bad houses, and bad clothing. The means of preventing the operation of these causes are to be sought for only in the diffusion of wealth, created by general industry, for which there are superabundant elements."

We will first treat of Syphilis, pronounced by some, as by Dr. Chapin, "the monster disease." We here enter debated ground; but reliance on the testimony of judicious medical men, whose long residence there gives them authority to speak, will extricate us.

The stereotyped history of Syphilis among them runs thus:—The disease was unknown until the discovery of the islands by Capt. Cook. From his crew it was first communicated to the females of Waimea on Kauai and of Kealakeakua on Hawaii, and from thence it radiated through the unimpeded channels of licentiousness over the whole group, among all ranks. From 1778 till now the disease has done

its work of mutilation and death, has manifested itself in all its hideous deformities, and has so destroyed the Hawaiian constitution that the nation is spoken of as physically rotten, and that the hopes of continued national existence are destroyed. I quote the *Narrative of the U. S. Ex. Expedition:* —"Mr. Whitney imputes this rapid decrease to foreign vicious habits, and both foreign and native authorities attribute the introduction of the venereal to the visit of Capt. Cook. This infection, brought to these Islands by the first voyagers, may now be said to pervade the whole population, and has reduced the natives to a morbid, sickly state; many of the women are incapable of child-bearing, and of the children which are born only a few live to maturity." Dr. Chapin, in *The American Journal of Medical Sciences*, says:— "With such an introduction, the venereal disease has for the past fifty-seven years continued to spread and increase; perpetuated and extended, too, by almost every vessel which touches at the Islands, till words fail to express the wretchedness and woe which have been the result. Foul ulcers, of many years' standing, both indolent and phagedenic, everywhere abound, and visages horridly deformed, eyes rendered blind, noses entirely destroyed, mouths monstrously drawn aside from their natural position, ulcerating palates, and almost useless arms and legs, mark most clearly the state and progress of the disease among that injured and helpless people." Rev. Artemas Bishop remarks:—"Their previous looseness of morals formed a ready conductor for the disease which was introduced by the first ship which touched here, and from the account given by the natives themselves, the consequences were incalculably more dreadful than had been feared by Capt. Cook and his associates. The deadly virus had a wide and rapid circulation throughout the blood, the bones, and sinews of the nation, and left in its course a train of wretchedness and misery which the very pen blushes to record. In the lapse of a few years, a dreadful mortality, heightened, if not induced, by their unholy intercourse, swept away one-half the population, leaving the dead un-

buried for want of those able to perform the rites of sepulture." The following, by David Malo, a native Hawaiian writer, is worthy of quotation, for its just recognition of God's moral discipline exerting itself through the ordinary and natural laws of disease:—"This disease has become prevalent among the people, and even children, and all the people of the Islands are miserably diseased; and it is clear that, from the arrival of Capt. Cook to the present day, the people have been dying with the venereal disorder. Foreigners (David Malo, would, of course, make many exceptions) have lent their whole influence to make the Hawaiian Islands one great brothel. For this cause God is angry, and he is diminishing the people, and they are nigh unto desolation."

Though many of the above statements are incontrovertibly true, they, probably, convey an exaggerated view of a great and real evil. Knowing that the disease had been introduced and had been disastrous, many an ulcerous leg and ophthalmic eye, and nearly the whole body of deformities, congenital and acquired, together with all the barrenness of the females, were imputed to the monster disease. Still we shall not deny it the character of an important individual among their maladies, and one that, with several other grave causes which have each reacted on the other for evil, has materially assisted on the nation's calamity.

Another series of statements must also be subjected to doubt,—namely, that which, without broaching the involved question as to the previous existence of a venereal disease, would make that disease introduced by Capt. Cook different in kind from any thing which could have preceded, and very different in degree, if not in kind, from any thing now existing. This opinion need not, perhaps, be more particularly discussed in this paragraph, as our remarks on the third series of statements will further elucidate this.

The philosophical query, as to the true period of the inception of the disease among the Hawaiians, involves a discussion of the long-mooted question of its origin among Euro-

peans—a debate we shall sedulously avoid. Whatever may be the theory of its existence in Europe or at the Sandwich Islands, anteriorly to the respectively accredited periods of 1493 and 1776, the fact seems undeniable, that at about those dates a disease, supposed to have been before unknown, spread with marvelous rapidity, attacking primarily the genitals, but introducing as accompaniments or sequelæ "excruciating nocturnal pains, corroding ulcers over the whole body, affections of the throat and nose, and, very frequently, death." (J. Bacot.) Whatever we may deem probable, or may demonstrate as certain, as to the anterior existence of genital diseases, it must be admitted, that, as in Europe, so at the Hawaiian Islands, there came a time when particular morbid developments on and near the organs of generation received unusual attention and were attended by constitutional symptoms unnoticed before, and by remote local diseases of unprecedented phagedenic character—that this new disease (as it was supposed to be) was contagious in a wonderful degree, and spread through the nation, and was a source of general dread, often proving miserably fatal. As proofs, we need but refer to such statements as just quoted from various residents, which are undeniable and decisive on these points, whatever we may judge as to their over-statement regarding the national degeneracy being mainly attributable to this monster.

With regard to the present condition of the disease, it seems also undeniable that as in Europe, so at the Sandwich Islands, Syphilis has ceased to be a dread, and though there be many syphilised constitutions, the immediate developments of the disease are not usually found save in the channels of systematic prostitution. And, in confirmation, I will quote, first, a report made in 1839, before the annual meeting of the Protestant Mission of the Islands, by a committee consisting of the physicians of the mission, who, at that time, constituted by far the majority of the resident physicians. I transcribe a considerable portion of the report for its intrinsic importance, though the last sentence quoted is that bearing directly on the subject at issue.

"1. That they find the climate of the Islands highly favorable to the development and perfection of the animal economy, the mean temperature being within a few degrees of that point which physiologists consider most favorable to human life, and free from those sudden and great changes to which most other climates are subject.

"2. That notwithstanding the favorableness of the climate, they find an unusual amount of disease among the natives, especially of the sub-acute character, which, though for the most part not very painful, tends always to undermine the constitution and pave the way to a premature grave.

"3. That the immediate causes of most of their maladies are plainly ascribable to their frequent violation of the first principles of correct living; to their low estimate of life, and recklessness of themselves; to their wretched habitations, which furnish little comfort or protection; to their practice of lying on the damp ground; to want of protection by clothing, in exhausted conditions of the system, against vicissitudes of the weather; and to their poverty, which keeps them strangers to necessaries and comforts.

"4. That we have witnessed no fatal epidemics since we arrived at the Islands, and that, of those diseases depending upon a specific contagion, almost no lives are now lost. * * The venereal disease, which, probably, did once make considerable havoc among this people, seems now so far to have worn itself out, that we seldom see it as recently contracted, except about the harbors, and there not extensively, and very few deaths from it have occurred in our practice. Neither do we perceive that this disease materially retards the increase of population on these Islands."

Dr. Lafon, several years a resident at those Islands, affirms, in reference to abortions, that they are no more frequent than elsewhere, and that they very rarely have connection with Syphilis; and as to the effects of the disease on the progeny, it also is infrequent. He unhesitatingly asserts that mistakes are made in attributing to Syphilis the great body of ulcers and tumors and other occasional results of the disease.

Mr. Jarvis, in his History, says:—"The venereal disease has almost exhausted itself, and it is rarely to be met with, except about the sea-ports, where the virus is kept active by augmentation from foreign countries. Even in these places it does not prevail either extensively or fatally, nor can it be said materially to retard the increase of population at the present time."

These authorities, who bring with them every element of reliability, agree in the assertion that primary Syphilis is comparatively rare. Who will, then, question the direct and inevitable inference that secondary Syphilis must be at least as infrequent. And if this be established, it will be seen, as before intimated, that that class or form of statements which pronounces the Hawaiian constitution syphilitically rotten, and which solves the problem regarding depopulation by the asserted prevalence of the venereal taint, must be in some degree erroneous. With the above facts before us, the national constitution cannot be affirmed to be syphilitically destroyed, unless the theory be developed that individuals and a people may be so tainted by this disease, through their ancestors, as to lose their powers of procreation. Such a theory will, so far as I am aware, be a new one to the medical world. Without doubt, syphilitic children of syphilitic parents attain to less vigor and are more liable to disease, and, so far as these causes are operative, may be possessed of less virility; but have we evidence of a specific effect on the procreative faculties of the descendants? Is there naught that destroys virility but Syphilis? And if such a fact or law as the above theory be yet proved, we must neither then nor now ignore the much more palpable and better known causes to which we shall presently allude.

It will be noticed that our authorities speak of the disease having "worn itself out," and of its having "exhausted itself." These expressions cannot have been intended by their authors to be taken in a rigid medical construction, as though it were proved that this virus did, by any law in any community, lose its inherent virulence. It will be suffi-

cient to say of the period of aggravated syphilitic affections at the Hawaiian Islands, as of that in Europe, that by a better acquaintance with the medication of the disease, and with the laws of its propagation, and also by the consequent removal of the veil of mystery, the era of dread and devastation was passed. It may also be suggested that Syphilis, like other diseases, may have its periods of aggravation from unknown epidemic causes, and that the syphilitic periods of Europe and the Hawaiian Islands may have been complicated with such causes. It must also be borne in mind that the morals of the people have since that time been improved —a cause which would alone tend to lessen the evil. It must also be noticed that at the Sandwich Islands, during the period in question, there existed certain political and civil conditions which served as great aggravations not only to the syphilitic but to other affections, and that these conditions are not now as disastrous as then. We pass on to a more particular consideration of these conditions.

The question now presses itself as to those causes of depopulation, to which allusion has been made, on the supposition that they were of themselves sufficient without an overpowering and still active syphilis. I answer it by quotations of some length from Mr. Jarvis' *History*, and will leave it for others to judge whether they are not conditions sufficiently disastrous not only to directly diminish the number, but even to lessen the fecundity of the nation, especially when we superadd the readily acknowledged disaster of Syphilis in its usual and well known degrees.

"Since the time of Cook a rapid decrease has occurred. Neither is this melancholy result of difficult solution. The population of the Islands probably never amounted to what, with the aids of civilization, they could be made capable of supporting. During their heathen state, though divided into many hostile tribes, perpetually engaged in warfare, their battles, from the imperfection of their weapons, were comparatively bloodless. That very condition served to develop enterprise and a national spirit, though accompanied

with beastly excesses, and thus a spirit favorable to physical growth was stimulated. The boundless hospitality which every chief was obliged by the spirit of his race to exercise, and which prevailed even among the canaille, always found food and shelter for the oppressed. A man dissatisfied with one master had but to flee to another, and he was sheltered and welcomed. Taxes were heavy and much labor required, but as it was generally for the support of the whole, an interested motive existed. The same work which would destroy the energies of a man who was to receive no reward for his toil, would produce health and cheerfulness in one who had an interest in the result. Every individual had that to some extent in the wealth and success of his chief; hence a patriarchal feeling was developed, which, with long used and uncontested power, will sufficiently account for the deep reverence, fear, and canine-like attachment, with which the common people regarded their superiors. Exceptions to this no doubt prevailed, and much misery was the consequence; but as a general principle it was correct, and stands in strong contrast with the relative condition of the two classes, after a thirst for foreign wealth was developed by intercourse with whites. A grasping, avaricious disposition succeeded; ends were to be attained regardless of the means used. The little natural human feeling the chiefs possessed, was extinguished by an all-powerful passion for gain. Interested foreigners stimulated this desire; cargoes of rich goods were brought, luxuries displayed, and no means left untried to excite their cupidity. The unfortunate result is well known. The whole physical resources of the kingdom were over-wrought, and women and children were taxed beyond their powers. Sandal wood was to be collected; mountains and valleys almost inaccessible were to be penetrated, and heavy loads borne on bleeding shoulders to the sea-side. Like the children of Israel, their toil was doubled and their sufferings found no consideration in the eyes of their cruel task-masters. Cultivation was neglected, and famine ensued. Multitudes perished under their burdens;

others left their homes and wandered like wild beasts in the depths of forests, where they either slowly sunk under the horrors of want and starvation, or sustained a miserable existence on roots and wild fruits. Blind to the consequences, the chiefs continued the same policy. Debts were contracted which must be discharged, and increased taxes were imposed. No property was safe. A native could neither hold nor acquire—all was his chief's—even his children became a source of additional suffering, for every head was taxed!—infanticide greatly increased;—parents gave away their offspring, and the natural feelings of the nation were crushed beneath this iron despotism. Life became a wearisome burthen; numbers of the most active sought safety and employment abroad. The first effects of Christianity added to this already intolerable load. So long had this system been pursued, that no other plan of public works, than the compulsory labor of the whole population, seemed feasible. Regardless of the instruction and advice of their religious teachers, they added to their labors the toil of building churches, school-houses, and other works, necessary in themselves, but erected by unholy means. This system prevailed in later days, with mitigations, however, until 1838, when it began to give way before the combined influences of the mission and foreign residents, and the more enlightened efforts of the native population.

"Before Cook's visit, diseases were few and simple. Subsequently they increased in number and virulence, while the remedies and knowledge necessary for arresting them remained unknown; the fatality attending novel illness, the progress of which they knew not how to arrest, produced a deep and often fatal spirit of despondency.

"Alcohol and licentiousness have usually been considered the most aggravated causes of depopulation; but their influence has been exaggerated. The habits of the natives in both respects are now better than they were before their discovery, when drunkenness, produced by the use of *awa*, and promiscuous intercourse and incest were almost parts of their natures.

'A powerful agent, though one the effects of which have been greatly overlooked, is the partial adoption of foreign clothing. This may seem paradoxical; but unfortunately it is too true. * * Many would wear their clothes but part of the time, and then, finding them inconvenient from extra heat or cold, throw them aside altogether. The utmost irregularity prevailed, not only from poverty, but from carelessness and from ignorance of the results. * * Their constitutions, already enfeebled, from causes before mentioned, could ill bear such treatment. Colds and fevers greatly increased, and of a more fatal tendency. Trivial predispositions to disease were aggravated, and death was the frequent result of attacks which the slightest prudence could have obviated.

"Much else might be named, which would cause the philanthropist less to wonder why they decrease, than that it should have been so slight in comparison to the many causes so actively at work to create it. * * It must be remembered that these causes were all additional to those which existed prior to their discovery, and which were of themselves sufficiently active to prevent any rapid increase."

The Hon. R. C. Wyllie, speaking of the supposed depopulation by Syphilis, says:—"There no doubt has been, and, I fear, still to a great extent exists a cause, in the laxity of native morals, why that disease should be propagated with unusual universality, and that very cause will add to the effect of disease in preventing offspring; but the outward appearance of fat and health, more general here amongst the natives than amongst the Indian tribes of Mexico, or any country in South America, is opposed to the belief of such an inward rottenness as could render the race unprolific, without the influence of other causes." The opinion of a gentleman of such eminent intelligence and general and medical information weighs much.

It is but proper that, before leaving this topic, I refer more particularly to Dr. Chapin's articles, especially to that in *The Boston Medical and Surgical Journal*, Vol. 42, No. 5,

where a greater potency is ascribed to the venereal than I have admitted. He maintains the syphilitic origin of a large number of affections, because "mercurial remedies" alone effectually reached them; and upon this the query rises, whether this be the best or proper test for the diagnosis of venereal. But though his diagnosis be both admitted and proved, it still remains to be established that the lack of fecundity among the Hawaiians, as compared with "the lowest class of Irish, and with the blacks of our own southern States (neither of whom are more moral, or regular in their lives, nor more temperate, nor better fed)," justifies us in counting Syphilis "the most prominent cause of disease at the Sandwich Islands." I trust the above discussion has gathered light on the subject.

Having thus dismissed the consideration of Syphilis, I shall not find a fitter place than the present to express a thought concerning the prophecy of the extinction of the Hawaiian race, founded on the ancient canon that all so-called Indian races must vanish before the Anglo-Saxon. The canon is based on an unfair and unchristian induction, which involves the supposition that Anglo-Saxon intercourse must always be attended by those Anglo-Saxon immoralities which have been the real destroyers, and that it is impossible in any instance to correct the effects of such commerce. Whatever shall be the ultimate fate of this interesting race, the efforts of no philanthropists should be damped by unfounded predictions. There is yet hope for a small remnant of this and other races which Anglo-Saxon would-be-philosophers have destined to annihilation. I again quote from Mr. Jarvis, the able and impartial historian. "Their depopulation was more rapid, as far as can be ascertained, in the reigns of Kamehameha II., and his successor Liholiho, than at a more recent period. As Christianity and civilization have advanced, in just that proportion has this mortality ceased. Their effects are of too recent a nature to predict the final consequences, but it may be confidently expected, that as the fatal tendencies are counteracted, and others

allowed to operate, good results will ensue." "Evil as the most active principle may for a while riot uncontrolled, counteracting and more powerful tendencies are at work, which must eventually neutralize and overcome the former."

Scrofula, considered apart from consumption, is reported as one of the frequent causes of disease among the native population. Dr. Judd says:—"Scrofula is very common in the various forms of goitre, ulcers, tabes, etc." Dr. Chapin says:—"Scrofula is not only frequent, but extremely malignant." Its cause is a little obscure, though it is, perhaps, readily enough given, if we use the general language which the custom of medical authorities on this subject allows us. We can, without difficulty, enumerate a number of debilitating causes; and if, with Dr. Alison, we limit "the causes of debility" to those "acting permanently, or habitually for a length of time, although not so powerfully as to produce sudden or violent effects," we may refer to their miserable houses, which are no sufficient protection from the weather, and in which they sit and sleep on the ground, with only a mat or two intervening. It is, indeed, their universal habit to make the ground their seat, which is everywhere more or less damp. Com. Wilkes, in speaking of their diseases, says:—"Many of them are brought on by living in their grass houses, which are by no means impervious to the weather. Another frequent cause is the partial decomposition of the grasses with which they are thatched on the roof and sides. In passing into them I invariably experienced a smell of mustiness, and a mouldy appearance is frequently seen about their mats and tapas." Says Mr. Jarvis:—"The houses of the common orders were mere hovels, made of straw, thatched upon a light wooden frame. They were low, small, and damp, and generally filthy within and without."

Their clothing, too, was partial and insufficient. The primitive Hawaiian costume, which is now rapidly giving place to more civilized habits of dress, was prepared of the bark of trees, and consisted of a sheet tied at two corners and thrown over the shoulders, with another narrow strip

wound round the loins and passing between the legs—or, for a female, a long piece about a yard in width, wound about the lower part of the body and descending to the knees, with, perhaps, a sort of shawl of the same.

Their food, too, was irregular, often "bad and deficient," and always principally "vegetable food." If these, as Mr. Philips contends, are productive of scrofula, we certainly can account for its existence among these islanders, for their food was almost exclusively vegetable, being preparations of the *arum esculentiam*. Fish was frequently an adjuvant, but it was rather an occasional than constant article of diet.

But the question arises, how, if, indeed, their modes of domiciliation and clothing and dieting be efficient producing causes, did they once, as a nation, thrive with comparatively little scrofula, though their houses and modes of dress and articles of food were essentially the same. The difficulty is, I think, satisfactorily met by the statements regarding the causes of depopulation already made. Their political conditions for long years rendered their preparations of food less ample and timely, their houses even less comfortable and habitable, and their clothing less complete and protecting.

Whether marriages between different races tend, as is generally supposed, to produce the scrofulous diathesis, the fact is interesting that, at the Hawaiian Islands, the children of alliances between the natives and Chinese, or negroes, or any of the Enropean nations, are far more healthy, and are better physically developed than those of pure Hawaiian blood. This may, however, only be because the indigenous race is so far exhausted that foreign blood is, with all its disadvantages, better than their own; or, more probably, because such descent generally receives more appropriate and efficient parental care.

Malarious Diseases, of all types, are rare, if not unknown—either because malaria is not there present, or because, if generated, it is so quickly dispersed.

How simple and beautifully circular the usual process of reasoning on this subject! Wherever malarious diseases

prevail, there certainly malaria is present, and if, in investigating the causes of disease, we inquire for malaria, its absence is conclusively shown by the absence of recurring fevers, even though, as at the Sandwich Islands, sheets of stagnant water expose their surfaces to the constant action of a tropic sun, and though the inhabitants build their houses on embankments in the midst of the exhalations (either malarious, or the opposite), which must constantly rise.

Their "taro patches" are artificial ponds of water in which the taro is planted. These, in advantageous localities, are crowded very closely together, and present very considerable areas of water, and in among these ponds the natives very frequently live, enjoying as perfect health as elsewhere.

This might be urged as a proof of the fallacy of the malarious theory of periodic fevers, yet without much force, for even if it be proved that malaria is here generated, the fact of its harmlessness is readily explained by reference to the influence of the winds, which are felt more or less constantly and directly on all parts of the groups. On this subject Dr. Chapin makes an important remark :—"It might be an interesting subject of inquiry, which I have not seen discussed, why the islands generally, throughout the world, if we except those spots covered by cities, made pestilential by crowded populations, are so free from those poisonous exhalations which abound on the continents, so generally between the tropics, and, during the warm weather, over such an extent of the temperate zones, especially along the rivers." "On the continents are large marshes, putrid with vegetable and animal decomposition, draining into streams nearly stagnant from the sluggishness of their courses, whilst on the islands, swamps are less abundant, and the streams are short, fresh, and rapid, and whatever malaria is generated is quickly diluted, and borne off by the passing sea breezes, and thus rendered innocuous."

But we may even question whether the same bodies of water in the same soil, in regions remote from the trades,

would be prolific of malaria; for, first, the ponds are every few days receiving fresh supplies of water; and, secondly, the soil is not that which, from its extreme richness in vegetable matters, would be supposed able to part with much that is noxious; and, thirdly, the ponds are kept almost constantly full, so that parts once moistened are kept submerged. Besides these taro patches, the few possible sources of malaria are utterly insignificant.

"With so entire an exemption from the existence of miasmata, there is also an entire exemption from those affections induced by it. Malignant bilious fevers do not occur, and * * * derangements of the liver and biliary organs do not prevail, neither are the stomach and intestinal canal, and other organs of the abdominal viscera subject to the numerous and complicated affections so common in every miasmatic region." (Dr. Chapin.)

Yet in 1803 or 1804, a pestilence raged which has by some been supposed to have been yellow fever, and by others, Asiatic cholera. "In the year 1804, when the late King Kamehameha was on his way from Hawaii to invade Kauai, he halted with an army of eight thousand men at Oahu. The yellow fever broke out among the troops, and in the course of a few days swept away more than two-thirds of them." (Journal of Tyerman and Bennet, vol. 2., p. 48.) "The great pestilence of 1803 destroyed multitudes, and has been supposed to have partaken of the character of the Asiatic cholera." (Jarvis' *History*.) Of this disease we can only say, that it probably was not either yellow fever or cholera.

Other forms of *Fevers*, not exanthematous, though "the most frequent and numerous class of diseases among the native population, are by no means the most malignant and fatal. * * * The excitable state of the system which predisposes strongly to febrile attacks, is not common at these Islands. The continued and oppressive heat is there not sufficient of itself to produce it, and the universal custom among the people, to repose during the hottest part of the

day, aids in counteracting other unfavorable influences. The simplicity, too, of their diet and habits of life is not calculated to promote a state of excitability." (Dr. Chapin.) The fevers are apt, I should judge, sometimes to take on the symptoms generally termed typhoid, though malignant typhus is rarely seen.

Of the *Exanthematous Fevers* little can be said, save that they have at occasional intervals been introduced. The natives seem never to have had them previous to the discovery of the Islands, and their insular position protected them for some time subsequently.

In 1848, *the Measles* in some unknown way made its advent among the unfortunate islanders. They had never before seen the disease—the symptoms were to them new and singular. It was difficult to impart to the masses the proper mode of treatment, and they, in their ignorance, during its eruptive period, under the disagreeable sensations of heat, frequently made applications of or immersed themselves in cold water, making it tenfold more than usually fatal.

Small-pox has never spread among the people, and should it now arrive they are probably quite well prepared for it by vaccination.*

In 1839, *Mumps* were introduced (though I violate order

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* In May, 1853, the small-pox appeared for the *first time* on the Sandwich Islands, and it spread with fearful rapidity and unprecedented mortality, about 6,000 of the unfortunate victims of the disease, or *eight per cent. of the entire population*, having been swept off in the space of eight months.

The malady is believed to have originated on the Islands from fomites, that had been conveyed from San Francisco to Honolulu in a chest of cast-off clothing. As the disease extended in Honolulu and its vicinity, the natives became panic-stricken, and fled in wild confusion and alarm to remote districts of that Island (Oahu), and to the other Islands; thus unhappily conveying the pestilential infection throughout the entire group of Islands, and to almost every community. The disease was of the gravest type, and was manifestly rendered thus by a most marked variolous epidemic constitution.

I have deemed it important to add to this valuable essay of my friend, Dr. Gulick, the above brief notice of the most terrific and fatal epidemic of variola that has ever been recorded. ELISHA HARRIS.

in noticing it here), and "prevailed very generally, and in some cases terminated fatally through mismanagment."

Rheumatism is a frequent malady among the islanders, as a consequence of their irregular life and extreme imprudence in spending their nights on the ground, and of "their habits of continuing long in the water and exposing their bare bodies to strong currents of wind, when overcome with heat and covered with perspiration."

Dr. Chapin speaks of its "very frequent occurrence, notwithstanding the very prevalent belief that it is almost peculiarly a disease of cold and variable climates, and is rarely met with in warm and uniform climates." He remarks with great justness that—"The constitution becomes so impressible in warm climates, that very slight variations in the atmosphere are as severely felt as the greatest changes with us." And from this prevalence at the Sandwich Islands he infers its presence "at the adjacent islands, and at all places throughout the inter-tropic regions, where the same exciting causes exist." At these islands "the disease is usually mild in its attacks, soon passes off, even without the application of medicinal means, and is seldom followed by severe secondary effects."

Primary derangements of *the Nervous System* constitute but a very small part of their diseases. *Insanity*, as might be expected from their quiet, simple mode of life, is not frequent. Among the females, *Hysterical* tendencies are not marked. *Chorea* is occasionally met with. *Paralysis* is more frequent, and Dr. Lafon attributes it to their long-continued sitting and sleeping on the damp ground, by which, not only their fibrous, but their nervous tissues are affected.

Pulmonary Affections are frequent and important. In an address before the Royal Hawaiian Agricultural Society, the Hon. Luther Severance says:—"If every native would wear a woolen shirt, and sleep at night under a woolen blanket, I think there would be less of asthma and other affections of the lungs, induced as these diseases probably are by exposure to the strong winds, while the pores of the

skin are opened by profuse perspiration." (*Transactions of the R. H. A. Society*, Vol. 1, p. 2.)

Chronic Bronchitis is so frequent and universal among the Hawaiians as hardly to receive attention. The mucous surface of their lungs seems to be peculiarly susceptible to external influences. Dr. Lafon, speaking of the "day-break prayer-meetings," says that for the first twenty minutes it was generally scarcely possible to proceed with the religious exercises, from the incessant coughing of the congregation. It was as though each one was under the necessity of expectorating a certain amount of mucus before respiration could be comfortably carried on. The causes are evidently those already so frequently mentioned—their unhealthy exposures both within and without doors.

Catarrhs are of course to be expected, though mild, and generally the result of exposures and sudden alternations of temperature. Dr. Judd remarks:—"The *Influenza* (epidemic catarrh) usually prevails every spring." Dr. Chapin speaks of them as "usually mild in their character, ephemeral in their existence; they easily yield to immediate applications and rarely pass into the more inveterate and fatal stages of pulmonic disease." Some, however, of these epidemics are much more serious, and their effects remain long after their departure. About four years since (1846) an epidemic of this kind prevailed over the group and was in some cases fatal, from untoward complications and bad management. And again in 1848–9 another epidemic arrived as a successor upon the measles, and was more than usually fatal. It would be of some interest to ascertain whether these influenzas have any relation to the direction of the winds, or, as has been suggested, to volcanic exhalations. The remote position of the group is very favorable for the investigation of the causes of disease, especially of the mooted questions regarding the contagious and epidemic character of maladies.

Asthmas are enumerated by writers among the diseases of the Sandwich islanders; but the term is used so indefinitely that

little can be learned from the statement. Dr. Judd, speaking of the annoyance from dust, says:—"It is, no doubt, a very efficient cause of the frequent occurrence of asthma among the natives." Dr. Chapin mentions, as a cause of asthma, "a habit, among the chiefs and wealthier portion of the common people, of inordinate eating, amounting even to gluttony," when "their capacious stomachs are distended not less than four or five times a day with truly surprising quantities of fish and poi."

Pneumonia and *Pleurisy* are mentioned: they cannot, however, be called zymotic diseases—they are, rather, accidental.

Croup among the natives is usually fatal. Dr. Chapin mentions its having prevailed epidemically once during his residence there. "Hoapili-wahine, a chief woman of high rank, upwards of seventy years of age, died of this disease in January, 1842." (Jarvis.)

Whooping Cough has been once prevalent, but soon disappeared.

Phthisis Pulmonalis is a very rare disease at the Hawaiian Islands. Dr. Judd says:—"This comparative exemption of a population—which is allowed on all hands to be fast wasting away—from one of the most fatal diseases of the United States and England, affords evidence that the climate is unfavorable to it."

An investigation of the causes of their entire exemption from pulmonary tuberculosis is one of much interest, especially if that disease is to be considered as dependent upon the scrofulous diathesis. The uniformity of temperature is certainly favorable, but why are not the producers of the other varieties of scrofula productive also of this? Is it that, for the development of phthisical scrofulosis, a close impurity of air is generally essential, by its immediate interference with respiration, and so, as it were, by centering upon the lungs in a primary degree the development of the scrofulous diathesis; while, if the glandular system be most impeded in the performance of its functions, through and

upon it will the diathesis be principally exhibited in specific scrofula? If this be accepted, the out-door lives which the Sandwich islanders live may be supposed to preserve them from that imperfect respiration, and so, from consumption, notwithstanding the untoward effects of many of their other habits, while the glandular system succumbs before the ready waiting enemy, incapable of receiving such relief and palliation of evil from fresh air, and even from that very exposure being made still more liable.

Foreign residents are completely exempted from such tendencies. Several members of the mission have entered the field with pulmonary affections, who were regarded as doomed to certain and premature death if they remained in this country (the United States), who now enjoy good health, and are entirely free from any abiding symptoms of disordered lungs." (Dr. Chapin.)

The remarks previously made, regarding the adaptation of the Hawaiian climate to persons of phthisical tendencies, are applicable here. The entire absence of Phthisis among the foreign and native inhabitants, with the mentioned instances of cure effected by a residence there, confirm the anticipations we might found on the mild uniformity of the climate.

There is one disadvantage, however, mentioned by Com. Wilkes, namely, "the great difference in the degree of moisture which exists within a few miles." This must be acknowledged a drawback, and though localities may be fixed on, enjoying proper mediums of moisture and heat, it would be difficult to confine a patient closely to them. But let me suggest that the mere fact of considerable moisture is not conclusive against a place as a residence for consumptives, especially if it fall, as it does at these Islands, during the summer season, in brisk refreshing showers, followed by beautiful sunshine, and leaving all nature revived and invigorated.

I repeat, that the Sandwich Islands will, as facilities of travel increase, become one of the places of resort for

invalids, especially during the summer season; for the beauty, grandeur, variety and novelty of the scenery will alone be a potent attractive, and the journeyings to enjoy it be efficient remedial agents.

Derangements of the functions of *the alimentary canal* are numerous, and frequently fatal among the islanders. Their irregularities in diet, with their habitual violation of all prudential laws, are causes sufficiently comprehensive.

Diarrhœa and *Dysentery* are common. "Beside the usual exciting causes which prevail in most places, they have an additional fruitful source, in a blind and barbarous practice of using immoderately the most powerful and drastic cathartics. I have known a case in which the average operations of four cathartics, given to disperse dropsy, were twenty-one, the aggregate eighty-four; and another case in which a man, from a fear that he would be sick, took such an enormous dose of the calebash, as to produce a hemorrhagy, which proved fatal within a few hours." (Chapin.)

Hepatitis, with all the other affections of the liver, are seldom met. The climate seems to be proof against that monster of civilized life—"the liver complaint"!! This exemption extends to all who reside there. "The frequent occurrence in hot climates, is ascribed by Dr. Saunders and others to the prevalence of a peculiar miasm in those regions, and if this be true, hepatitis will not be expected to predominate at the Sandwich Islands, where there is no evidence of any miasm whatever. Indeed, hepatic disorders are not merely uncommon there, but they do not appear to be incident to those seas. The Pacific is thronged with American and English whaling vessels, which cruise from three to four years, and, as they change their ground to the north and south of the equator, with the change of the seasons they are continually exposed to the hottest latitudes, and are much of the time in the torrid zone. Of these a large number touch semi-annually at the Islands for supplies, and though my practice among the seamen has been extensive, I have been called to prescribe for only two or three

cases of inflammation of the liver, and in no instance have I met with the disease in its acute form. The heat to which the sailors are subjected, during calms at sea, is often intense; and if the existence of hepatic disorders is owing mainly to the close sympathy between the biliary and respiratory organs, the etiology proposed by Dr. Johnson, I certainly ought to have met oftener with it. * * Two or three gentlemen of the mission, who had chronic diseases of the liver when they went to the Islands, have not only spent several years without any exacerbation, but one of them is quite relieved from the complaint." (Chapin.)

"*Worms* in the intestinal canal are not, so far as my observation has extended, of usual occurrence. The children of the mission, who numbered more than sixty, were entirely exempt, and no case of the existence of worms among the native population came to my knowledge. One individual, a native of this country, who had been for several years a resident of the Islands, was affected with ascarides, and this was the only case I met with." (Dr. Chapin.)

Diseases of the Eye are frequent. Blindness is not uncommon. "Ophthalmia, of the purulent form, abounds in every portion of the group, and opaque corneas and thickened coats of the eyes are very numerous. The old and the young are alike affected with this disease; very small children are occasionally met with nearly blind with its effects. I at one time attributed its prevalence to the effects of the clouds of sand, often raised and blown about with great violence by the trade-winds; but finding it equally common in those districts where frequent rains prevent the dust from ever rising, there appeared to be no other cause so active as the trade-winds, which come mingled with salt spray." (Dr. Chapin.)

Cutaneous Diseases are said to be numerous, though the names of varieties are not mentioned, except those of "*scabies*," and a disease called "*poupou*," spoken of by Com. Wilkes. "Though the Sandwich islanders are remarkably fond of the water, and are fastidiously particular in their prac-

tices of washing and bathing, they are, nevertheless, extremely filthy and squalid in many of their habits of life. With their beasts and fowls in the same habitation, and not unfrequently on the same mats with themselves, their often-repeated ablutions will be regarded as timely. The kapa, or native cloth, used by the inhabitants, is worn without cleansing, till, having become foul with vermin and dirt, and too ragged to serve longer the purposes of covering or protection, it is lain aside. Hence diseases, induced or exacerbated by such causes, have at those Islands a fruitful soil, and flourish luxuriantly. The *itch* is extremely prevalent, and often assumes a virulence unseen in this country. The pustules sometimes, becoming confluent, are converted into large and troublesome ulcers." (Dr. Chapin.) These details regarding their clothing apply rather to the past than the present—yet they are, no doubt, still too true.

From the Hon. Mr. Wyllie's "notes" I quote the following:—"In a valuable manuscript paper of Dr. Rooke's, to which I have had access, he adds *Puerperal Fever* as very common and very fatal. Excepting that disease, apoplexy, croup, and dropsy, the others are stated to be generally mild, yielding easily to proper care and medical treatment."

The *Therapeutic Constitution* of the Hawaiians is not, so far as I can learn, peculiar, save that their systems seem not as susceptible as ours to influences of a morbific or remedial character. Their life seems not of so high a grade as ours. Their nervous systems are not as fully developed, and are with greater difficulty impressed by external influences. It it this fact which, I think, accounts for their being able to exist, undermined as their constitution has been, and adhering to modes of living which would prove rapidly fatal to the same number of the most robust of the Anglo-Saxon race; for it will be remembered, that their lives of exposure are very different from those exposures connected with the incessant activity and vigilance incident to journeys and heroic exploits, which may ever be encountered with impunity.

This portion of my essay is meagre. It is with difficulty I have collected that which I give. How desirable that men of medical intelligence should investigate and report on this and the several other points of interest connected with the climate and diseases of Polynesia.

I will first notice such of the Materia Medica and remedial practices, originally employed by native Hawaiians, as I am informed of, and will then enumerate those other indigenous Materia Medica, not, so far as I am aware, included in the native Hawaiian Dispensary; and will thirdly notice such medicinal vegetables as have been introduced since the discovery of the Islands, enumerating both the unofficinal and officinal.

And *first*—To pass unnoticed the Materia Medica of a savage people, simply because employed by savages, is unreasonable and impolitic; for, have not all medicines been first employed empirically—has not our science been built up from empiricism—and have not the great body of our vegetable Materia Medica been first used by ignorant and even savage empirics? Might it not be possible, by a complete canvassing, to learn something even from Hawaiian empiricism?

The *Arum esculentium* is a plant very nearly allied to the arum maculatum and arum tryphillium in all its external habits and properties, and probably, like them, possesses a "property of stimulating the secretions, particularly those of the skin and lungs." (U. S. Dispensatory.) It is the principal article of diet among the Hawaiians. The heat of the oven dispels its peculiar acrid principle and renders it a very nutritious and valuable article of diet, had in great esteem by foreigners, but especially by the natives. The acridity is probably reduced by cultivation, but a very considerable portion of it is still retained. Says Dr. Chapin: —"It is, when raw, very styptic and acrid, and the skin of the root is used by the natives in the cure of dysenteries and intestinal hæmorrhages."

The *Cucurbita lagenaria*, or gourd, is used as a purgative. It is, in its medical properties, allied to several of the cucurbitacæ, particularly to the cucumis colocynthis. "The pulp of the root is used," says Dr. Chapin, "and in large doses it is terribly drastic. The inordinate doses given by the natives sometimes produce dysentery, rapidly fatal." Dr. Judd relates the case of a woman purged to death with this article by a native physician for an imagined disease. "About four feet of the green running vine of the bitter calabash, or gourd, thirty-two of the hollow stems which support the leaves, and about one ounce of the dry pulp, next the shell, of the dried gourd were pounded together on a board and the juice mixed with about three pints of water." "It is used by them successfully in dropsies. I once knew a native, with abdominal dropsy, cured by one of his own physicians with this article, after he had been treated unsuccessfully by foreign skill." (Dr. Chapin.)

A variety of *Ipomea* is mentioned by Dr. Chapin. "The roots are used by the natives as an emetico-cathartic. I tried it somewhat, and found it had efficacy; but the doses requisite were so large and the trouble of preparing it such, I abandoned it." I am utterly unable to give the specific title. It is questionable whether its medical powers have been fully ascertained.

The *Aleurites triloba*, or candle-nut, is one of the articles of the Hawaiian Dispensary. "The kernels of these are stuck, one over another, like beads, upon a fibre of cocoa-nut leaf, a foot long, and, containing a considerable proportion of inflammable oil, they give sufficient light for ordinary purposes, the flame communicating downward till the last piece is consumed. Sometimes five or six such strings, two yards in length, are wrapped together in a leaf of banana, and carried before the king, as flambeaux, when he travels by night." (Tyerman and Bennet's Journal.) Dr. Chapin remarks:—"I know it to be used as a cathartic, but never experimented with it myself." An oil extracted from this nut forms an article of export for painting—may it not have available medicinal properties?

The *Piper methysticum*, called "*ava*" by the Hawaiians, is one of the most important of their indigenous Materia Medica. From it they prepared a narcotic drink, esteemed throughout Polynesia. The bark of its stem is possessed of the peculiar properties of the plant, but it is the root which was principally used by them. "They prepared it for use by mastication. A person chews it thoroughly, and ejects it with the accumulated saliva into a dish, in which state it is drunk by the patient. Most of their medicines they prepare in the same manner." In continuation, Dr. Chapin says to the author:—"I supposed it might be serviceable as an anodyne: I gave it repeatedly in powder. It did not seem to possess narcotic properties, and after a number of trials with it I gave it up. The natives, as they said, used it to cure cutaneous diseases, by producing desquamation of the cuticle. They give it daily in such quantities as at length to accomplish the object. I think the article deserves further trial." Mr. Bingham informs me that "the juice is highly valued, and was much used both as a luxury and as a medicine, as alcohol still is in wiser countries. A singular effect of taking a course of ava was the cracking and coming off of the cuticle over the whole body of the patient, with which, it was maintained, the system parted with maladies." Mr. Jarvis says:—"Its effects were very pernicious, covering the body with a white scurf, * * * inflaming the eyes and causing premature decrepitude. It was also taken as a medicine, and was supposed to be an effectual remedy for corpulence." Mr. Ellis speaks of the "burning effect and unpleasant taste of the ava." A few years since, a gentleman, long a resident of the Islands, proposed exporting it to the United States, and there manufacturing of it some nostrum—which might, no doubt, have become as popular as Townsend's Sarsaparilla! Its medicinal properties are, perhaps, allied to those of the *Piper augustifolium*, or Matico, of which the U. S. Dispensatory says:—"Its most useful internal application is, probably, as an alterative stimulant to the diseased mucous membranes."

The Dispensatory refers to an article by Mr. Morson, on the *Ava*, in *The Pharm. Journal and Transactions*, Vol. 3, p. 472, which I have not been able to obtain.

The Vapor of Hot Water was, it seems, employed by the Hawaiians, and though a practice not peculiarly their own, the mode of administration, as related by Dr. Chapin, may amuse and instruct. "Prolapsus uteri they relieved by steaming over heated stringent herbs. Febrile diseases, rheumatisms, and many others, were treated by steaming. The patient was wrapped in green leaves, freshly picked, and laid on a bed of heated stones. If he writhed under the intensity of the heat he was held still by attendants. If he died, the doctor and all ran away!" How striking the similitude between the Hawaiian and the American quack, both in the mode of practice and in manner of escape!

But their characteristic mode of alleviating pain is the *Lomilomi*—a systematic kneading, and pressing, and squeezing, and rubbing, employed in all cases of fatigue or pain, where not intolerable. To appreciate fully the virtues of the practice, one must himself be operated on by a practical Hawaiian. It is, in many cases, most admirable. "People were especially trained to lomilomi; a kind of luxurious kneading or shampooing, and stretching, and cracking the joints, which seemed completely to renovate the system, when suffering either from a surfeit or fatigue. The fatter the chiefs, the more they required the operation." "The most delightful of the traveler's comforts is the lomilomi. It is something between a squeeze and a pinch, which none but a native knows how to perform; commencing gently, and increasing in violence as they proceed, every limb in the body is subjected to this treatment. It is, as a friend terms it, a physical regeneration. (Jarvis.)

A few articles of our Materia Medica, though not employed by the Hawaiian practitioner, are found indigenous upon the Islands, and should be mentioned. The number might, no doubt, be extended.

Lime (calx) is readily prepared by the calcination of coral.

Nitre (potassæ nitras), of which J. G. Sawkins remarks, it "is not found pure, so far as I can learn, on this group." (*Agricultural Report*, Vol. 1, No. 2.)

Sulphur, from about the crater of Kilanea.

Common Salt (sodii chloridum) is manufactured in considerable quantities from the ocean, and is also collected from the salt lake of *Alia-packai*. During the year ending June 30th, 1851, 5,332½ barrels of salt were exported. Mr. Sawkins remarks of the Island salt, that it is "rarely pure, on account of the sulphurous gases of the neighboring active volcanoes."

Glauber's Salt (sodæ sulphat.) is found at Kilanea, and has been occasionally used.

Sponges (spongia officinalis). They are, however, a very coarse, inferior article.

The Sorrel (rumex acetosa).

Arrow-root (tacca oceanica). From July 1st, 1850, to June 30th, 1851, inclusive, 16,780 pounds of prepared Arrow-root were exported. I extract the following from The United States Dispensatory:—"A variety of Arrow-root has been imported from the Sandwich Islands. It was supposed to be procured from the root of *Tacca pinnatifida*, which grows abundantly in Tahiti and other islands of the South Pacific; but Mr. Nuttall, during his visit to the Sandwich Islands, found that it was the product of another species of Tacco, which he describes under the name of Tacca oceanica. (*Am. Journal of Pharmacy*, ix., 305.) It is said that a similar product is obtained from Tacca pinnatifida, growing in the East India province of Arracan."

The Sugar Cane (saccharum) is by far the most important of the indigenous Materia Medica, in a commercial aspect. The manufactured *Sugar* which was exported, amounted in 1849 to 653,820 pounds, and in 1850 to 750,238 pounds. The exported *Molasses* (sacchari fæx) amounted in 1849 to 41,235 gallons, and in 1850 to 53,855 gallons.

A large number of the "Flora Medica" have been introduced since the discovery of the group. Quite a number of

them are thoroughly naturalized; and some are already of great importance among the exports, though in every such instance the article is not only a medicine, but also a food. Without question, the Sandwich Islands will yet produce for export many of the Materia Medica proper. From the paucity of my facts, I can do little more than give a mere list of these introductions, and even this will be defective.

I will first mention the *unofficinal* articles.

Coffee (coffea arabica). This was first permanently introduced by Lord Byron in 1828. In 1849, 28,231 pounds of coffee were exported, and in 1850, 208,428 pounds. (Cheever's *Sandwich Islands.*) It is of an excellent quality.

Indigo (indigofera). In many parts of the Islands it now grows wild. From experiments made by the writer many years since, the Sandwich Islands indigo may be pronounced a good variety—probably quite as good, in its medicinal and economical and manufacturing properties, as any in the markets of the world.

The Touch-me-Not (impatiens noli-me-tangere) grows luxuriantly.

Onions (capa). They are greatly relished by the natives as a condiment, and are raised by them in considerable quantities. During the year ending June 30, 1851, 3,759 barrels were exported.

The Irish Potatoe (solanum tuberosum). Of these there were exported, in 1849, 858 barrels, and in 1850, 51,957 barrels.

Indian Corn, or *Maize* (zea mays) grows well; is not extensively raised. During the year ending June 30, 1851, five barrels were exported.

Indian Rubber, or *Caoutchouc* (syphonia cahuchu, or S. elastica). A very useful tree, which it is to be hoped will be rapidly multiplied on the Islands.

Rice (oriza sativa). As yet it is only raised experimentally, but it may become an important production.

The Pumpkin (cucurbita pepo). *The Muskmelon* (cucumis melo). *The Cucumber* (cucumis sativus).

Of *officinal* plants, the following imperfect list will serve our purpose of exhibiting the admirable adaptation of the soil and climate to the production of many choice articles, and of indicating how independent of other countries, as to their Materia Medica, these Islands may become.

The Castor Oil (ricinus communis). This may be said to be effectually naturalized. In many places it grows, becoming a perennial. As yet no considerable use is made of it. There may, however, come a time when Castor Oil shall be manufactured there, not only for home consumption, but for export from the Islands—a rival even to "the cold-drawn East India oil."

Mustard (sinapis) grows wild over considerable tracts. I am not aware that it is at all used, even as a condiment, though, no doubt, possessing requisite strength. Mustard is even imported for the tables of foreign residents.

The Pomegranate (punica granatum) has been brought to maturity on the Sandwich Islands, and is, no doubt, still cultivated by those of horticultural tastes. The rinds of the fruit (malecorium), and the flowers (balaustines), may yet be valued among the rural inhabitants for their astringent and tonic properties; though, if it be true, as before stated, that verminous affections are rare, the famed properties of the bark of the root may not be called into requisition.

The Stramonium (datura stramonium), introduced many years since, now propagates itself, and was, about Honolulu, the nuisance of my boyish days. This powerful narcotic, so identical in its effects with belladonna, though by no means to be employed as a popular remedy, may yet be made valuable to the Island practitioner.

Several members of the genus *Citrus*—*The Orange* (c. aurantium), *The Citron* (c. medica), *The Lemon* (c. limonium), *The Lime* (c. acris)—which are, I believe, all introduced, form an important group. The orange was first planted on the Islands by Capt. Vancouver, in 1792. As a fruit, they have already became quite an article of export. In 1849, 10,000 were exported, and in 1850, 139,500. I know not

why the Sandwich Islands may not produce the much sought orange flower water (aurantii floris aqua), used both in the toilet chamber and the apothecary's shop; and if the flowers of the Seville or bitter orange (citrus vulgaris) be preferable, it can, no doubt, be added to the Island Flora. The oil, or neroli (aurantii oleum) will, no doubt, possess as fine a scent as that of France or Italy. Three hundred and four gallons of lime juice (limonus succus) were exported in the year ending June 30th, 1851.

Cotton (gossypium). This article, so useful in burns, grows well, and is of good quality. It has not become an article of export.

Wheat (triticum).

Oats (avena sativum). These two grains, officinal in the Pharmacopœia, and of such noted importance in other departments of civilized life, are every year becoming more important articles of culture for home consumption.

Coriander (coriandrum sativum). *Fennel* (feniculum vulgare). *Anise* (pimpinella anisum). *Horseradish* (cochlearia amoracia). *Cayenne Pepper* (capsicum). *Black Pepper* (piper nigrum). *Rhubarb* (rheum). *Lettuce* (lactuca sativa). *Sage* (salvia). *Carrots* (daucus carota). *The Broom* (cystisus scoparius). *Ginger* (zingiber). *Hops* (humulus lupulus). *Roses* (rosa galica). *Poppy* (papaver somnifera).

Aloes (aloe). I think I am correct in mentioning this, though as yet it is only cultivated for ornament.

The Tamarind (tamarindus Indica) has long been introduced, and is a very valuable tree for the tropic zone.

Tobacco (nicotiana tabaccum) has been long cultivated on the Islands, and promises to become a very important export.

Figs (ficus carica) are being more and more cultivated, and may become an important export.

The Grape (vitus virifera) grows well in some localities, and it is now a subject of active discussion and experiment, whether it may not be extensively cultivated. Should the anticipations of some be realized, the Hawaiian Islands are to become as noted for their wines as Portugal or Madeira.

Thus, to repeat Edmund Burke's witticism, the Sandwich Islands producers are aspiring to the rights of kings, viz.: to the "*jus de vinum.*" While the *Grapes* are cultivated for luxurious contributions to the table, and while the *Raisins* are dried for the home and foreign markets of future days, as medical men, we may "hope against hope," that *Hawaiian Wines*, with all their variety and excellence, shall be manufactured for the Materia Medica rather than for the Materia Alimentaria.