# Much Ado About Little Things: Microscopes and Microscopists*

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Although many physicians and scientists visited Hawaii in the century following Captain Cook's discovery of these islands in 1778, we have no way of knowing which of them brought the first microscope ashore, or who focused his microscope for the first time upon an indigenous organism. None of the earlier missionary-physicians from America seems to have been so well equipped: to them, as to the American Board of Commissioners for Foreign Missions which sent them to labor for the Lord in this Hawaiian vineyard, a microscope would have been considered both unnecessary and too expensive for the primitive communities in which mission doctors ministered to their patients. Possibly one or the other of the secular physicians who found their way to Honolulu—such as Dr. T. C. B. Rooke, or the baronial Robert Crichton Wyllie—might have included a microscope among his possessions, but their histories give no evidence that they owned or used such a modern piece of apparatus.

It is difficult to believe that the very German, very scientific Dr. William Hillebrand, one of Honolulu's foremost physicians from 1851 to 1871, and first Director of the Queen's Hospital, did not have a microscope with which to peer at parts of the plants he described in his great *Flora of the Hawaiian Islands*, if not at specimens derived from his patients; or that William Harper Pease, that pioneer malacologist who was here in the 1850s and 1860s, did not use a microscope to study the finer details of molluscs and other marine creatures he described; or that the succession of "natural philosophers" who taught the biological and physical sciences to students at Punahou School and Oahu College were not provided with an institutional instrument. All of these savants (and their contemporaries), trained to see with their unaided eyes, would have thought themselves well served had they used a magnifying glass or a hand lens.

In all probability, the "corps of scientific gentlemen" who accompanied Lieutenant Charles Wilkes upon the impressive United States Exploring

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Expedition to the Pacific from 1839 to 1843 shared a microscope aboard the USN Sloop-of-War *Vincennes*, or aboard one of its five supporting vessels, but we can only guess that a microscope was available to them by the nature of the specimens they collected and described, and because of the general excellence of the equipment with which the expedition was furnished.[1]

Not until the investigations of Louis Pasteur, Robert Koch, and their colleagues in Europe, during the 1870s and 1880s, established the fact that microorganisms are the causative agents of infectious diseases, would physicians consider that a microscope might be a helpful instrument, if not a necessary one, in the practice of medicine.

In any event, and not surprisingly for those times, the first reference to a microscope in Hawaii of which I am aware presents it in the role of a parlor toy—somewhat rarer than the magic lantern, no doubt, and certainly more mystifying. Miss Isabella Bird, that intrepid lady traveler who has left us such a fascinating account of her *Six Months among the Palm Groves, Coral Reefs, and Volcanoes of the Sandwich Islands*—and who seems to have preferred Nature's larger wonders to its infinitesimal ones—gives us this morsel of information in a diary-letter she wrote from Hilo on Saturday, February 22, 1873. While she and her companion, Miss Karpe, were "installed in a large buff frame house, with two deep verandahs, the residence of Mr. [Luther] Severance, Sheriff of Hawaii," as her book informs us, ". . . . Dr. Wetmore[2] came in with his microscope and I got a nervous headache which I cannot lose."[3]

From this flitting reference, we can conclude that the organisms being exhibited by Dr. Wetmore were not dangerous germs (and nothing as small as bacteria), but were harmless, free-living forms, such as protozoa, diatoms and other algae, radiolarians, perhaps even fragments of coral reefs, or preparations of higher plants and animals, shown by the good-natured doctor to a favored few of Hilo's residents as "marvels of the microcosmos."

More fortunate than Dr. Wetmore in the making of converts to microscopy was a "Dr. Harkness of Sacramento," who (uninitialed and unaccompanied) arrived in Honolulu aboard RMS *Cyphrenes* on February 17, 1875. On March 1, Rev. Samuel C. Damon introduced him to readers of *The Seaman's Friend* as a distinguished visitor who "not only has standing in his medical profession, but is also known as a man of science in the use of the microscope. . . ."[4]

By April 1, Dr. Harkness was front-page news in *The Friend:*

A NEW SCIENTIFIC ASSOCIATION

Just as our paper was going to press, we learned with much delight that a microscopical association was about being organized. A subscription list, headed by His Majesty with $50.00, and followed by others equally generous, is now circulating. It is proposed to procure a microscope of 'high power.' This is a movement in the right direction. Dr. Harkness, now visiting the islands, is a member of a similar association in San Francisco, where great attention is paid to experimenting with the microscope. . . [5]

Apparently Dr. Harkness' hobby was just what King Kalakaua and some of his fellow-intellects felt they needed, to while away the long dull evenings in a town where excitement of any kind was rarely provided. During that

month of April, for example, according to Thomas G. Thrum's weekly newspaper *The Islander*, baseball (the "Athletics" versus the "Whangdoodles" and the "Pensacolas") and spelling-matches were the major preoccupations of Honoluluans. Even so, excitement was not unknown: in July young George Newcomb, son of Dr. Wesley Newcomb, scandalized the townsfolk with a sort of ocular diversion all his very own: he was "arrested under the floor of St. Andrews' Church, where he had bored a number of auger holes, for purposes known only to himself. Some little excitement followed, with many expressions of just indignation."[6]

On April 2, 1875, "at 11 a.m., at the request of His Majesty through His Exc. W. L. Green," seventeen of Honolulu's more serious-minded gentlemen—after suitable preparation by several exposures to prestidigitating Dr. Harkness and his revealing instrument—met with that persuasive visitor in the Museum Room at Ali'iolani Hale[7] to discuss the founding of a "microscopic society for scientific purposes." Thos. G. Thrum, then beginning his long career of recording almost as they occurred the significant events in Hawaii's history, reported upon the meeting in *The Islander:* "In the absence of His Majesty—from indisposition—His Exc. W. L. Green,[8] by motion of Hon. C. R. Bishop[9] was chosen Chairman, and C. J. Lyons[10] Secretary of the meeting."[11] Mr. Green announced that in a few hours he had collected more than $800.00 in pledges, and expected to collect $1,000.00. A committee consisting of Green, Lyons, and Dr. George Trousseau was authorized to spend "up to $600.00 for a microscope and adjuncts." An amendment to the motion of authorization empowered the committee "also to decide upon what books for instruction should be ordered, not to exceed . . . $100.00."[12]

Theophilus H. Davies, a man of vision as well as of protocol, "suggested a more formal organization for the purpose of disseminating scientific information." Mr. Green, Mr. Alexander J. Cartwright, Mr. Lyons, and Dr. Trousseau were elected "to draw up a Prospectus to embody the name and nature of such an association . . . to be reported at another meeting."[12]

Mr. F. A. Schaeffer moved a vote of thanks to Dr. Harkness "for his kindness in attending the meeting," Mr. Davies moved that "he be made an Honorary Member of the Association." In his reply to these expressions of esteem, Dr. Harkness declared "that we have no idea of the magnificent diatoms in Punahou spring" or of "the varieties of protocarpus to be found in the Hotel[13] fishpond".[12] Thomas Thrum put the message somewhat more poetically: "We did not know the rich field that laid before us, but he did, and could therefore look forward with confidence to a future of success, for our ponds, and streams, and reefs furnished an endless field for the microscope."[11] To a burst of applause, "he then made the Society its first donation, consisting of the Red Snow animalculus, protococcus nivalis, from the Nevada mountains."[14]

Dr. Harkness, ready with an expert's advice, recommended the purchase of "a Binocular Microscope, one of Beck's make, of London, with objectives from 2 inch to $\frac{1}{8}$ inch . . . [With this instrument] and a library of Microscopic Works, among which was mentioned that of Carpenter's on the Microscope

and [Its] Revelations, we should be able to labor with interest for years to come. . . ."[12]

Dr. Harkness had recommended a superlative instrument indeed, one of the very best available in those days, complete in all its parts and accessories, from mahogany case and supporting stand and iris diaphragm down to the last glass slide, cover-slip, and paper label. He suggested, also, a dissecting microscope "with lenses of best quality," and a "set of assorted mounted specimens in different branches [of the plant and animal kingdoms]."[15]

Enthusiasm was not long contained. The very next morning, His Excellency W. L. Green (who, one suspects, was the most eager man in the group as well as its hardest worker) despatched to Messrs. Beck and Company in London, by the *Schiller*, an order for the whole set of equipment and seven textbooks, manuals, and sets of journals. Unfortunately, the *Schiller* was lost at sea, along with all mail from Honolulu. Late in June, 1875, poor Mr. Green had to write again the long order he had sent off so happily in April.[16]

The founding of such a society, as Rev. Damon sagely observed, was most certainly "a movement in the right direction." Then as now, people who lived in Hawaii desperately needed intellectual stimulation. Ever since the first *haole* settlers who possessed any minds at all arrived in the islands, they had been starved for news, for entertainment, for learning and for intellectual converse; and they sought kin-spirits among other residents and especially among visitors with the same kind of fervor that made more earthy *haoles* chase after *wahines*.

Most of the seventeen gentlemen who gathered in the Museum Room on April 2, 1875 were members of the small group of intelligences who actually ran the Kingdom of Hawaii and directed the course of its development. They were interested in more than their jobs or in the fortunes they were busy trying to amass. They were the patrons of the few artists and the employers of the even fewer scientists who wandered into these remote islands. And they themselves, amateurs in the true sense of the word, wanted to learn more about the discoveries in the sciences which, during that marvelous era in the history of the human intellect, were being announced almost weekly in Europe and America. Honolulu's intelligentsia, isolated though they may have been by geography, were not ignorant of those discoveries: newspapers, magazines, and books from the United States and from Europe were read with great attention—even in the palace of Ho'iho'i Ea, even by the King, who was not as stupid or as feckless as, later in his reign, certain of his detractors would maintain.

Since the 1850s at least, the leaders of Honolulu's social and intellectual circles, the Kings of Hawaii among them, attended many a lecture presented by visiting authorities; wrote letters, reports, and journals; initiated businesses, projects, philanthropies in an unceasing and characteristically *haole* effort to improve their minds as well as the community in which they had chosen to live. Boredom and stagnation must have been a constant threat, and those who succumbed to these twinned evils often became disgraces not only to *haoles* but also to the human race. Those who succeeded in finding ways to

fight off this "moral deterioration" did so only at the cost of continuing effort, great expenditure of labor, and considerable sums of money. In their private or cooperative ventures, for the benefit of other residents in addition to themselves, they were exemplars of alruism at its Calvinist best.

Instances of their concern—and their labor—are numerous, and appear with increasing frequency after the stability and the independence of the kingdom had been established during the late 1840s. Some of the more valuable and enduring of the organizations they helped to found are: the Board of Health, one of the first in the world, started in 1850; the Royal Hawaiian Agricultural Society and the Honolulu Chamber of Commerce, both established in 1850; the Board of Education, created in 1855; the Hawaiian Medical Association, chartered in 1856; the Queen's Hospital, opened in 1859; the National Museum of Archaeology, Literature, Botany, Geology, and Natural History of the Hawaiian Islands, established by the Legislature of 1872; and the Honolulu Library and Reading Room Association, begun in 1879.

The Natural History and Microscopic Society, short-lived though it proved to be, quite properly belongs among this distinguished company. T. H. Davies' suggestion that it be organized "for the purpose of disseminating scientific information" is revealing: he was not the only man present that morning who was practical enough to want to share the information this Society was expected to yield. The partial list of townsmen who payed their subscriptions during the first two days of canvassing is further assurance that they had in mind nothing so frivolous as another social club:

PAYMENTS OF SUBSCRIPTIONS TO MICROSCOPICAL SOCIETY[17]

April 2nd, 1875

| | | | |
|---|---|---|---|
| His Majesty | 50.00 | T. R. Walker | 5.00 |
| E. H. Boyd | 10.00 | C. T. Gulick | 10.00 |
| A. Herbert | 20.00 | | |

April 3rd, 1875

| | | | |
|---|---|---|---|
| W. L. Green | 30.00 | M. Louisson | 10.00 |
| H. Prendegast | 10.00 | R. McKibbin | 10.00 |
| James Olds | 10.00 | C. Brewer & Co. | 50.00 |
| L. McCully | 5.00 | C. R. Bishop | 25.00 |
| A. F. Judd | 10.00 | John H. Paty | 10.00 |
| J. S. Walker | 25.00 | E. P. Adams | 10.00 |
| W. C. Parke | 10.00 | S. G. Wilder | 25.00 |
| W. L. Moehonua | 25.00 | J. C. Glade | 25.00 |
| H. R. Hitchcock | 10.00 | H. Schmidt | 5.00 |
| McInerny | 5.00 | Furstenau | 10.00 |
| T. G. Thrum | 10.00 | F. H. Riemenschneider | 10.00 |
| G. Rhodes | 15.00 | Richardson | 10.00 |
| G. W. McFarlane | 5.00 | F. A. Schaeffer | 25.00 |
| T. H. Davies | 25.00 | Lishman | 5.00 |
| A. J. Cartwright | 30.00 | | |

Except for His Excellency W. L. Moehonua, Minister of the Interior, and Major E. H. Boyd, His Majesty's Chamberlain, who may have joined out of loyalty to their King, these were hard-headed businessmen, who did not throw money away for no good purpose. They were not the fawning sort who flocked to ingratiate themselves with His Majesty, whom they may have liked or disliked as a person, but could not possibly have feared as a monarch.[18]

The best clue to their interests lies in the list of journals and books they ordered, from dealers in San Francisco, New York, and London. The titles of these accessions indicate that the members of the Society were interested in the whole range of science, not only in the microcosmos; and it is fair to conclude that they expected to receive instruction and assistance from the organization they were founding. Dr. Harkness, his microscope, above all his enthusiasm, gave them an incentive for organizing a society for which they had long felt a need. In effect, the society they created was an Academy of Science. In a way it was a successor to the excellent Royal Hawaiian Agricultural Society, which between 1850 and 1856 had played an extremely important role in appraising the kingdom's economic needs and in developing its agricultural industries, especially its sugar plantations and cattle ranches. It was an adjunct to the Planters' Society, which replaced the Royal Hawaiian Agricultural Society in 1864. And it was a precursor to the Hawaiian Sugar Planters' Association, which in turn evolved from the Planters' Society in 1895, as it was the immediate parent of the Honolulu Library and Reading Room Association, established in 1879 by some of these same gentlemen.

The very name of the new organization and its Prospectus prove both the range of their interests and the seriousness of their purpose.

## PROSPECTUS

NAME AND OBJECTS of the Society:

"The NATURAL HISTORY AND MICROSCOPICAL SOCIETY," has been organized at the request of His Majesty, the King, in order to create a taste for scientific subjects, and to assist in acquiring and diffusing a knowledge of Natural History amongst us.

A first class microscope and adjustments with the necessary books and periodicals have been sent for to Messrs. I. and R. Beck of London. . . . It was considered that a powerful microscope besides being a valuable instrument in almost every department of Natural History would tend to draw together a number of gentlemen who might not otherwise have taken a special interest in scientific subjects, and would be a rallying point around which all those may gather who desire facilities either to acquire scientific knowledge or to communicate it, and it is proposed to begin at once to form a small library of some of the most recent and approved works on the natural sciences, as well as to receive regularly some of the best of the periodicals devoted to the different branches of Natural History. It is also proposed to send for such scientific instruments and apparatus as may come within the objects and means of the Society.

One special object of the Society will be to acquire and disseminate whatever scientific knowledge may bear upon the Agricultural and Manufacturing prosperity of the Country. As there is hardly scope in this Kingdom for separate societies devoted to special branches of enquiry, it is proposed not to restrict too narrowly the objects of this Society, but to give encouragement to those which from one cause or another appear to present themselves as likely to be taken up efficiently to the advantage of the community or in the general interest of science.[19]

This Prospectus, the inevitable Constitution and By-Laws, a list of the microscope's parts and accessories which had been ordered, and a list of the books still to be purchased were ready for the membership at the Society's next meeting on April 23, 1875, at 11 a.m. in the Museum Room at Ali'iolani Hale. "Present were His Majesty the King, and 20 of the subscribers, mostly the same gentlemen as those present at the preliminary meeting." Committee-reports were heard and approved, dues were set at $6.00 per year, $50.00 for life; the number of members was limited to 100; future meetings were scheduled for 7:30 p.m. upon the first Thursday of each quarter, in January, April, July, and October. And, of course, officers were elected. "Dr. Trousseau moved that His Majesty be elected perpetual President of the Society." W. L. Green was elected Vice President; Alexander J. Cartwright, Treasurer; C. J. Lyons, Recording Secretary; and Dr. George Trousseau, Corresponding Secretary. Captain H. W. Mist expressed the sentiments of the membership when he moved that "the Committee send at once for textooks and periodicals as seemed best in their judgment."[20]

During May and June, 1875, His Excellency the Vice President ordered these journals and texts from A. L. Bancroft & Company in San Francisco:[21] a year's subscription to the *American Journal of Science*, *Journal of Applied Chemistry*, *Edinburgh Review*, *Westminster Review*, *London Quarterly*, *Scientific American;* one copy each of Nicholson's *Zoology*, a textbook of *Osography and Geology*, Nasmyth and Carpenter *On the Moon*, *Polarization of Light*, and Frazer's *Table for Determination of Minerals.*

From Edward Standford, at Charing Cross, London, these books were sent, "in a tin-lined packing case per Globe Express:"[22] Garrot's *Physics*, Guillemain's *Forces of Nature;* Lockyer's *Spectroscope and Its Application;* Proctor's *Borderland of Science;* files of the journals *Nature*, *Popular Science Review*, *Geological Magazine*, and the *Journal of Botany.*

After such an excellent beginning, nothing more can be learned about the Natural History and Microscopical Society, or its sessions, or its demise, either from Reporter Thrum or from any one else. Apparently it continued to exist, if not to meet, until 1878, because its name and officers were listed among those of Honolulu's organizations in Thrum's *Hawaiian Annual* for 1876, 1877, and 1878.

We can suspect that by 1878 some of its members were becoming much too involved in other activities to have time for sober deliberations upon natural history or for the putterings of microscopy. In 1876 the Reciprocity Treaty with the United States had brought prosperity and Claus Spreckels to Hawaii; and after 1876 the machinations of Walter Murray Gibson and Claus Spreckels, and their conjoint influence upon King Kalakaua, must have riven the microscopic Society as thoroughly as they did the islands' populace.

We can regret the loss to the Society's members of those quiet, unharried evenings of thoughtful inquiry and gentle discourse which they were anticipating. And we can wonder whatever happened to that splendid microscope when finally the Society was disbanded. The costly instrument, with all its parts and components, was not presented to the National Museum, or to its

successor, the Bernice Pauahi Bishop Museum, when that was founded in 1889.[23]

The fate of the Society's small treasury is disclosed by a succinct memorandum dated April 14, 1884:

> The undersigned members of the Natural History and Microscopical Society hereby donate their interests in and to the effects of said Society to the Honolulu Library and Reading Room, Building Fund.[24]

Eighteen members of the defunct Society signed this document. The names of eight others are appended, all inscribed in the same hand. Perhaps those eight members gave oral approval to the decision, perhaps they could not be reached, possibly no one bothered to ask them. Among them was His Majesty, the Perpetual President of the Society. When the Library and Reading Room was opened in 1879, probably the Society's reference books and journals were added to the collection.

On March 10, 1900, soon after the Republic of Hawaii was annexed to the United States, a new breed of men, with a different purpose in mind, organized the Honolulu Microscopic Society. They were physicians and "paramedical personnel," as the jargon of today would denote them, members of a generation who were acquainted with the new doctrines and techniques of microbiology, pathology, and epidemiology. They met not as dilettantes but as scientists, to share their reading and their experiences, in the hope of improving diagnostic procedures in clinical medicine and public health. Thrum's *Hawaiian Annual* listed the same officers for 1901–1903: President, Dr. H. C. Sloggett, a general practitioner (who was also Vice President of the Hawaiian Medical Association); Vice President, Dr. W. Hoffmann, the Board of Health's bacteriologist and its physician-in-charge of the Kalihi Receiving Station for lepers; Recording Secretary and Treasurer, Mr. E. C. Shorey, Food Commissioner and Analyst of the Board of Health; and Corresponding Secretary, Mr. Arthur Johnstone, identified in City Directories of the time as "a journalist."

After 1903 however, Thrum no longer included the Honolulu Microscopic Society in his *Annuals*.

Then as now, organizations were easily started in Honolulu, and even more easily died, victims of that peculiarly Hawaiian affliction, desuetude.

## REFERENCES AND NOTES

[1] The Expedition was in Hawaiian waters from September 1840 until April 1841.

[2] Dr. Charles H. Wetmore (1820–1898), "formerly with the Mission," as Miss Bird wrote. He and Mrs. Wetmore arrived in Hilo on May 18, 1849; he left the Mission in 1850, and continued the private practice of medicine in Hilo from 1850 until about 1896.

[3] Unpublished letter; I am indebted to Professor Alfons Korn for this quotation. One should assume that the microscope, not Dr. Wetmore, was the cause of Miss Bird's headache.

[4] F, Mar. 1, 1875, p. 20.

[5] F, April 1, 1875, p. 1.

[6] *The Islander* 1 (18), July 11, 1875. Justice was swift in those times: the day after his arrest, unfortunate George was sentenced to three months' hard labor.

[7] The new Government Building, completed in 1874; now known as the Judiciary Building.

[8] Then Minister of Foreign Affairs.

[9] Then a member of the Privy Council of State, President of the Board of Education, President of the Honolulu Chamber of Commerce, Treasurer of the Queen's Hospital, member of the Board of Immigration, Treasurer of the Sailors' Home Society, Secretary and Treasurer of the American Relief Fund, and, of course, the kingdom's only banker.

[10] Then the Government's Assistant Surveyor.

[11] *The Islander* 1 (6), April 9, 1875.

[12] Minutes of the meeting; in Cartwright Collection, AH.

[13] Probably the Hawaiian Hotel, built in 1871–1872, where the Armed Forces YMCA now stands.

[14] *The Islander* 1 (6), April 9, 1875. Presumably "the Red Snow animalculus" was provided as a preserved suspension; it is a single-celled alga which Dr. Albert Bernatowicz, Professor of General Science at the University of Hawaii, tells me is now named *Chlamydomonas nivalis* (Bauer) Wille.

[15] List written by W. L. Green; in Cartwright Collection, AH.

[16] Memorandum, Green to Lyons; in Cartwright Collection, AH.

[17] List written by W. L. Green; in Cartwright Collection, AH.

[18] In addition to those persons named in my account, these gentlemen also were present: His Exc. J. S. Walker, Minister of Finance; Messrs. Henry M. Whitney, member of the Privy Council, former owner and editor of *The Pacific Commercial Advertiser*, who in 1873 became publisher and editor of *The Hawaiian Gazette;* W. W. Hall, President of the YMCA; Allan Herbert, Manager of The Hawaiian Hotel; Thos. G. Thrum, publisher and editor of *The Islander*, who on January 1, 1875 had published the first issue of the *Hawaiian Annual and Almanac;* . . . Derby; and J. Montgomery.

[19] MS of W. L. Green; in Cartwright Collection, AH.

[20] Minutes of the meeting; in Cartwright Collection, AH.

[21] Bill from Bancroft; in Cartwright Collection, AH.

[22] Bill from Stanford; in Cartwright Collection, AH.

[23] Personal communication: E. H. Bryan, Jr., Bishop Museum.

[24] Memorandum; in Cartwright Collection, AH.