

Dr. Edward Arning
The First Microbiologist in Hawaii

O. A. Bushnell

The first bacteriologist to work in Hawaii, and certainly the most remarkable example of this usually inconspicuous species ever to be associated with these islands, was Dr. Edward Christian Arning. In 1883, encouraged by Walter Murray Gibson in his capacity as President of the Hawaiian Board of Health, Dr. Arning arrived in Honolulu to study leprosy—and thereby became involved in such a series of scientific adventures and personality conflicts that his successors ever since have been foredoomed to dullness.

Arning was born on June 9, 1855 in Manchester, England, the second son of a merchant who had migrated from Hamburg and found his fortune in Britain. Although Edward Arning for many years considered himself an Englishman and used English as his native tongue, he was essentially a German: he received most of his education in Germany, the interests and loyalties of his mature years were German, and—save for an occasional visit to his parents in Manchester and the interval in Hawaii—he spent most of his long life in the Vaterland.

Because family ties with Hamburg were strong, the lad was sent there at the age of 12 to attend the Gymnasium Johanneum. After being graduated from the Johanneum in 1874, he spent two years as a medical student at the University of Heidelberg, then went to the University of Strassburg to complete his training in medicine. From that institution he obtained his degree in 1879. He began his physician's career in Berlin, as a gynecologist, but, his interests having turned to dermatology and venereology, in 1881 he became a member of the famous Dermatological Institute in Breslau.¹

O. A. Bushnell is professor of microbiology at the University of Hawaii.

No. 1 in the *History of Science in Hawaii* series, "Hygiene and Sanitation among the Ancient Hawaiians," appeared in the *Hawaii Historical Review*, II, No. 5 (Oct., 1966); No. 2, "Hawaii's First Medical School," in the same periodical, II, No. 9 (Oct., 1967).

Dr. Bushnell's acknowledgments: I am grateful for the assistance given me by my colleagues in Hawaiian history at the Gregg M. Sinclair Library of the University of Hawaii, the Hawaiian Mission Children's Society Library, and the Archives of Hawaii. For schooling me in the sobriety expected of historians, I wish to thank Dr. A. Gavan Dawes.

There he met Dr. Albert Neisser, an energetic young man his own age, who had acquired an impressive knowledge of the new science of bacteriology. In 1879 Neisser had begun his notable contributions to microbiology by being the first to demonstrate in pus cells obtained from gonorrhoeic patients the organism which causes their disease.² Arning and Neisser immediately "entered into a strong friendship which bound them until Neisser's death" in 1916. Under Neisser's instruction, as Arning was proud to acknowledge, "I soon had the opportunity to work in the new field of bacteriology."¹

At Breslau, if not earlier in Berlin, Arning developed a fascination with leprosy. Neisser, it so happened, had studied in 1879 with Dr. Gerhard Armauer Hansen, Physician to the Leper Hospital in Bergen, Norway, the very man who first demonstrated the presence of "leprosy bacilli" in tissues taken from lepers. With specimens obtained from patients in Norway and other parts of Europe, and using techniques learned from Hansen or developed for himself at Breslau, Neisser taught Arning the latest methods for demonstrating leprosy organisms and the pathological manifestations of their presence. When Neisser was called to a new position at Leipzig in 1882, faithful Arning went with him as his First Assistant.

While he was still an associate of the Breslauer Hautklinik Arning conceived a plan of journeying to Hawaii in order to study leprosy there. It is not known why he chose Hawaii, of all places in the leprous world, or how he had managed to learn of it. He was not likely to be influenced by Father Damien's example (if, indeed, he had ever heard of the priest); and, as his later career was to prove, he certainly was not inspired to offer himself as physician to the lepers of Hawaii or of any other country. Nor was he the sort of Anglo-Saxon who suffers an inordinate passion for the life romantic among lusty, lovely Polynesians. The only kind of passion he displayed, at least while he lived in Hawaii, was an almost monomaniacal dedication to work—unless his feuding with Walter Murray Gibson can be elevated to the dignity of a passion.

More than likely his friend Neisser was the one who told Arning about Hawaii's need for a leprologist. A cryptic sentence in the collection of correspondence printed in 1886 by Arning's supporters in Honolulu implies that in 1881 Neisser had been approached about coming to Hawaii.³ That busy big-time operator, much in demand in Germany, would have had no moments to spare for a jaunt to the distant Hawaiian Islands. Suggesting to the admiring Arning that he take the job was just the kind of thing Neisser would do.

In any event, in 1883, soon after moving to Leipzig from Breslau, Arning received a grant from the Humboldt Institute of the Royal Prussian Academy of Sciences, commissioning him to make a study-tour to Hawaii for the joint purpose of investigating leprosy and acquiring an "ethnographic collection". In the negotiations for this stipend, Arning's sponsors were two of Germany's most prestigious scientists: Dr. Rudolf Virchow, the foremost pathologist of his time, and Dr. Emil du Bois-Reymond, an eminent physiologist.

The combination of medical and cultural interests which Arning professed, and which the Humboldt Institute endorsed, would be greeted with suspicion if not with horror in an application for a research grant submitted today. In

Arning's time such a diversity of talents was permitted in a European scientist, perhaps; but it can also be considered as evidence that already in youth Arning was showing the tastes and skills of a connoisseur in the arts which distinguished him in later years.

Somehow, during the waiting for a decision from the Institute, Arning managed to put Dr. William Hillebrand to work for his cause in Hawaii. In choosing Dr. Hillebrand, he gained the best possible intercessor with the Hawaiian government. During his residence in the islands, from 1851 to 1872, Hillebrand was one of Honolulu's most respected citizens. He was personal physician to Kamehameha IV, Queen Emma, and other members of the royal family; first Director of The Queen's Hospital; first Royal Commissioner for Immigration; and importer of many plants and animals new to the islands. (Some of his plants, like the *Bombax* tree, still grow in the grounds of The Queen's Hospital and on the site of his former home, now known as the Foster Gardens). And, most relevant of all, Dr. Hillebrand was the first physician to alert the Board of Health to the alarming increase in numbers of lepers among the people of Hawaii, thereby starting the series of events which led to An Act to Prevent the Spread of Leprosy, passed by the Legislature of 1865, and to the establishing of the Leper Settlement at Kalawao in 1866.

In 1882 Dr. Hillebrand, frail and ill, was living in semi-retirement at Montreux, Switzerland, preparing the manuscript for his classic *Flora of the Hawaiian Islands*. On December 16 he took up his pen for Arning's sake, and wrote a long letter to Walter Murray Gibson, Premier of the Kingdom of Hawaii, Minister of Foreign Affairs, President of the Board of Health, Commissioner of Crown Lands, and holder of sundry other positions in and out of King Kalakaua's government. The original of this letter has been lost, unfortunately: its introductory paragraphs might have told more of Hillebrand's relationship with Arning, and about the reasons which made Arning want to come to Hawaii. Nonetheless, extracts from the letter which were published by Gibson in 1886 disclose a great deal about Arning's intentions:

[His work] will not be confined to inoculation of animals, but will extend over all the possible bearings of the contagium. The germ will be propagated outside of the human body, cultivated in breeding stores of particular construction, in liquids of different chemical constitution. . . . For this purpose the soil of the leper graves will have to be examined; houses which have been inhabited with lepers, or in which the disease is known to have taken its commencement, will have to be searched for extra-corporeal breeding places. . . .

Probably you have read in the papers of the discovery by Dr. Koch in Berlin of the bacteria which cause tuberculosis of the lungs, consumption, well, he has demonstrated by exclusive experiments, not that the disease is inoculable—for that discovery had been made before him—but that the bacteria are the sole carriers of the disease, and that they are present only in the tubercular deposit, not in the blood. In no sputum of a tubercular lung are they wanting, and from the dried sputum they pass in the atmosphere of confined rooms, where they may . . . become propagators of the disease. . . .

Only men in possession of all the specific knowledge obtained thus far, experienced in the use of the microscope and practically trained to the different methods of experi-

mental research are competent to undertake it. Such a man offers himself to you, commissioned by one of the highest scientific bodies, from no motive of gain but prompted by the simple enthusiasm of science and philanthropy. I am sure that you will not grudge him the very small contribution which is needed; 1,500 to 2,000 dollars will cover the whole expense, I should think. . . .⁴

Gibson, whatever faults he may have shown as a politician and as a man, was sincerely interested in the welfare of native Hawaiians and, at least in 1883, was being a very energetic and imaginative President of the Board of Health (if also a rather lax enforcer of its ordinances about segregating lepers). His helpful response to Hillebrand, written on February 1, 1883, showed a quick comprehension of Arning's place in his own master-plan for a better and healthier Hawaii:

. . . It gives me great pleasure to be able to assure you at once that if Dr. Arning comes here for the purpose of studying the natural history of the contagium of leprosy, he will receive from the Board of Health every assistance they are in a position to give him in the way of premises and facilities for carrying on his investigations, together with a salary as a physician under the Board, during the time he is thus occupied, of say \$150.00 per month. For the purpose of giving him full opportunity for research, he may, at his choice, find a place on the medical staff either at the branch hospital at Kakaako or at the leper settlement.

An investigation by a competent person of a nature such as Dr. Arning desires to engage in, is a matter that I have long desired to see taken in hand, and the Board has been anxiously considering how so desirable a work could be carried out. Dr. Arning may therefore feel assured, that if he comes here for this purpose, he will receive the cordial and earnest cooperation of the Board.⁵

For a better and safer Hawaii, perhaps, but also—as some people were always quick to say about anything Gibson did—for the greater glory of Walter Murray Gibson. Hillebrand, who knew the yeasty Premier from personal experience, on April 29, 1883 wrote to prepare Arning for future exposure to that man of many promises:

. . . In Honolulu your arrival is looked upon as a settled fact, judging from a leading article in the official newspaper, which is evidently penned by Mr. Gibson himself, as it brings [in] points which are taken from a letter written to him by me, although somewhat misunderstood and distorted. I have certainly given no cause for such a misconception, but it appears that the Minister wants it to be looked upon as his personal merit to have secured the services of a scientist for such an investigation.⁶

Heartened by Gibson's cordial reply (and, no doubt, by Hillebrand's counsel at closer range), Dr. Arning set forth on his great adventure in the summer of 1883. He went first to Hamburg, to see relatives there and to call upon his very patient fiancée, Fräulein Helene Blohm. Then he visited his parents in Manchester. On August 28, from the paternal home, he sent a note to Gibson, "to convey my best thanks for the manner in which you propose to promote my work and the material aid with which the Board of Health has promised to assist me."⁷

By October 11 he had progressed as far as Niagara Falls. More the typical tourist than might be expected, he wrote again to Gibson: "Having been detained in Europe for above a week by an accident to our steamer, I only arrived at New York four days ago and am even now on my way to San

Francisco. Not wishing to rush through the States and requiring several days at S. Francisco to provide myself with necessary apparatus and appliances," he soberly notified his employer that he would be a trifle late in reporting to work.⁸

Arning reached Honolulu aboard the steamer *Mariposa* on Thursday, November 8. For that arrival Steamer Day was more exciting than usual. Also aboard the *Mariposa* were seven Franciscan nuns, whom the tireless Gibson had persuaded Honolulu's Catholic bishop to beseech from their mother-chapter in Syracuse, N.Y., as nurses for "the sick poor of these islands."⁹ Greeted by representatives of the Catholic clergy and laity, and by Mrs. George Beckley and other ladies-in-waiting to Queen Kapiolani, the seven sisters were "conveyed in several of His Majesty's carriages" to the Cathedral of Our Lady of Peace on Fort Street, where, after they were "welcomed by the Bishop of Olba, a *Te Deum* was sung."⁹ No one thought to mention Dr. Arning, or whether he was met at the wharf. Like most newcomers to Honolulu, he registered at the Hawaiian Hotel.¹⁰

But unlike most *malihini*, he wasted no time on Honolulu's scenic attractions or social amenities. A news item in the *Pacific Commercial Advertiser* for November 12, sounding suspiciously like a press-release from Gibson (who, not incidentally, was the paper's owner and publisher), gave second billing to the doctor: "His Excellency Mr. Gibson visited the Branch Leper Hospital on Friday last accompanied by Dr. Arning and initiated the arrangements for that gentleman's studies in the dermatology of leprous patients and the question of its contagiousness." Preoccupied as they were with other momentous affairs—such as preparations for King Kalakaua's forty-seventh birthday on November 16 (Walter Murray Gibson, naturally, was Chairman of the Committee), descriptions of the latest contingent of exotic Portuguese immigrants marching to the music of guitars and mandolins from the Quarantine Station to the Catholic Cathedral and back again, complaints about "furious riding," and protests against "the smoky haze which lies over our fair city on windless days"—Gibson's reporters could find nothing newsworthy in the expert from afar.

A photograph of Arning with his fiancée, taken in Hamburg at the start of his tour,¹¹ depicts a short, slight young man, dressed in expensive and soberest fashion, unwrinkled, stiff, and utterly indifferent to the beautiful young woman at his side. His hair is brown, as are his eyes, but the heroic mustache is blonde, matching the fair Nordic skin. This mustache seems to be a bit extravagant, even for that day; but it does give a masculine effect to the long, narrow head, the long, thin nose, the compressed lips unwilling to smile. The prim countenance is made to look all the more severe by the black rimmed pince-nez through which he appraises the camera and, one knows, the world. Even the long black ribbon looping down from the pince-nez to its button on his vest is *gänzlich korrekt*. The conclusion is total, unmistakable: he is neat, precise, systematic, formal, self-centered, unyielding, humorless. He is, in sum, a perfect prig. Gibson might well have winced at sight of him.

The physician behind the pince-nez would have seen in Gibson a tall, lean, rumpled old man, would have needed only an instant to guess that the gaunt-

ness, the hectic flush, marked him as a victim of the consumption. A cloud of white hair on his head, a graying beard upon his thin face, gave him the look of a prophet, slightly mad, definitely theatrical. And like a prophet he stalked about, while torrents of words issued from the generous mouth, ideas, plans, concepts, and questions tumbled all over each other in the man's insatiable need to inform and to be informed. Arning might well have recoiled at sight and sound of him.

Two more different men, in person and temperament, are difficult to imagine. They were fated not to get along.

Nevertheless, they made a brave beginning. Arning went to work at once, and maintained that intensity of application during the 26 months of his association with the Board of Health. As ingenious as he was tireless, he did a prodigious amount of research under extremely difficult conditions and in literally appalling circumstances.

Gibson, conceding the scientist's obvious competence, was just as quick to prove that he, too, was a man of deeds. During the first week after Arning's arrival Gibson instructed Fred. H. Hayselden, Secretary of the Board of Health (who was also his son-in-law), to make official the assurances he had written to Dr. Hillebrand on February 1. Arning's prompt reply acknowledged Hayselden's letter of November 19 "appointing me a Government Resident Physician with a salary of \$150 a month during my stay in the Kingdom for the purpose of carrying on an investigation in the pathology &ct [sic] of leprosy, and promising to defray the expenses of my passage back to Germany on my return."¹² Position and salary were part of the bargain Gibson thought he had made; and, as he was to claim later, he also thought that, by accepting them, Arning accepted, legally and ethically, a position as a member of the Board of Health's staff of government physicians. On the other hand, the generosity with which His Excellency committed the Board of Health to pay the doctor's passage to Germany was an act of pure Gibsonian lavishness. Strangely enough, this was the only part of the written arrangement which Arning chose to regard as binding.

During his service with the Board of Health, Dr. Arning wrote two long reports and a number of shorter ones for Gibson's notice.

The first of these, a seventeen-page manuscript submitted on April 10, 1884, was a progress report. Written when everything was still going well, it began by presenting Arning's observations and opinions upon a variety of subjects. Leprosy among the native Hawaiians, he said, appeared to have become less malignant than Hillebrand's recollections had led him to expect; the hypothesis that leprosy was a late stage of syphilis (as many physicians still believed and loudly expounded) "seems to me to be extraordinary and self-condemning;" syphilis itself was "not nearly so prevalent here as has been generally stated." The greater portion of the report was devoted to an account of the experiments he had started "in the beginning of December."

With his microscope he had been able to demonstrate in specimens taken from Hawaiian lepers the presence of Hansen's bacilli and of the same evidences

of pathology that he had found in leprous tissues from Norway, Spain, Syria, and Surinam. The necessary corollary was also true: Hansen's bacilli "cannot be found in any other disease." Moreover, by employing the techniques Albert Neisser had taught him, "in three cases of consumption occurring amongst natives, I have found Koch's bacillus tuberculosis,¹³ and in gonorrhoea and pneumonia the same germs that have been proved to cause these diseases in Europe. Nor have I failed in detecting in various skin diseases the itch, the white kane spot,¹⁴ and the puupuu,¹⁵ which are so prevalent amongst the natives, the same closely allied animal and vegetable parasites which are known to produce corresponding diseases in other countries . . ."

These statements show that Arning was the first physician in Hawaii's history to use techniques of histopathology and microbiology in the laboratory diagnosis of infectious diseases.

"My time during the next six months," he continued, "will be chiefly devoted to cultivation experiments—i.e., to try and grow the *Bacillus leprae* on specially prepared substances outside of the human body. This work is of the most tedious and delicate nature, and always associated with many discouraging failures," he warned his critical reader, "but nevertheless, it has to be undertaken, forming an essential part of the modern methods of investigating disease."

He finished with some thoughts upon treatment, both by surgical intervention and with medicines: "The recent experiments concerning the germ nature [of leprosy] may be the means of showing us the path of rational treatment . . . we must not expect to find an arcanum, an oil or extract, with very nearly supernatural qualities . . . but must act systematically on a rational basis." He had even used electricity, generated by a Galvanic battery, to treat some of the lepers with encouraging effect.

It was a fine report, to which no one then or now could take exception. Honest, modest, and so perceptive as to be prophetic, it was the product of a systematic and rational mind. It was just what might be expected of the new kind of scientist the laboratories of Europe were creating, under the influence of great teachers and thinkers like Pasteur and Koch and Virchow. Never before in Hawaii had such words been used, because never before had such a modern medical intellect come among the physicians of Hawaii. By the standards of their day, a few of those were good doctors; a few were quacks and derelicts, flotsam and jetsam from the seven seas and the six continents; most of them were contented mediocrities. Whether good or bad, few of them would have understood much of Arning's vocabulary or of his reasoning. Yet Gibson, who was not a medical man, was the one for whom Arning wrote so rationally. He read the report carefully, understood Arning's goals if not his methodology, and, satisfied for the moment, gave it to Hayselden to file away.

This report marks a high point in Hawaii's medical history. Not only did it introduce the language of modern science into the mixture of primitive superstition and medieval empiricism which was the medium of expression

among physicians who were trained in older schools. It was also a testimony to the ability of the man who was both the first and the best of the medical bacteriologists to be employed by the government in Hawaii until World War II was ended. Not until Dr. Max Levine came in 1947 did the Board of Health gain another bacteriologist of Dr. Arning's quality.

Arning brought his instruments, microscope, staining reagents and other chemicals, a modicum of glassware—the basic items in a pathologist's laboratory of those days. Because Dr. Hillebrand in Montreux would have told him how little he could find in Honolulu, Arning must have transported those things all the way from Germany or purchased them in San Francisco before he boarded the *Mariposa*. Even then he would have needed many other pieces of equipment in order to keep his laboratory going. What he could not buy with Board of Health funds pried from grudging Hayselden, he bought with his own money. What he could not find in Honolulu's general stores, he ordered from San Francisco. What he did not purchase ready-made, he designed and commissioned artisans in Honolulu to make. Cages for his rabbits, for example, were built by P. Nott, one of the carpenters at George Lucas's planing mill on Fort Street.¹⁶

He hired a youth to assist him in the more menial chores, paying for this help with his own money—and drew a reprimand from Hayselden, who decreed that “the Sisters are to serve no meals to the young man in your service.”¹⁷

With great effort and innumerable frustrations, he contrived a laboratory of sorts in a hut at one end of the Branch Leper Hospital at Kakaako. The hospital itself was a horror: on five acres of land at “Fisherman's Point, on the shore line inside the reef,” where not many years before Hawaiians had made crude salt from sea water, perched “about a dozen separate cottages, hospital, school, cook-house, laundry, and other conveniences; also the Convent of St. Anthony of the Franciscan Order, occupied by a Mother Superior and six Sisters of Charity . . . who have the Branch Hospital in charge.” When the Hospital was opened on December 12, 1881, the area had been “laid off in walks and ornamental grounds, flowers and shade trees [were] planted [and] a good carriage drive to it along the shore line was also made.”¹⁸

Unhappily, as Dr. G. L. Fitch, the Hospital's superintendent soon declared, “the site is wretchedly chosen, and should be abandoned.” In spells of *kona* weather, like “the great southerly gale of December [1883], the tide backed into the yard to a depth of nearly three feet, there not being a dry spot in the enclosure.”¹⁹

Few flowers or shade trees or well-laid walks survived such visits by the sea. Usually, in that incredible setting of mud and misery, about a hundred patients were being detained for observation until the Government Physicians could decide whether or not they were lepers. The only relief, for doctors as for patients, would have been the example of Mother Marianne and her

Sisters in charity, ministering to the sick poor who were held captive behind the high fence which separated them forever from the world of the well.

There Arning managed to keep as diverse a collection of experimental animals as he could assemble in Hawaii: rabbits, guinea-pigs, rats, hogs, pigeons, "at ages ranging from a few days old to grown up beasts," and a lone monkey. "They were inoculated in and under the skin, in the cavity of the abdomen, under the conjunctiva of the eye, in the anterior chamber of the eye, and in the ulnar nerve, mostly with small pieces of leprous tubercle excised under antiseptic precautions."²⁰

The media he made, his "artificial soils" as he called them,¹⁸ would be awesome even today, in the modern laboratory with its shelvesful of dehydrated media which can be prepared for use almost as easily as is a potful of instant coffee:

- "1. Koch's meat-petone gelatines of varying strengths
2. Gelatines made of seaweed and meat
3. Gelatines made of seaweed and fish
4. Bouillons of meat and fish
5. Sterilized and solidified serum of blood taken direct from the carotid artery of bullocks and sheep
6. Vegetables, solid and in decoctions
7. Poi."

These media were sterilized with steam or dry heat, generated by kerosene he requisitioned from the Board of Health—or borrowed from the nuns when his meager supply was not replenished soon enough.²¹

And with the unsteady flame of a kerosene burner he tried to keep at constant temperature the cultures he prepared by implanting "with the leprous germ" those different "artificial soils" he and his assistant made from the natural ingredients with so much labor. After all this, we can only agree with him (and marvel at his restraint) when, in his last report to Gibson, he complained: "No one who has not tried himself at this particular kind of modern research is able to judge of its many disappointments, its dependency from [sic] apparently insignificant particulars, and the difficulties which crowd upon you when you are working outside of the accustomed laboratory with its always handy intelligent help and never-failing supply of requisites."²⁰

The specimens he examined, both microscopically and culturally, for the presence of leprosy bacilli came not only from the tissues of lepers, but from every conceivable source: the pus, scabs, blood, spittle, sputum, urine, feces, and smegma of lepers, the scurf of their skin, the rotting remnants of their corpses, the very dust of their graves, gave him material for study. So did the foods they ate, the water they drank, the houses they lived in, the clothes they wore, the air they breathed, even the mosquitoes, lice, bed-bugs, and other vermin which bit them, the flies, the roaches, the animals great and small which lived with them. He thought of everything, peered into every-

thing, even the family poi bowl—and he found Hansen's bacilli (or what he thought were Hansen's bacilli) almost everywhere in the lepers' environment. But never could he succeed in growing the damnable things in any medium at all. . . .

It is true, of course, that all this drudgery was a necessary part of a bacteriologist's life in those days, as it may be even now whenever one has to work in the field, "outside of the accustomed laboratory." In this respect, Arning was just another of the many investigators who were attempting to discover the causative agents of diseases during that "Golden Age" of microbiology. And, like them, he might well remain all but forgotten now, after the rush of developments since their work was finished, if he had not become involved in two extraordinary experiences while he was enduring the tribulations of field-work in Hawaii.

The first of these was the inoculation of Keanu, a Hawaiian murderer who was condemned to death for his crime. Both before and since Arning's time, in other parts of the world, convicts and other human volunteers have been used in experiments to prove the contagiousness of leprosy and of other diseases, so Arning's use of Keanu was not extraordinary in itself. As a matter of record, Keanu was not the first Hawaiian convict to be considered as an "experimental animal" in studies on leprosy: in 1883 Dr. G. L. Fitch proposed to the Board of Health that a convicted murderer named Mendosa "be (he being willing) inoculated with pus from a Leper, and if at the end of a stated period it was found that the Disease Leprosy has not been communicated to him, that he be pardoned his crime and released from prison."²² Because the proposal seems to have been opposed by the Attorney-General of the Kingdom, Fitch did not perform the experiment upon Mendosa.

Keanu, then, became the man of forfeit. And, because the consequences of Keanu's inoculation were unusual, to say the least, both he and Arning have gained a place in the history of medicine.

Arning explained his reasons for this experiment with Keanu:

. . . As every seed requires its peculiar conditions of soil, atmosphere, etc., to allow it to strike and . . . to grow up to be itself a seed-bearing plant, so does the leprous germ require a certain disposition of the human soil to strike and thrive. What this peculiar disposition may be, we are at present unable to define. It is evidently a disposition which may co-exist with apparent good health, as many examples of strong robust men, developing leprosy, show us. This disposition may possibly be transmitted by heredity. I desire not to be misunderstood on this particular point. I do not believe that leprosy itself is in any case congenital; but I do believe that a certain weakness to resist its attacks may be transmitted."²³

Keanu, a great hulking brute of a man, apparently neither very intelligent nor attractive, committed his crime of passion at Kohala in February, 1884; was tried for it in Honolulu; and, on August 2, 1884, was condemned to be hanged.²⁴ The "Kohala Murder Case," as local newspapers referred to it, and its conclusion could not have escaped Arning's notice.

With his usual efficiency, he applied to

. . . His Majesty's Privy Council, to be allowed to perform some inoculation-experiments on . . . Keanu. The application I made resulted in the sentence of

death . . . being commuted to penal servitude for life. With the prisoner's written permission, I commenced operations on the last day of September 1884, after having previously made a most searching inquiry as to any leprous taint in his family, and a close examination of his own body. This examination satisfied me that, as far as I am able to judge, no trace of the disease could be found in him at the time. A further step was to insure that the prisoner would not be employed at work outside the prison walls. . . .

I inoculated Keanu on the 30th day of September, 1884, and, for the four weeks following, I saw him daily, and after that once a week for several months, a microscopic examination of the inoculation spot being made every time. After that period the convict [was] examined by me regularly, once or twice a month. The microscope revealed the presence of the *bacillus leprae* in large numbers until the middle of March, 1885. They have since gradually diminished in number, but a recent excision of a small part of the scar shows them present even yet, i.e., nearly 14 months after the inoculation.

At the same time there is nothing in the general appearance of the convict which would denote any development of leprosy. . . .²⁵

And here, for the moment, let us leave the testing of Keanu.

Dr. Arning's second important experience, in the long view of hagiography, if not in his own opinion, was the part he played in establishing the diagnosis of Father Damien's leprosy.

Dr. Arthur Mouritz, physician to the island of Molokai and to the Leper Settlement from 1884 to 1888, who knew Father Damien, and who wrote two rambling "histories" of leprosy in Hawaii and in other parts of the world, was unusually succinct in his account of this event:

. . . In January, 1885 Damien visited Honolulu . . . [and accidentally] scalded his left foot. Father Leonore, the provincial of the mission, phoned for Dr. George Trouseau, whose examination of the priest's foot and leg proved they were devoid of feeling and probably caused by infection with leprosy. He immediately phoned for Dr. Arning, who using a powerful current of electricity passing through a platinum needle and pushed deeply into the flesh of the foot and leg of the priest, causing him no pain. This discovery indicated that the peroneal nerve and its branches were dead due to leprosy. Father Damien refused treatment by Dr. Arning at the Kakaako Hospital, where Bishop Herman had made arrangements.²⁶

Arning did not mention the occasion in his reports or letters. To him, surrounded by scores of lepers in all stages of the disease, diagnosing Father Damien's affliction was just another incident in the life of a harried physician.

Besides, what man in that fetid camp at Kakaako could indulge himself in the weaknesses of sentiment? Hard of heart a man had to be, strong of stomach, almost unseeing, unbreathing, unhearing, if he wanted to keep his sanity and get any work done.

There, at Kakaako, Arning labored for most of those 26 months, with only a rare trip to the other islands or to the Leper Settlement at Kalawao as escape and diversion. He performed biopsies on living patients, autopsies on the dead; inoculated his assorted animals, sacrificed them and autopsied them; examined hundreds of microscope preparations, made thousands of attempts to grow Hansen's diabolical bacilli on artificial media; interviewed patients, treated them, watched them. In short, he did everything that a busy Government Physician was called upon to do, in addition to the innumerable tasks he wanted to perform in order to carry on his research.

A most remarkable man he was, tireless in body and indestructible in spirit.

But Walter Murray Gibson, too, was a remarkable man—perhaps the most complex personality, the most glittering intellect, ever to appear in Hawaii's history. The full story of this fantastic, fascinating force has not been told, and cannot be told here. This little episode with Arning was only a minor event in Gibson's adventurous career, yet it shows in miniature the character of that "Lucifer to the Hawaiians."

If Arning had worked for some other man, in all likelihood the tale of his sojourn in Hawaii would have been as sober and as rational as was his first report. Because he had the misfortune—or perhaps the good fortune—to work for Gibson, his experiences in Hawaii became the material for a comedy of conflict which must have surprised everyone except Gibson.

The trouble, of course, lay in their massive egos. Although Freud had not yet given the world the familiarity with the concept it has today, the world was well acquainted with models of their type—and even had a word for them.

Inevitably, contention and controversy developed between those two egregious egotists.

Gibson, the very practical politician, eager to impress his constituents at home and the nations abroad, was impatient for results. Having no understanding of the scientific method, and less sympathy for a man who practiced it, Gibson prodded his "Special Medical Representative" for discoveries in the cause and cure of leprosy which would gain for Hawaii—and for Gibson—the admiration of the world. He did not deign to conceal this motive: in February 1885, as Minister of Foreign Affairs, he had sent to

. . . His Majesty's accredited Representatives abroad a series of questions somewhat similar to those propounded by the Royal College of Physicians in England, in 1882, to medical representatives of Foreign Powers in whose borders leprosy exists . . . To these questions His Majesty's Government has received interesting and valuable replies in many instances. It is proposed to print these reports in conjunction with your report and other material of value in the study of leprosy. His Majesty's Government deeply appreciating the good will shown by other nations in collecting and forwarding . . . the information required, is naturally anxious to reciprocate . . . by furnishing to such Foreign Powers all the information the Board of Health can obtain in regard to leprosy as it exists on the Hawaiian Islands. . .²⁷

Arning, meticulous, maddeningly methodical, as only a scientist trained in Germany could be, was not one to be hurried. He would have welcomed wondrous earth-shaking discoveries just as much as Gibson was wanting them, because the fame he would acquire with such contributions was as alluring to him as it was to all other bacteriologists in those exciting days, when instant immortality could be won with the proof of a postulate. Even so, he had a tender reputation to guard. He would not compromise a determination to be as systematic, as scientific, in his conclusions as he was in his methods.

With an irresistible force charging down upon an immovable object, trouble was bound to develop.

Unknown to them, the relationship between the two protagonists in this drama was complicated by the superb intransigence of their common enemy, the causative agent of leprosy. More stubborn than either of the men, it was no more willing to yield its secrets to them than it has been to dozens of investigators before and since their time. Even today, despite tremendous advances in the techniques and concepts of microbiology and pathology which have been made since 1885, we still cannot answer with certainty the questions which Arning asked of leprosy. Whatever it is, "this enigmatic malady," like a sarcophagic sphinx, still keeps its secrets.

Not knowing the mettle of his microbial adversary, Arning tried mightily to conquer it. And for most of the second year of his striving, his very human antagonist circled about, waiting for those magical discoveries.

At last Gibson was unwilling to wait any longer. To do him justice, the deadline for delivering copy to the printer was approaching, and Gibson wanted to have his grandiose two-volume *Report* to the Legislative Assembly of 1886 printed and distributed to the legislators before the session was convened in April. Furthermore, for Gibson Arning's report was going to be something that the President of the Board of Health could present with pride as Hawaii's contribution to the world's need for knowledge "of value" about leprosy.

Deliberately he provoked the denouement to this comedy in which he played pushing Mephisto to Arning's fretting Faust.

Sometime in October, 1885, using Hayselden as go-between, Gibson "requested" Arning to submit a complete report on his work and his conclusions. Similar requests were sent, some rather belatedly, to other physicians in the islands who might have information to contribute on the subject of leprosy.²⁸ The original communication to Arning has been lost, but its meaning can be judged from this marathon sentence in a letter Hayselden wrote on January 30, 1886, in extenuation of his father-in-law's insistence:

. . . His Excellency . . . after the lapse of so much greater time than was originally anticipated, and the very liberal expenditure of public monies ["an aggregate of over four thousand three hundred dollars (\$4,300)"], desired to obtain from Dr. Arning such a report of the progress of his labors as would give to the incoming Legislature some strong evidences of justification for the expenditure, be an indication for future requirements and appropriations, and an aid to the consideration of the ultimate value of such investigations to the Hawaiian people, and the world at large, and the outlining of the course to be pursued in connection with them, by cooperation, development, or otherwise.²⁹

Challenged thus untimely to account for his squandering of "public monies" and ministerial indulgence, Arning chose to use the weapon in which Gibson had given him much schooling.

The second of his big reports, completed on November 14, 1885, is an immense and verbose thing, 47 pages long in manuscript, written on lined composition paper in his own clear hand.³⁰ Upon superficial inspection it appears to be a proper and conscientious report, heavy with technical terms and earnest plodding descriptions of the experiments he had performed. But then, on closer reading, the deficiencies in it become evident, and—artfully

placed among the verbiage—the poisoned barbs he wanted to lodge in Walter Murray Gibson's thick skin.

The report begins dully enough, in the best manner of bureaucracies:

At the request of the President of the Board, I furnish you with a report as to the course of investigation, carried on by me with regard to Leprosy.

The general headings, under which the work is being conducted, may be classified thus:

- I. — Clinical.
- II. — Morbid-Anatomical.
- III. — Special Bacterial Research.
- IV. — Therapeutic.
- V. — Hygienic.

All these different classes of work have had an even amount of attention bestowed on them, which I will try to outline in the following, without of course going into details, which have found, and will find, their place in medical publications.

There's the first barb. Now follows a second, with a generous dose of venom:

I.—The *clinical work* embraces: Inquiry into the general historical features of the disease, and into the history of the disease in the individual. I have here encountered great difficulties, and am afraid have wasted time and patience in trying to derive reliable information from the Hawaiians. Lack of observation of their personal health and wilful deceit are so mingled with truth in their statements, that I defy anybody to collect reliable statistics . . . on which it might be possible to base proofs for hereditary or congenital transmission of Leprosy on these Islands . . .

From there on he mixed sober, dead-pan narration (in laborious detail) of the obvious aspects of things he had done with tantalizing glimpses of what he proposed to do in the future; homilies of advice on how the Board of Health and the Kingdom should manage the problems arising from leprosy with sarcastic asides about how neither has given him much help in his work and with strictures about his not being “in the habit of drawing hasty conclusions, especially from negative evidence.” All this might possibly be construed as the ruminations of an excessively cautious man, if he had not tipped his hand just often enough to show the boss that he was not that stupid. And, very neatly, throughout the rambling prose, he sowed hints that, really now, he wasn't telling all or yielding at all, as he slid past “details which have found, or will find, their place in medical publications.”

Revealing nothing not already known, he described the testing of Keanu (in the passages quoted previously). And then he says, stiffly, if correctly, “I do not consider my experiment with Keanu concluded, or mature for scientific publication.”

He ended the slipperly opus with a rousing rhetorical exhortation in a style which surely Gibson must have recognized as a parody of his own:

Let me close these observations and suggestions relative to the hygienic side of the question with the following general appeal. Increasing familiarity with a signal danger lessens our fear of it, but not the danger. This applies most pointedly to our relations with leprosy. . . . It will be a good thing to sound a warning note from time to time, so that carelessness on the part of the population may not be the outcome of assurances of safety. Examples like those of Father Damien, who has now himself become a leper, and as such a veritable martyr to his cause, and of other worthy and pure members of

the community whose names I am not authorized to mention, should teach us a lesson, and cause us all to work harmoniously and united for the one good end, to confine the dreaded leprosy to its closest limits, and to help and support the poor afflicted ones with the best of our will and skill.

If it is thoroughly unsatisfactory as a report, it is also the retort of a man completely in possession of his temper as well as of his facts, the work of a free man who is completely unimpressed by Gibson's rank or temperament. It is rebellious, of course, the calculated manifesto of an individual who owes allegiance to no one but himself.

And here we find, at last, either the great flaw or the great strength in the man. Without knowing more about him than can be inferred from official letters, slanted reports, and a eulogy written long after he was dead, it is impossible to conclude whether he was thoroughly selfish or was fiercely protecting his freedom of thought and action.

The respect and esteem he received during his long life in Germany after his study-tour in Hawaii would support the claim that he was an honorable man.

And yet—while he was in Hawaii, working under something like a contract with the Board of Health, therefore legally and morally bound to share his knowledge with the Board, he acted as though the Board did not exist except as an obstacle and a threat to him. He behaved as though Dr. Arning was the most important man in the Kingdom, above the claim of law or loyalty. Most certainly he did not fulfill old Dr. Hillebrand's assurance to Gibson that he was unprompted by "motives of gain."

In this respect he resembled very closely his great and good friend Albert Neisser, who recognized no loyalty to Dr. Hansen, his teacher, and who—to the scandal of Europe's scientists and the blackening of Neisser's name—hastened to publish his observations upon leprosy specimens made after his return to Breslau from Bergen before Hansen could publish the conclusions he had reached from his pioneer's studies upon Norway's lepers.³¹ Whoring after fame, rushing into print, "scoring a scoop,"—alas! some scientists are too human.

So who can cast stones at Arning?—He must have felt that he had reasons aplenty to consign Gibson and the Board of Health to eternal damnation. Perhaps if he had been older and wiser he would have behaved differently. Even so, it must be cause for regret that a man so able could not have been just enough better to be a good man as well. As he depicts himself in this report, he may be conceded respect for his determination to remain a free agent, but he cannot be admired who, until now, has seemed to be an admirable man.

Ironically, it is the aggressive, flamboyant Gibson who emerged the better from this contest: although he had many faults, selfishness was not one of them. He gave, of his self, his money, the wealth of the Kingdom, to help Hawaii's people. And, with the same generosity—touched no doubt with a bit of vanity—he wanted to give the results of Arning's work to the people of the world.

Gibson read every word of Arning's sassy return to his expectations, underlining with a lead pencil those sentences which did not satisfy him, marking in the margins of the manuscript whole paragraphs which exasperated him. Son-in-law Hayselden, as Secretary of the Board of Health, was summoned, was instructed, was dismissed to compose the rejoinder which told the brash young doctor to deliver a better report.

Hayselden's letter, dated November 30, 1885, minces a lot of words, but manages to convey the idea:

. . . It is reasonably considered that after the two years you have spent on these islands in the services of the Board of Health with liberal endowment, combined with your high recommendations to the Board as an honorable scientist and close and faithful student, and the facilities and opportunities it has placed at your disposal for experiment and observation, you have been enabled to acquire knowledge and information in regard to leprosy, of great value and importance to the Health Authorities of the Kingdom, and to all interested in the study of the disease abroad; creditable to this State and honorable to your talent and your position as the Government's Special Medical Representative.

. . . in the opinion of His Excellency [the report] is incomplete and inconclusive, and not such a one as might be anticipated after two years of special labor, with considerable outlay of public funds.³²

Hayselden concluded the reprimand by identifying those sections of the report which displeased the President of the Board: the notes and data "retained or intended for future publications;" the schedule "referred to, but not revealed," which would "serve as a guide for examination of doubtful cases;" the "photographs and casts of cases selected at Kakaako and Molokai;" the incompleteness of notes upon methods of treatment; and several lesser instances.

To this not unreasonable request, Arning replied on December 15. Disdaining Hayselden, he went straight to the top man:

. . . after due consideration, and after having submitted my report to some of my medical friends, viz., Drs. Trousseau, McKibbin and Brodie,³³ I cannot modify it or make a more extensive one. My friends and myself are of opinion that, as information for a lay Board of Health, it is as complete and conclusive as necessary.

It is far from my desire to have, for the present, a full scientific report published, as my investigations are not nearly completed, and will probably take many more years to allow me to come to positive conclusions.³⁴

Had he ended his rebuttal there Arning might have stood on safe ground, both legally and ethically. But he pushed on, impelled by self-importance, sorely inflamed by a sense of grievance, and in doing so revealed a mentality—and an opinion of his relationship with his employer—which are nothing less than astonishing:

. . . Footing on the preliminary correspondence between Your Excellency and Dr. Hillebrand, and our own conversation after my arrival, I could not look upon the moderate salary³⁵ allowed me by the Board otherwise than as an assistance and encouragement to purely scientific work; but never for a moment understood that either my work or notes, or specimens, ect., [sic], could be claimed by the Board for its own purposes. The above were mostly obtained by my private expense, and for my private use; and, therefore, I must decline to furnish duplicates, or put at the disposal of the

Board, my private notes of cases and post-mortems, these being collected for future scientific information and publication.

It is unnecessary to say, that in these latter due credit will be given to the Hawaiian Government for all assistance rendered to me.

I have, however, keenly felt that this assistance was not such as I was led to expect from the above-mentioned correspondence, especially as far as moral support was concerned.

I further beg to state that I did not visit the Lepers on the other islands with the intention of gathering information for the Board of their whereabouts, but for my own private knowledge, to be able to judge of the causes of the continued spread of leprosy, in spite of segregation. The finding and segregating of these cases is a duty devolving on the public and local Government physicians. . . .³⁴

If he wrote as he really believed, that last paragraph alone would be enough to condemn Arning as the worst kind of scientist: the irresponsible, the *inhumane*, investigator who collects facts but is indifferent to the manner in which they may be used, the designer of machines who cares only that they might work, but does not worry about whether they will be used to help other men or to destroy them.

Fortunately, as he himself had already proved and would prove again, Arning was not the monster he pretended to be. That ugly paragraph was written in petulance. Gibson knew this much about his man, and did not censure him for neglecting a physician's responsibilities.

Rather tactfully, considering the blow to his hopes Arning had dealt him, the wise old man let the young rebel go. On December 22 Hayselden delivered the message to Arning:

By the instruction of His Excellency the President of the Board of Health, I have the honor to inform you, that by a recent resolution of the Board, a special committee was appointed to make such reduction in the Medical Staff of the Government as they deemed advisable; and, acting under this authority, it has been decided to discontinue your services on the Staff. . . .

Your appointment as a resident physician . . . will cease on the 31st instant; and between now and this date you will vacate the offices situated in the Kakaako Hospital enclosure, now used by you, leaving therein such articles as have been supplied to you by the Board. . . .³⁵

Not a whit surprised, not caring enough to protest, Arning replied on December 28, agreeing to leave his laboratory by the thirty-first of December. He ended this letter, but not his correspondence with the Board of Health, by reminding Hayselden that he would draw his salary for December on the last day of the year and by claiming "the payment for my expenses connected with my return to Germany . . . which I figure at five hundred dollars."³⁷

It scarcely needs to be added that, despite Hayselden's hoary device of hiding behind a "special committee" of the Board of Health, no such committee existed. In the 26 months of Arning's association with the Board, his name appeared only once in the minutes of its meetings—and then it was in connection with a discussion of cholera, not of leprosy, to which he and several other physicians had been invited.³⁸ During the weeks of maneuver and countermaneuver between Gibson and Arning, the doctor's intractability was never brought before the Board. More than likely Gibson considered

the problem a personal one which he could take care of, and to which—characteristically—he expected a happy ending. Autarchic as he was, and busy as he must have been with his many other offices and the political crises he experienced (and enjoyed) so frequently, he rarely called a meeting of the Board. Just as he had invited Arning to Hawaii without consulting his colleagues, so did he dismiss the malcontent doctor: all by his own cavalier self. The one nice note in the whole business is the fact that Gibson did not drum Arning out of the corps in disgrace. He let him go with dignity, and in a manner intended to spare Arning any loss of face.

Yet, in fairness to Arning, it must be admitted that, Gibson being the casual administrator he was, it is entirely possible that he never did get around to defining clearly and specifically Arning's position in the Board of Health's hierarchy and therefore his responsibilities as an agent of the Hawaiian government. If Gibson felt this to be the case, then of course he had to act in such a manner that his own dignity was not jeopardized.

His Excellency was very much mistaken if he thought that he had plucked the last sting from his flesh when he turned the Teutonic gadfly out of the Board of Health's premises at Kakaako. The doctor had a few friends in high places, if not in low; and Gibson had a host of enemies all over the place.

Nine physicians in Honolulu³⁹ started a Friends of Arning Committee of sorts. Making much of what they chose to call Gibson's "policy of retrenchment," they organized a "Leprosy Investigation Fund," to which they and "many other gentlemen resident here . . . mostly heads of families" would contribute in order to pay Arning's salary for two more years. It is impossible to say how much of a part Arning himself played in initiating this Save Arning Movement, but it is quite clear that once the machine started to roll he became a very active member of its steering committee. Only with his assistance could the organization have obtained copies of his correspondence with Hillebrand, Gibson, and Hayselden. And only with his help could his supporters have been so well instructed in exactly what to say when they addressed their memorials to Gibson.

Did they really expect that Arning would be restored to Gibson's grace and to his former position in Gibson's show? Possibly Arning was naive enough to expect reinstatement, perhaps some of his more earnest fellow-physicians shared this naïveté, as well as a genuine reluctance to lose the benefits which might be derived from his research.

Even so, the suspicion must persist that subtly underlying the whole movement was an intention on the part of Gibson's political opponents to use the the Arning Affair as a means to embarrass the powerful Premier and "Minister of Everything" by discrediting the autocratic President of the Board of Health.

On January 25, 1886, the nine physicians (and "Mrs. Dr. Emerson") sent a letter to three of Honolulu's most potent businessmen and citizens, Charles R. Bishop, F. A. Schaefer, and J. B. Atherton, asking their intercession with Gibson:

. . . We hope . . . that it may yet be possible to induce the Board of Health to reconsider its action, at least so far as to allow him all necessary aid and facilities for thorough and continuous experiments and investigations . . . It is a duty which we owe to our profession and to the public to make this statement, and to record our conviction that a grave error would be committed by any interruption of the investigation which Dr. Arning has conducted during the past two years. . . .⁴⁰

Dutifully, the three businessmen addressed His Excellency, sending him not only their "proposition," as they called it, but also the communication signed by the nine physicians and Mrs. Emerson.

They should have known that they were taking on a master at the game of one-upmanship, a superlative dealer in personal ploys and politicians' gambits. Yet there they were, dulcet and decorous, as they ventured into the domain of the magician, the while (as Gibson would have said), they "chaunted" piously:

. . . Without any desire to raise a controversy with the Board of Health, or to create excitement on the subject of leprosy, great anxiety was expressed for a continuance of Dr. Arning's research. . . .⁴¹

And how he played with them, that wizard with words and wile! At first—not so much out of modesty, to be sure, as in deference to protocol—he used Hayselden for his mouthpiece:

. . . In reply, I beg to say, on behalf of the President of the Board of Health, that the past history and conduct of His Excellency, in connection with the disease of leprosy in these islands, have proved his sincerity, energy and anxiety in the matter of dealing with it, both as a legislator and as a Minister. It is, perhaps, unnecessary to remind you, gentlemen, of His Excellency's successful efforts to induce the legislature of 1878 to grant the appropriation of \$10,000 for the medical scientific investigation of leprosy, or that it was at His Excellency's own suggestion, and by his correspondence with Dr. Hillebrand, and his own personal influence and exertion, that Dr. Edward Arning, himself, came to this country to pursue his studies and experiments, as a medical scientist, under the patronage of the Hawaiian Government. . . .⁴²

So it went, on and on, for nine pages of handsome, mesmerizing, secretarial calligraphy. After recapitulating—from His Excellency's naturally unbiased point of view—the sequence of events by which Arning had been hired, tried, and fired, Hayselden delivered his father-in-law's magnanimous concessions to Honolulu's men of good will:

. . . As Dr. Arning has already had over two years' experience in the investigation of leprosy in this country, His Excellency will be glad to afford him farther [sic] opportunities to study the disease, under what he deems most favorable conditions, with all the surroundings that could be desired by a humane and scientific investigator—by enabling him to pursue his investigations at the Leper Settlement on Molokai. At that place there are upwards of 600 lepers of all ages, sex, [sic] and condition, and in varying stages of the disease. . . .⁴²

Although they should have been consumed utterly by this blast from the fiery furnace, the sober three were sustained most wondrously by their invincible righteousness. After taking counsel with the Committee of Nine and with Arning, the champions in this war of words stood forth once again to do battle with the foe:

. . . we now beg to state what Dr. Arning considers requisite, in order to pursue his investigations in a manner most likely to lead to valuable results . . . Free access to the Branch Hospital at Kakaako, and to the Leper Settlement on Molokai, for himself and his assistant, and to all of the inmates at both places; a separate hospital ward of eight beds at Kakaako. . . .⁴³

More stipulations followed, but why go on? The demands, the tone in which they were made, would have infuriated a more saintly man than ever Gibson was. Two days later he himself roared them into a rout:

. . . The *ultimatum*, it can scarcely be called a *request*, of 'what Dr. Arning considers requisite,' I deem it necessary to say, must be most emphatically declined. In my opinion the proposal is one of such an important character in its present bearings, and future connections with established departments of the Government, that it should be reserved for Legislative discussion and action, in connection with other kindred plans and proposals relative to leprosy.

To grant the *demands* of those who claim to speak on behalf of Dr. Arning, would be, practically, to create an irresponsible extra-medical department for leprosy, capable, perhaps, in the hands of Dr. Arning, individually, of doing much good; but, at the same time, possessing the elements of discord, and the possibility of creating considerable confusion and mischief. . . .

I regret that the offer made to Dr. Arning, on behalf of the Board of Health . . . has been declined.⁴⁴

That did it. They subsided—as far as Arning was concerned. But not as far as Gibson was a cause for concern.

Still trying to embarrass him, they published for everyone in Hawaii to see a slim pamphlet entitled *Copies of Report of Dr. Edward Arning to the Board of Health and of Correspondence arising Therefrom*. Although the introduction is unctuous ("without any desire to raise a controversy. . ."), the snide manner in which excerpts from Hillebrand's letters to Arning are slipped in on the pamphlet's last page marks this little polemical gem as the insidious thing it was meant to be.

Gibson won this round, too. Not at all embarrassed, he simply added the report and the correspondence—neatly separated as Appendices I, O, and U—to a batch of communications more or less related to leprosy, and printed the whole lot of them as yet a third volume to his spectacular *Report on Leprosy of the President of the Board of Health to the Legislative Assembly of 1886*.

More sportsmanlike than his enemies, he cut not a word from Arning's long second report or from the correspondence published in their pamphlet—although, quite sensibly, because these were scarcely pertinent to the subject of leprosy, he did omit their sinuous introduction and the excerpts from hapless Hillebrand's letters to Arning. Furthermore, to show his disdain for their tricks with scissors and paste, he sent his lawyer, Wm. Horace Wright, to call upon Arning "with proof sheets of your Report for your perusal."⁴⁵ Only when Arning had approved the galley proofs did Gibson permit his printer to lock the type into the press.

Once again the clever old man had outwitted them. Even worse, by putting Arning's actions and those of his friends in the context of helpful reports

submitted by people like Dr. Fitch, Dr. Mouritz, and Father Damien, Gibson revealed how much of an obstructionist and a trial Arning actually had been.

Arning's friends exerted themselves no more in his behalf. Biding their time, they waited for the showdown with Gibson. To them, and to many other residents of the Kingdom, the Arning Affair and Gibson's unilateral manner of handling it was one more heavy beam in the growing burden of grievances they were accumulating against "the One-man Government." They treasured it, along with all the other acts of "arrogance" and of "chicanery" they attributed, rightly or wrongly, to Gibson. At last, little more than a year later, the day came when Gibson's adversaries could endure no more of his machinations, no more of the bunglings of his feckless crony, the King. In the "Bloodless Revolution of 1887" they drove Gibson out of the government and out of the Kingdom. Unable to dispose of King Kalakaua so easily, they chastened him, humiliated him, and installed themselves as his warders in a severe and sober regime they called "the Reform Government." Constrained by laws, curtailed in his Privy Purse, the monarch was merry no more.

Meanwhile, what happened to Dr. Arning? That stickler for legalities would not stir until his passage home was paid by the Government, as promised. On March 2, 1886, he wrote to his former employer: "Having as yet received no reply [to his letter of December 28], I hereby repeat my request with a view of making arrangements for my return to Europe in the near future."⁴⁶

Gibson could have kept him dangling, but promptly informed him (through Hayselden) "that the Board recognized its promise made to you and will provide for your return passage . . . , but it must be understood that this engagement cannot be left open for an indefinite period, and it is expected that you will avail yourself of it before the present fiscal year closes."⁴⁷

Arning did not hasten to leave Honolulu by the very next ship. Apparently he had not come to hate the place, or the people in it: he was level-headed enough, it seems, to have emerged from the contest without a martyr's complex. Once the daily slavery to research was ended, he might even have enjoyed the social life Honolulu offered. He may have lingered because he wanted to finish recording his observations on the cultures and the inoculated animals he took with him when he left the laboratory at Kakaako hospital.⁴⁸ Probably, in order to keep himself alive during the interval, he opened an office, or joined one of his physician-friends in the practice of medicine. And, most likely of all, he spent some of this time and the greater part of his money in assembling the ethnographic collection he had assured the Humboldt Institute he wanted to make. But all of this is only conjecture, because no evidence to support these possibilities can be found.

Even the date of his departure from Honolulu is uncertain. Very likely he left on July 1, 1886. In the last letter he wrote from Honolulu to the Board of Health, he told Hayselden of his plan to sail on that date, and asked "where I can draw the sum promised to me, to cover the expenses of my return

passage to Germany.”⁴⁹ Mouritz, usually reliable as far as dates are concerned, stated flatly that Arning left on July 1.⁵⁰

If he did sail that day, aboard Claus Spreckels' new steamship *Australia*, the scene at the wharf must have reminded him of the day he arrived in Honolulu. “His Majesty the King and a large crowd of spectators were present . . . to witness the departure of the fine ship,” the *Advertiser* reported. “Nearly all the cabin passengers were profusely decorated with leis. The Royal Hawaiian Band was in attendance.”

Although only two days before, on June 29, His Majesty had conferred upon Dr. Arning the certificate and the jeweled insigne of a Companion of the Royal Order of Kapiolani, in recognition of his services to the nation, the *Advertiser* does not mention this ceremony in its Court Calendar.⁵¹ Nor does it say whether the Merry Monarch bade the doctor farewell at the pier. No, the band, the King, the festive crowd were attending upon someone else: “As the steamer left the wharf, the band struck up with the Portuguese national anthem in honor of Senhor Canavarro, the Portuguese Commissioner, and afterwards played ‘Hawaii Pono.’”⁵²

We can hope that at least one friend was present that morning, to speed Dr. Arning on his way with an “*Aloha*” and a *lei*.

Walter Murray Gibson, we can be certain, was not there. Also on June 29, as Arning and his supporters could have read in the *Advertiser* of June 30, “it has pleased His Majesty the King to appoint. . . . Hon. Walter Murray Gibson Premier and Minister of the Interior, vice His Excellency Charles T. Gulick, resigned.” When the *Australia* departed at noon, His Majesty's trusted Premier was at Ali'iolani Hale, managing the Legislature.

Arning took with him not only the observations accumulated during his work for the Board of Health, but also “more than 300” native artifacts. His notes about leprosy gave him material for several publications in European medical journals which brought him considerable fame. The paper in which he described the inoculation of Keanu drew much attention when, being convinced that he had waited long enough, he presented his account of the experiment—and of its consequences—at the First Congress of the Society of German Dermatologists, held in Prague in 1889.⁵³

The ethnographic collection he gave to the Museum für Völkerkunde in Berlin. The pieces were exhibited for the first time in the Aula of the Museum on November 2, 1887. Adolf Bastian, world traveler, ethnographer, and virtual founder of the Museum, hailed them as proof of the fact that, even at such a late date, when acquiring a good collection of Hawaiiana was almost a hopeless undertaking, Arning's “earnest effort and intelligent application” had been very successful.⁵⁴

One further memento from Hawaii went with Arning—an invisible, immaterial thing, carried in the folds of his spirit as a leper's germs might have been borne in his flesh. Perhaps he was aware of it before he left Honolulu, perhaps he was not. But by May of 1888 it had grown within him to the point where he was compelled to acknowledge it.

In Honolulu, on March 1, 1888, the Reform Government's new Board of Health had been thinking about Arning:

Hon. S. M. Damon moved that a communication be addressed to Dr. Arning in Germany, asking for full particulars, charges, &c, concerning the Hospital of Dr. Unna in Hamburg, Germany [whose recent publications were arousing hope that he had discovered a cure for leprosy], and also if inducements could be offered for his (Dr. Arning) return to the Islands, and continue the pursuit of his investigations of leprosy, &c.⁵⁵

Most agreeable to these instructions, Dr. N. B. Emerson, the Board's new President (and one of the nine physicians who had rallied to Arning's support in 1886), wrote a long letter to Arning on March 13:

The question of leprosy is still a vital one on these islands. The Board of Health look with regret upon the discontinuance of your labors in this country towards the elucidation of the pathology and scientific treatment of this scourge. At a meeting of the Board . . . the question was definitely raised whether you would be willing to resume the study of this question in our midst, if suitable inducements were offered and if so what such inducements would be. . . .⁵⁶

In Hamburg, on May 10, Arning prepared his reply:

I beg to acknowledge the receipt of your letter. . . . Ever since my return to Europe the lively interest I brought back with me from the Islands has been kept up unremittingly. You will therefore understand how extremely gratified and honoured I feel by your offer to assist a renewal of my work . . . and I beg you and the members of the Board of Health to accept my sincere thanks for this recall to my former field of labour.

But however interested I still feel in the intricacies of the study of leprosy, I can not now engage in its pursuit away from my new home. I have settled here in Hamburg, as a specialist in dermatology, am doing fairly well, and am engaged to be married in a couple of weeks. But apart from these private reasons, there are still others of a more general character, which have decided me to reluctantly decline the acceptance of your honourable offer.

Previous experience has taught me, and I have repeatedly given public utterance to this opinion, that Hawaii is not the proper place for elucidating the etiological mysteries of leprosy.—Though I feel assured that the present enlightened administration would ensure smoother and more reliable conditions for work, than I encountered during the Gibsonian regime, still I am afraid that the intense feeling which everything connected with leprosy necessarily evokes in so small and terribly afflicted a community, cannot favour the slow and tedious progress of purely scientific work.—Moreover, the bacterial work connected with leprosy appears to be of such especially delicate nature, that it has again and again baffled even the most successful bacteriologists, surrounded as they are in their laboratories by all conceivable aid, the large centres of science alone are able to provide. Add to this that there are other elements of difficulty which cannot be avoided, dependent as they are on the character of the natives, the climate, &ct, [sic] and that Hawaii is decidedly not as recent a centre of leprosy as was accepted previous to 1883, nor that leprosy is at present any more virulent on the Hawaiian Islands than in any other of its established foci, take all this into consideration and I trust you will agree with me that the scientific work connected with the etiology and pathology of leprosy can with surer prospects of success be carried on here in its European centres.—And this is actually being done: there are quite a number of bacteriologists and microscopists besides myself at work on this intricate question, and slowly unravelling knot on knot towards its solution. Let Hawaii turn all her immediate energies on those practical points, which we know have arrested and are now banishing

the scourge in Europe, viz. strict and *early* segregation and improved general sanitation, and on therapeutic experiments on a large and well organized scale!

Giving specific answers to Emerson's questions, Arning continued: "I have talked matters over with Dr. Unna, whom I know and esteem, and . . . I am fully satisfied that Dr. Unna has not yet succeeded in perfecting a cure of leprosy in a single case." He advised Emerson not to send any patients from Hawaii, certainly not Hawaiian natives, because of the problems of "this villainous climate," homesickness, want of accustomed food, and other factors. However, if the Board of Health insisted, he and Dr. Unna suggested that one or two Caucasian patients be sent, "a tubercular and an anaesthetic case."

Then he wrote the poignant conclusion which showed that he, too, had not recovered from the inoculation of Keanu:

But if you decide to send a Hawaiian, we both, in case you and the judicial authorities deem it feasible, would urge the request, that the convict Keanu, who as I learn from the papers and private sources, has of late evinced signs of leprosy, may be sent. Of course I do not know whether the reports of Keanu's leprosy are based on facts and I feel most anxious to know what particular symptoms, if any, have developed, and moreover I appreciate the difficulties of sending a deaf and dumb convict,⁵⁷ but on the other hand I consider it my duty to do my best in helping to arrest the disease I myself have inflicted.

. . . Trusting that the Board of Health will accept this letter as a candid and straightforward reply to the confidence it has placed in me and my interest for the welfare of Hawaii nei, and hoping to soon hear from you particulars of Keanu's case. . .⁵⁸

At that time, certainly in 1889 when he presented his paper at Prague, and for several years thereafter, Arning believed that Keanu had become a leper in consequence of his inoculation. The doctor's stricken conscience is a credit to him, then, and indicates that he was not the cold, dispassionate scientist some people have accused him of being.

However, as the years passed and more knowledge was acquired in the epidemiology of other diseases as well as of leprosy, evidence accumulated that the appearance of leprous symptoms in Keanu was not the unqualified proof of its transmissibility that Arning considered it to be. For one thing, Keanu was born and raised in a country where leprosy was epidemic; for another, some of Keanu's close relatives developed leprosy after Arning returned to Germany.⁵⁹ As epidemiologists began to point out, the probability was high that Keanu could have acquired leprosy by being exposed to lepers around him. Authors of textbooks began to qualify their statements that Arning had proved the transmissibility of leprosy, until eventually, if they mentioned the experiment at all, they contented themselves with saying that, of all the many attempts which have been made to transmit leprosy from one human being to another, Arning's experiment with Keanu is the one which has "come closest to succeeding." If such wariness caused Arning to brood over the transience of fame, he might have drawn comfort from the hope that perhaps he was not responsible, after all, for Keanu's being a leper.

And what of Keanu? Needless to say, after the discouraging reply from Arning, the Board of Health did not send Keanu or any other patients from Hawaii to Dr. Unna in Hamburg.

Dr. Mouritz recorded the details of Keanu's progress along the path of the destroyer:

Twenty-five months after his operation, October, 1886, Keanu showed the maculation of nodular leprosy all over his body, the nerves and lymphatic glands near the seat of the wound also showed implication. The infection in the various selective seats of the body peculiar to leprosy became apparent (ear lobes, helix, cheeks, forehead, supra-orbital alopecia, etc.) in the year 1887; in the fall of that year, some three years after inoculation, Keanu was a confirmed leper. . . .

I examined Keanu in February, 1888, at the request of the U.S. Minister, G. W. Merrill, at the Oahu jail; the details of this examination were forwarded to Washington.

All through the year 1888 Keanu's leprosy progressed rapidly. He became a menace to the prisoners in the jail; no proper accommodation for him existed in the hospital of the prison, therefore it was determined to remove him . . . to Molokai.⁶⁰

The Board of Health built a jail-house at Kalaupapa for Keanu and another leprous prisoner named Daniel. Keanu (and probably Daniel also) arrived at Kalaupapa on February 6, 1889. He died in the hospital at Kalawao on November 18, 1892, at the age of 56, "eight years and 50 days after his so-called inoculation." Mouritz, who did not consider Arning's experiment a proper method for determining the manner in which leprosy is transmitted naturally, dismissed the whole affair with a callous epitaph for the sacrificed man: "Keanu's tenure of life was about that of the average leper."

And, finally, what of the scientist who saved Keanu from the hangman's noose? Dr. Arning became a very successful dermatologist in Hamburg, and terminated his honored career as Professor of Dermatology at the University of Hamburg. Three children, one son and two daughters, "blessed his marriage with Fräulein Helene Blohm." Mrs. Arning died in 1924, the year in which Arning retired from his University professorship. He died in Munich, during his eighty-second year, on August 21, 1936.

Always a man of many interests, an amateur photographer, a *bon-vivant*, a respected teacher, he was also a discerning patron of the arts, wealthy enough to collect paintings by contemporary German artists and an outstanding assemblage of wood-sculptures from the Middle Ages and the Baroque period.

A photograph taken "in later years" (one guesses at about the age of 65), shows a man who bears absolutely no resemblance to the unyielding young prig of 1883.⁶¹ The mustache is still there, but is much smaller and neatly trimmed, and the face is lined, of course, the hair is gray. But the pince-nez are gone, and now the eyes are bright and clear and wise, the mouth is curved in readiness for a smile. The mature Arning, it appears, shed many a compulsion along with his pince-nez, and became a very urbane, a very elegant man, who looked out upon the world with an amused tolerance such as Gibson possessed—and such as Gibson could never have hoped to find in the stiff-necked young scientist. If to do so were not to be parochial, one might be permitted to wonder whether that old Mephistopheles in Honolulu did not have some lasting effect after all upon the young scholar.

A statement by his eulogist⁶¹ supports this impression: "Arning was no fanatic about work and, as he once said about himself, had no love for the pen. His life was happily divided between the work of his profession and the enjoyment of art."

NOTES

- ¹ Unless other sources are indicated, most facts and quotations about Arning's life in Europe are taken from the short biography-eulogy entitled "Eduard [sic] Christian Arning" written by Walther Schonfeld and published in *Schriftenreihe der nordwest-deutschen dermatologischen Gesellschaft*, Heft 4, pp. 28-57, 1955.
- ² For which reason the microorganism now is named *Neisseria gonorrhoeae*.
- ³ The sentence reads: "Likewise an extract from a letter from the German consulate in Honolulu to Dr. Neisser of Leipzig, whose intended visit to these Islands devolved upon Dr. Arning after the former had been nominated as Professor of Dermatology at Berlin University." The letter to Neisser from German Consul J. C. Glade in Honolulu is dated January 13, 1882. Unfortunately, the extract from the letter tells us nothing we need to know. It is not impossible, however, that Gibson (or his predecessor as President of the Board of Health) wrote to Neisser to ask if he would be interested in studying leprosy in Hawaii.
- ⁴ Gibson's *Report on Leprosy of the President of the Board of Health to the Legislative Assembly of 1886, Supplement*, pp. 154-157.
- ⁵ *Ibid.*, p. 157.
- ⁶ This quotation is taken from the last page of that strange privately-printed collection of correspondence pertaining to the Arning Affair which was published by Arning's supporters in Honolulu. The history of this publication is discussed in the text.
- ⁷ Arning to Gibson, Aug. 28, 1883; AH. (Most of Arning's letters to the Board of Health and the reports he wrote are collated in a folder labelled "Hansen's Disease.")
- ⁸ Arning to Gibson, Oct. 11, 1883; AH.
- ⁹ PCA, Nov. 9, 1883; AH.
- ¹⁰ PCA, Nov. 10, 1883; AH. The paper listed him as "Dr. K. E. Arning, of Manchester, England."
- ¹¹ The photograph is reproduced on p. 86 of Dr. Arthur Mouritz's *A Brief World History of Leprosy* (Honolulu, 1943, revised edition). I am well aware of the dangers inherent in deducing character from photographs. But, before you condemn me for an excursion into fiction, look at this photograph.
- ¹² Arning to Hayselden, Nov. 25, 1883; AH.
- ¹³ Koch described the tubercle bacillus in 1882. Arning's first report, submitted on April 10, 1884, was published in the *Supplement* to Gibson's *Report on Leprosy* . . . 1886, pp. 146-154.
- ¹⁴ Probably a form of tinea, a fungus infection, similar to ringworm.
- ¹⁵ Probably scabies, caused by body mites.
- ¹⁶ Arning to Gibson, Jan. 6, 1886; AH.
- ¹⁷ Hayselden to Arning, Feb. 5, 1885; in BHLB, p. 114; AH.
- ¹⁸ From an article by Robert J. Creighton in his *Honolulu Almanac and Directory*, 1886, p. 91. The Branch Hospital was located between present-day Kewalo basin and the entrance to Honolulu harbor, about where the municipal incinerator stands today.
- ¹⁹ Dr. G. L. Fitch, Report to the Board of Health of 1884, published in Gibson's *Report on Leprosy* . . . 1886, *Supplement*, pp. 140-145. (The part quoted appears on p. 141). This "wretched site" was occupied until the end of 1888, according to the BHM, July 24 and Oct. 25, 1888.

- ²⁰ From Arning's second report, submitted Nov. 14, 1885, published in Gibson's *Report on Leprosy . . . 1886, Appendix*, p. xlii.
- ²¹ F. J. Testa [Acting Secretary of the Board of Health] to Arning, Dec. 7, 1885, in BHLB, p. 437; AH.
- ²² BHM, Jan. 3, 1883; AH.
- ²³ From Arning's second report, published in Gibson's *Report on Leprosy . . . 1886, Appendix*, p. xliiii.
- ²⁴ PCA, Aug. 4. 1884. Dr. Arthur Mouritz, in *The Path of the Destroyer* (Honolulu, 1916), p. 153: "Keanu, at the time of his trial, was 48 years old, his physique massive, weight about 250 pounds, broad-shouldered, erect of carriage, 5 feet 10 inches tall." The second colored photograph in this book (on an unnumbered page at the rear), illustrating a case of "Nodular Leprosy (medium)," shows Keanu as he appeared 1888.
- ²⁵ From Arning's second report, *op. cit.*, pp. xliii-xliv.—Was it tact, or was it guile, which kept Arning from mentioning here the first of his stipulations?: "I alone was to be in charge of this experiment." He did not hesitate to say so in the account of Keanu's inoculation he presented at Prague in 1889 (Schonfeld, 1955, p. 34).
- ²⁶ Mouritz, *A Brief World History of Leprosy*, p. 85. The style is purest Mouritz.
- ²⁷ Hayselden to Arning, Nov. 30, 1885; in Gibson's *Report on Leprosy . . . 1886, Appendix*, pp. lv-lvi.
- ²⁸ Gibson's *Report on Leprosy . . . 1886, Appendix*, p. lxix.
- ²⁹ *Ibid.*, p. lxii.
- ³⁰ As printed in the *Appendix* to Gibson's *Report on Leprosy . . . 1886*, Arning's second report extends from p. xxxvii to p. xlv.
- ³¹ M. Soule and G. McKinley, "Leprosy," In: *AAAS Symposium Series, Vol. I. Tuberculosis and Leprosy*, 1938, p. 89.
- ³² Hayselden to Arning, Nov. 30, 1885; in Gibson's *Report on Leprosy . . . 1886, Appendix*, pp. lv-lvi.
- ³³ Dr. Robert McKibbin was director of The Queen's Hospital and part-time government physician employed by the Board of Health; Dr. George Trousseau and Dr. John Brodie were engaged in private practice. Late in January, 1886 these three were the happy recipients of letters from Hayselden, inviting them to contribute "information of value" to Gibson's portfolio of reports. With Roman integrity, they declined to do so.
- ³⁴ Arning to Gibson, Dec. 15, 1885; in Gibson's *Report on Leprosy . . . 1886, Appendix*, pp. lvii-lviii.
- ³⁵ The sum of \$150 a month may have represented a "moderate salary" in Leipzig, but in Hawaii it was the average pay a Government Physician received from the Board of Health for part-time services. Most Government Physicians also continued the private practice of medicine. Because Arning's involvement in research denied him this source of income, probably he was strapped for funds, and therefore aggrieved. His stipend from the Humboldt Institute, like all such grants, would not have sustained him in the luxury his colleagues in Hawaii could enjoy.
- ³⁶ Hayselden to Arning, Dec. 22, 1885; in Gibson's *Report on Leprosy . . . 1886, Appendix*, pp. lviii-lix.
- ³⁷ Arning to Hayselden, Dec. 28, 1885; *ibid.*, p. lix.
- ³⁸ The discussion was held Oct. 24, 1885.

- ³⁹ According to their signatures, the nine physicians were: G. Trousseau, John Brodie, Jno. S. McGrew, Henri G. McGrew, N. B. Emerson, Robert McKibbin, Charles T. Rodgers, G. H. Martin, and S. G. Tucker.
- ⁴⁰ Gibson's *Report on Leprosy . . . 1886, Appendix*, p. lxi.
- ⁴¹ Introduction to *Copies of Report of Dr. Edward Arning to the Board of Health and of Correspondence arising Therefrom* (Honolulu, 1886), 44 pp.
- ⁴² Gibson's *Report on Leprosy . . . 1886, Appendix*, pp. lxii-lxv.
- ⁴³ *Ibid.*, p. lxvi.
- ⁴⁴ *Ibid.*, pp. lxvii-lxviii.
- ⁴⁵ Wm. Horace Wright to Arning, Feb. 8, 1886, in BHLB; AH.
- ⁴⁶ Arning to Gibson, Mar. 2, 1886; AH.
- ⁴⁷ Hayselden to Arning, Mar. 10, 1886, in BHLB; AH.
- ⁴⁸ Arning to Gibson, Jan. 6, 1886; AH.
- ⁴⁹ Arning to Gibson, June 22, 1886; AH.
- ⁵⁰ Mouritz, *A Brief World History of Leprosy*, p. 85.
- ⁵¹ The certificate accompanying this decoration is reproduced in Schonfeld, 1955, p. 37. Gibson's role in awarding this honor to Arning is not known. It is difficult to believe that King Kalakaua would have risked affronting his Premier and confidant by honoring the doctor over Gibson's protest. Yet the unnatural silence of the *Advertiser*, Gibson's newspaper, about Arning's decoration and departure suggests that the doctor was still on Gibson's blacklist. More than likely the King was pressed by Arning's partisans to show some gesture of thanks to the visiting scientist, and Gibson was practical enough (or quixotic enough) to advise His Majesty graciously to respond.
- ⁵² PCA, July 2, 1886.
- ⁵³ *Eine Lepraempfung beim Menschen und Demonstration einer Sammlung von Lepraabgüssen. Verh. dtsch. dermat. Ges., 1, Congress gehalten zu Prag, 10-12, 6, 1889* (Wien, 1889). [Inoculation of a human being with leprosy, and exhibit of a collection of casts of lepers. Proceedings of the German Dermatological Society's First Congress, held at Prague June 10-12, 1889. Printed in Vienna, 1889].
- ⁵⁴ Schonfeld, 1955, p. 35.
- ⁵⁵ BHM, Mar. 1, 1888; AH.
- ⁵⁶ Emerson to Arning, Mar. 13, 1888, in BHLB; AH.
- ⁵⁷ This description of Keanu comes as a shock. Inasmuch as he was not deaf and dumb at the time of his trial and when he was inoculated, it must be concluded that (unless Arning was misinformed) Keanu lost his powers of speech and hearing either in consequence of his infection or because of psychological disturbances arising from imprisonment.
- ⁵⁸ Arning to Emerson, May 10, 1886, in BH Letter File for May 1886; AH.
- ⁵⁹ Mouritz, *The Path of the Destroyer*, p. 154: "Dr. Swift, who resided 4 years (1888-1892) at the Molokai Leper Settlement, made known the fact that Keanu's relatives were affected with leprosy, and that [Keanu] had lived in the same house with these leper relatives." Mouritz identified those relatives as "maternal cousins, so-called," impugning with the qualifier not Dr. Swift's statement but, rather, the degree of consanguinity between Keanu and his "cousins," and therefore the sexual mores of all Hawaiians.
- ⁶⁰ *Ibid.*, p. 154.
- ⁶¹ Schonfeld, 1955, p. 28.