

Two Centuries of Eye Care in Hawai'i

Robert C. Schmitt

Eye care in Hawai'i has changed dramatically since 1778. The ancient Hawaiians lacked any optical aids and had only the most primitive methods of treatment for their visual problems. During the next 200 years, Island residents benefited from a succession of technical innovations and new professional skills, all introduced from abroad: spectacles, optometry, ophthalmology, contact lenses, corneal transplants, and eye banks, among others. This history, oddly, has remained largely unknown, even to leading practitioners.

Native Hawaiian eye care in pre-contact times was relatively unsophisticated. The ancient kahunas, according to Gibson, "are said to have cured the frequent inflammatory conditions of the eyes of Hawaiians with an extract from the stem of the *pohuehue*" (beach morning-glory).¹ Gutmanis has written that "weak eyes were treated by the placing of mother's milk in the eyes, or by blowing the chewed leaf of a *lele* banana or the flower of an '*ilima* across the baby's eyes." Blindness (*maka-po*) required using the milk of a young coconut and *popolo* (black nightshade), followed by earnest prayer. Cataracts were treated by "gently scraping the surface of the cornea with a bit of soft *kapa*."² In another cure for cataracts, a thick liquid made from the shoots of a grass called *kukaepua'a* ("hog dung") was blown into the affected part of the eye.³

The first optical devices seen in Hawai'i (like so many other examples of European technology) came aboard the ships of Captain James Cook in 1778 and 1779. Cook had equipped his vessels with "an Achromatic Telescope," "a Reflecting Telescope," and "two

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Night Telescopes," and one of his surgeons, William Anderson, had brought along a microscope.⁴ Whether Cook or any of his officers, scientists, or crew wore eyeglasses is, however, unknown.

Many foreign ships anchored in Island waters during the ensuing half century, and it seems likely that at least some of their masters or officers used spectacles, if only for reading. The possession of eyeglasses by common seamen seems much less probable, given their high cost—as much as \$100 for an ordinary pair in the United States in the late 1700s—and the low shipboard wage levels of the day. First produced before 1289, eyeglasses were still limited, five centuries later, to higher-income individuals.⁵

One of the earliest visitors definitely known to wear spectacles was Lieutenant Charles R. Malden, surveyor on H.M.S. *Blonde* in 1825. The Hawaiians, who "soon gave most of the officers nicknames, in their own language," dubbed Malden "the man with four eyes."⁶

The eyeglasses brought from Boston by Mercy Whitney may have been the first actually owned by a Hawai'i resident. Mercy, the wife of Samuel Whitney and a member of the Pioneer Company of missionaries, left Boston in October 1819 and arrived in Hawai'i in April 1820.⁷ After more than a decade, these glasses had apparently reached the end of their usefulness. Late in 1830 she wrote: "The glasses which I purchased before I left home, hurt my head, so that I cannot wear them."⁸

Mercy Whitney was also responsible for the first mention of tinted lenses in Hawai'i. On December 1, 1830, while living at Waimea, Kaua'i, she recorded "another attack of the ophthalmy," and added:

The Gov. has lent me a pair of green glasses which have lately been presented him, by Mr. Jones the American Consul. These preserve my eyes in a measure & are a great comfort to me.

On April 17, 1831, she suffered yet "another attack of Ophthalmy" and once more referred to her dark spectacles:

Kaikioewa our Gov. lent me a pair of green glasses last fall, & when he left here in Dec. said I might keep them for the present, as they were of no use to him, being too young for his eyes. They are double glasses, i.e., having glasses at the side as well as in front, & have been a great preservative to my eyes.⁹

Such tinted glasses were not readily available in the Islands. In 1834, David B. Lyman of Hilo wrote to Rufus Anderson in Boston regarding Sarah Lyman's "weakness of eyes": "If you can take the trouble to see that a pair of plane [sic] colored glasses are sent here, we shall be much obliged. . . . Colour purple light."¹⁰

Replacing broken lenses could mean a wait of a year or longer, requiring an order sent by slow sailing vessel around Cape Horn to Boston and a reply by the same route. In 1839, for example, Lydia Brown, a teacher in Wailuku, mailed a desperate appeal to Levi Chamberlain in Honolulu, for

... a pair of the best spectacles for the sight that can be procured. . . . I had the misfortune to brake [sic] a pair the other . . . day which were the best for my sight I had although not the most costly. I bought a pair just before I came from Boston [in 1834] that the optician told me would be more useful in future than at the present time. But it does not prove to be the case.¹¹

Miss Brown could expect to be without glasses for many months.

Nineteenth-century residents, foreign and native alike, suffered various visual ills. One of the mission physicians, Dr. Alonzo Chapin, wrote in the 1830s that "*ophthalmia*, of the purulent form, abounds in every portion of the group, and opaque corneas and thickened coats of the eyes, are very numerous."¹² William Hooper, describing his workers at Kōloa Plantation, informed Ladd and Company in April 1836: "They are troubled with sore eyes etc etc which need & ought to have advice & medicine."¹³ Mercy Whitney filled her journal with references to "the ophthalmy," noting on one occasion (February 7, 1830) that "I have had an attack of it almost every year of our residence here."¹⁴ Even the physicians were not immune. In 1844, Dr. James Smith of Kōloa (according to Halford)

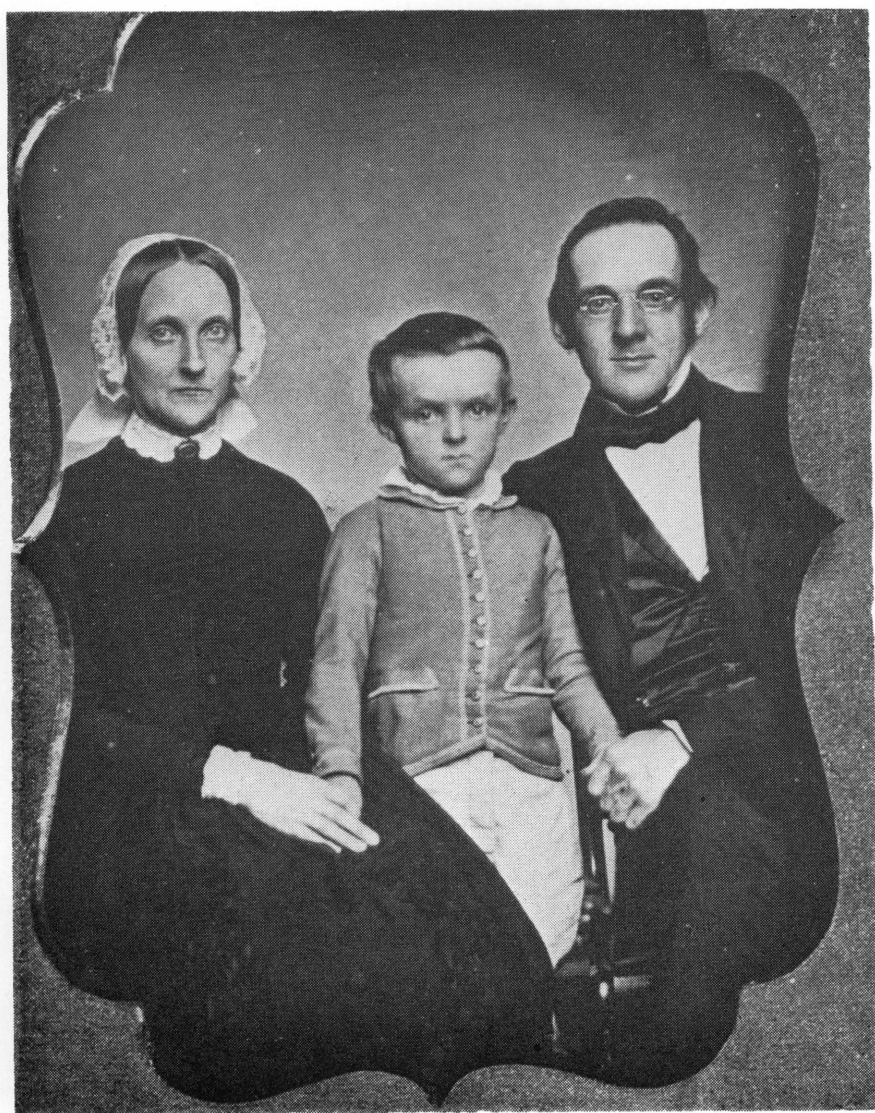
... complained of sore eyes, probably conjunctivitis, which so many of the missionaries seemed to pick up within a short time after landing; obviously a contagion from the Orient, where ophthalmia was common and chronic.¹⁵

The 1849 census classified 337 natives (1 out of every 234) as blind, and the 1850 census counted 505, or 1 out of every 159.¹⁶

Hawai'i's *haole* physicians sometimes treated eye conditions in ways that a modern practitioner would consider grossly inappropriate. One night in October 1841, for example, Juliette Montague Cooke went to the cupboard for the eye water she had been using for her chronic inflammation, "but by mistake applied a phial of the tincture of castor, prepared with strong ammonia."¹⁷ Dr. Gerrit P. Judd was immediately summoned. Mrs. Cooke later gave this account of his treatment:

I was bled eight or ten times, twice the temporal artery was opened and a pint at a time taken from the temples; blisters, cathartics, tartar emetics, etc., were my constant companions for, I cannot say how many days.

FIG. 1. Rev. Samuel C. Damon and family, early 1850s. (HMCS daguerreotype.)





Commenting on this case more than a century later, Dr. Halford remarked, "How she survived, let alone regained sight of even one eye, might mystify the best ophthalmologist of today."¹⁸

Dr. Judd himself suffered from severe visual problems, including a retinal detachment in 1843 and cataract in 1845. He wore spectacles at least as early as 1852.¹⁹

The first Island shop to sell eyeglasses was apparently the Honolulu jewelry store of E. H. Boardman, a watch and chronometer maker. Beginning September 9, 1846, Boardman advertised "Gold, Silver and Steel framed Spectacles, and other goods usually found at a Jewelers establishment" in the weekly issues of the *Sandwich Islands News*. Later slightly reworded (to read "gold and silver spectacles, eye glasses . . ."), this one-column ad appeared regularly until October 26, 1848.²⁰ D. N. Flitner, Boardman's successor and like him a watch and chronometer maker, followed much the same course, and for 14 months in 1851 and 1852 advertised "spectacles, convex and colored glasses."²¹ A somewhat similar Flitner ad listing spectacles ran as late as 1870.²²

Now able to obtain eyeglasses locally, increasing numbers of Hawai'i residents began using them. At least four members of the Sandwich Islands Mission posed for mid-century daguerreotypes while wearing glasses: Samuel C. Damon (fig. 1) and Lorenzo Lyons around 1850, Ephraim W. Clark about 1852, and Peter J. Gulick in 1853.²³ Some at first wore their spectacles with trepidation; Maria P. Chamberlain, for instance, took her new pair to Sabbath school and "felt less embarrassed in putting on my glasses to read than I feared."²⁴ The collections of both the Bishop Museum and Mission Houses Museum contain numerous spectacles and spectacle cases that once belonged to Island families, but none so far has been accurately dated.²⁵

Some of the members of Hawaiian royalty wore eyeglasses. A daguerreotype of King Kamehameha III, made shortly before his death in 1854, shows either a monocle or magnifying glass hanging over his vest.²⁶ King Kalākaua owned horn-rimmed tinted spectacles and a lorgnette, both of which are exhibited at the Bishop Museum.²⁷ Queen Lili'uokalani's gold lorgnette is displayed at the Queen Emma Summer Palace.²⁸ Princess Ka'iulani (fig. 2) was photographed as a bespectacled schoolgirl in London in the early 1890s, and later in the

FIG. 2. Princess Ka'iulani as a schoolgirl in London, 1892. (Bishop Museum photo.)

decade in Hawaii with a lorgnette (or possibly pince-nez) suspended from her neck.²⁹

Island jewelers selling glasses competed with West Coast opticians for the Honolulu market. For almost a year, beginning March 18, 1865, the *Advertiser* carried the advertisements of Lawrence & Houseworth, San Francisco opticians, for "710 dozen spectacles in gold, silver, steel and plated frames," "305 dozen eye glasses in gold, silver, steel, horn, shell and rubber frames," and "150 dozen wire gauze goggles."³⁰

Many (perhaps most) of the eyeglasses purchased by Hawai'i residents during the 19th Century were imported from abroad. In 1875, the first year for which such statistics were published, 50 dozen spectacles and eyeglasses, with a combined value of \$254.02, were entered through the Hawaiian Customs. By 1899, the annual number imported had risen to 1,274 dozen (from three countries), worth \$587.45.³¹ The retail cost of these glasses was presumably much greater than their declared import value.

At first handled only as a sideline by jewelers and watch-makers, eyeglasses eventually were sold in more specialized outlets (fig. 3). On May 14, 1879, for example, Honolulu newspapers first carried an advertisement for "A. Kraft & Sons, Opticians, Manufacturers of Jewelry, and Dealers in Watches and Watch Materials. We make the business of Opticians a Specialty." August Kraft, an American who had moved to the Islands only five weeks earlier, was apparently the first Island resident to describe himself as an optician.³² (An *optician* is "a maker of or dealer in optical items and instruments; one that grinds spectacle lenses to prescription and dispenses spectacles." An *optometrist* practices "the art or profession of examining the eye for defects and faults of refraction and prescribing correctional lenses or exercises but not drugs or surgery." An *ophthalmologist* is a physician specializing in *ophthalmology*, "a branch of medical science dealing with the structure, function, and diseases of the eye." *Oculist* is an older word for *ophthalmologist*.) Fourteen years later, Henry F. Wichman advertised: "H. F. Wichman, Fort Street. Jeweler and Optician. . . . The only establishment in the country where eyes are measured on thoroughly scientific principles and glasses guaranteed to fit each particular case."³³ Classified business directories for Hawai'i did not include a category for opticians until 1898.³⁴

FIG. 3. *Hawaiian Gazette* advertisement, 10 September 1879, with the first use of the word "optician". (HHS photo.)

A. KRAFT & SONS,




OPTICIANS



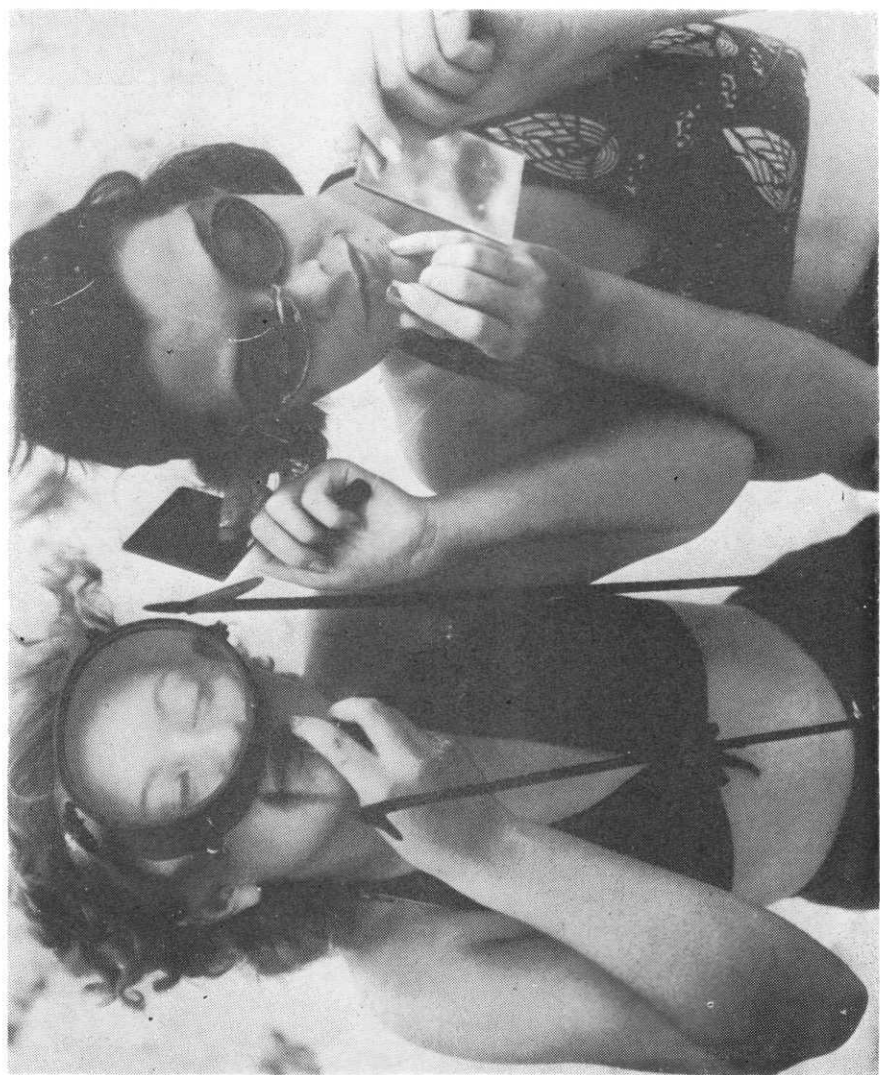
MANUFACTURERS OF JEWELRY!

AND DEALERS IN

WATCHES AND WATCH MATERIALS.

 We make the business of **Opticians** a Specialty.
Hotel Street, next door to Bonanza Saloon, Honolulu, and
221 Broome Street, New York.

747 6m



Physicians and surgeons specializing in eye disorders began to appear in the last third of the century. One of the earliest was Joseph Nicholas Bechtinger, M. D., a multi-lingual Austrian, then about 31, who moved to Honolulu from Washington, D.C., by way of Mexico City, in 1866. For six months, beginning March 24, he advertised his services, promising "particular attention paid to Diseases of the Eyes." On March 2, 1867 he sailed for Hong Kong. Eight years later the *Advertiser* began carrying regular advertisements for his Eye, Ear and Throat Institute in San Francisco, referring to him as "J. Bechtinger, M. D., of the University of Vienna, late physician to the harem of the Grand Vizier of Egypt."³⁵

Others similarly moved toward specialization. One was Hugo Stangenwald, M. D., now remembered mostly as a pioneer photographer. In 1872, Stangenwald offered to treat "patients suffering from Chronic Diseases, including also diseases of the Eye and Ear, Throat and Lungs."³⁶ In an 1880 advertisement, Chas. Neilson, M. D., claimed, "The Eye and Ear Cases successfully treated."³⁷ E. Pontoppidan, M. D., a 38-year-old German who arrived in Honolulu on October 2, 1881, described himself as an "Oculist, Physician and Surgeon, Eye Diseases a Specialty." After three months, Dr. Pontoppidan discontinued his newspaper notices and presumably departed.³⁸ It was not until 1896 that the two directories then published for Hawaii added a category for "oculists and aurists." Only two names appeared at first under this classification, Dr. H. C. Sloggett, a Honolulu "eye and ear specialist," in one directory and Dr. Wm. L. Moore of Hilo ("Makes a Specialty of Eye and Ear") in the other.³⁹

From 1899 to 1905, the Honolulu Eye and Ear Infirmary ("supported by voluntary contributions") was operated in various downtown locations, first by Dr. Sloggett and later under Dr. Moore.⁴⁰

Optometry emerged as a separate discipline in Hawaii by 1916. In that year, the directory presented its first classified listing of optometrists, consisting initially of a single establishment: Wall & Dougherty, "Jewelers, Goldsmiths, Platinumsmiths, Silversmiths, Opticians and Optometrists."⁴¹ Others still calling themselves opticians at this time were apparently engaged full-time in optometry.

FIG. 4. The first reference in Hawai'i to face masks appeared in *Paradise of the Pacific*, July 1938, with the caption: "Spears, Lipsticks, Goggles—'The Poor Fish Haven't a Chance'—Pan Pacific Photo Press." (AH photo.)

"An Act to Regulate the Practice of Optometry and for the Appointment of a Board of Examiners and Providing Penalties for the Violation Thereof" was passed by the 1917 Territorial Legislature, effective July 1. This new law required all optometrists (other than those already practicing in Hawaii) to have at least two years of a public high school education and either three years of experience in a registered optometrist's office or a degree from a reputable school of optometry.⁴²

License No. 1 under the 1917 legislation was granted to William H. "Doc" Hill, a Hilo optician and charter member of the Board.⁴³ According to Hill's obituary (1970):

He had some experience in optics from a job in a jewelry store back on the Mainland, so when he noticed a display of 40-cent eyeglasses in a Chinese store he persuaded the proprietor to let him have four dozen pair on credit.

These he peddled to aging Orientals in the plantation camps for \$4, on easy payments. 'A fair profit,' he often remarked.⁴⁴

In later years Hill apparently downplayed his academic background. In 1954 he recalled: "I had a Japanese boy who trotted along as interpreter, and he introduced me to everybody as '*megani isha*,' an eyeglass doctor. I became 'Doctor Hill,' and I've been Doc Hill ever since."⁴⁵ Although the published biographical sketches of Hill mention only a grammar school or high school education, he actually possessed a Doctor of Optics degree from Northern Illinois College of Ophthalmology and Otology.⁴⁶ After 1926 he left his practice to become a highly successful financier and long-time Territorial and State legislator.⁴⁷

Underwater vision, a matter of considerable interest to Island divers and spearfishermen, received little help until recent times. The ancient Hawaiians, who often dived to great depths, did all their underwater viewing with the naked eye, unprotected by goggles or face masks. "When they emerged, their eyes were always red and starting; the effect of the violent strain upon the optic nerve which the use of sight under water produces," wrote von Kotzebue after seeing divers at work in 1825.⁴⁸ A glass diving helmet was used in Honolulu Harbor as early as 1840, although without any significant impact on local diving practices.⁴⁹ Hawaiian words for goggles appeared in both the Andrews dictionary of 1865 and Hitchcock's 1887 dictionary, but whether these terms (*he aniani uhi maka* and *aniani palemaka*) referred to diving goggles is not known.⁵⁰ Glass-bottomed viewing boxes were in common use by 1901.⁵¹ Most

divers, however, continued to swim without eye protection well into the 20th Century.

The earliest published references to diving goggles in Hawai'i apparently date from the 1920s. William G. Anderson, a member of the *Tanager* Expedition, was photographed wearing goggles at Laysan Island in 1923, and Ted Dranga was similarly pictured, seeking coral on an O'ahu beach, a few years later.⁵² Modern face masks were in use in the Islands by 1938 (fig. 4).⁵³

The first O'ahu telephone directory with a "classified business list," issued in November 1921, reported 11 opticians on the Island, one of whom was also described as an optometrist. The same directory included a category for "Eye, Ear, Nose and Throat," with seven physicians on the initial list. A separate listing for "Eye specialists" did not appear until 1936.⁵⁴

The Bureau of Sight Conservation and Work with the Blind has been called "the first autonomous territorial casework organization supported solely by taxation." This agency originated in a 1932 request for help addressed to the National Society for Prevention of Blindness, which led one year later to the appointment of the Governor's Committee on Conservation of Sight and in 1935 to the creation of the Bureau itself.⁵⁵ The Bureau's functions are now carried on by the Services for the Blind Branch of the Hawaii State Department of Social Services and Housing.

Professional membership groups in the field of eye care were first organized in Hawai'i more than 50 years ago. The Hawaii Optometric Association, apparently the oldest, was founded in 1932, in large measure through the efforts of James Hirokawa.⁵⁶ The Hawaii Eye, Ear, Nose and Throat Society was organized in 1937 by members of the Territorial Medical Association. Around 1979 the EENT Society split into two groups, the Hawaii Society of Otolaryngology, Head and Neck Surgery and the Hawaii Ophthalmological Society, with the latter receiving its State Charter on January 4, 1980.⁵⁷ The founding of the Opticians Association of Hawaii is thought to have occurred in the middle or late 1940s.⁵⁸ The Hawaii Chapter of the American Academy of Optometry was formed around 1954 but is now inactive.⁵⁹

On July 1, 1949, "An Act to Regulate the Occupation of Dispensing Optician; to Create a Board of Examiners for the Licensing of Dispensing Opticians; to Define the Purposes and Functions of the Board; and to Provide Penalties for the Violation Thereof," passed by the 1949 Territorial Legislature and went into effect.⁶⁰

Contact lenses, first developed in 1887 and imported into the United States since 1924, did not reach Hawai'i in significant numbers until the 1950s. They were reportedly first brought to the Islands about 1930 by Dr. Gideon M. Van Poole, following a visit to Germany, but whether any were actually worn in Hawai'i during the next 10 or 15 years is unknown.⁶¹ The first local optometrist to specialize in contacts, apparently, was Dr. Kwai Cho Choy, and his listing in the Summer 1946 classified telephone directory ("Choy K C contact lens Pantheon bldg") was by far the earliest to mention the new lenses.⁶² Other early references included those in the advertisements placed by the Sanford Optical Company ("Contact lenses fitted") in the 1950 directory and Pacific Optical Co., Ltd. ("Corneal Contact Lens") in 1951.⁶³ Increasing numbers of Honolulu optometrists began prescribing contacts during the early 1950s, and within a decade the lenses came into relatively widespread use.⁶⁴

The first successful corneal transplantation in Hawai'i was performed at St. Francis Hospital in May 1956. In this operation, Francisco Tumpalang, blind in both eyes, was given the cornea of a heart attack victim.⁶⁵

The Eye Bank of Hawaii was opened in 1964 on the grounds of The Queen's Hospital. A donor registry program, the Eye Bank was created largely through the efforts of the Hawaii Lions Eye Foundation, with an interest in visual care going back to 1925.⁶⁶ A second group, the Makana Foundation for Organ Transplants, was incorporated in November 1970.⁶⁷ The two organizations eventually merged and now operate as the Hawaii Lions Eye Bank and Makana Foundation, at Straub Clinic and Hospital.⁶⁸

Optometrists, opticians, and optical goods stores increased rapidly during the post-World War II years. The 1940 decennial census reported only 13 optometrists and a like number of opticians in the Territory, but by 1980 the census counted 107 optometrists and 166 "optical goods precision workers." According to the 1948 Census of Business, there were then 8 optical goods stores with payroll in the Islands; 34 years later, this number had grown to 43 establishments, with sales of \$9,068,000 and 198 paid employees. Trends are traced in tables 1 and 2.⁶⁹

Ophthalmology likewise expanded in the postwar period. The O'ahu telephone directory for Summer 1946 listed only 10 names under "Physicians & surgeons, M. D.—Eye specialists," but by 1984 the total (now classified as "Physicians & surgeons, M. D.—Ophthalmology") numbered 48.⁷⁰

TABLE 1

OPTICIANS, OPTOMETRISTS, AND KINDRED WORKERS: 1920 TO 1980
 [Data refer to gainful workers through 1930 and employed persons thereafter]

<i>Year</i>	<i>Opticians, and lens grinders and polishers</i>	<i>Optical goods precision workers</i>	<i>Optometrists</i>
1920 - - - -	16	(NA)	(NA)
1930 - - - -	16	(NA)	(NA)
1940 - - - -	13	(NA)	13
1950 - - - -	33	(NA)	33
1960 - - - -	61	(NA)	54
1970 - - - -	81	87	30
1980 - - - -	(NA)	166	107

NA Not available.

TABLE 2

OPTICAL GOODS STORES: 1948 TO 1982

<i>Year</i>	<i>Number of establishments with payroll</i>	<i>Sales (\$1,000)</i>	<i>Paid employees</i>
1948 - - - -	8	(NA)	(NA)
1958 - - - -	12	736	43
1967 - - - -	13	1,503	51
1977 - - - -	34	4,504	152
1982 - - - -	43	9,068	198

NA Not available.

A similar growth occurred in public and private programs for the visually handicapped. In addition to the Bureau of Sight Conservation and Work with the Blind and its successor agency, the Services for the Blind Branch, new or expanded programs included those of the Hawaii School for Deaf and Blind (opened in 1913), the Library for the Blind and Physically Handicapped (1931), Eye of the Pacific Guide Dogs, Inc. (1954), and several consumer organizations, the Hawaii Association of the Blind (1967), National Federation of the Blind of Hawaii, and Aloha Council of the Blind and Visually

Impaired.⁷¹ By 1982, the index to the Hawaii Revised Statutes contained over four columns of citations under "Blind and visually handicapped," "Eyes," "Ophthalmologist," "Opticians," and "Optometry."⁷²

The population requiring help likewise grew. The State Blind Register, which contained 355 names in 1936, listed 620 in 1951, 1,001 in 1970, and 1,751 in 1982.⁷³ The Hawaii Health Surveillance Program 1982 survey reported that persons with visual impairments—either blind in one or both eyes, or unable to read ordinary newspaper print even with glasses—numbered 12,015, or 12.6 per 1,000 population. The rate ranged from 2.0 per 1,000 for persons under 17 years of age to 81.8 for those 65 years and older.⁷⁴ The number of less handicapped persons who wore eyeglasses was not estimated, but it must have been sizable.

Many questions remain unanswered regarding the history of eye care in Hawai'i. Virtually nothing is known, for example, of either the methods or instruments used in fitting glasses in the Islands during the 19th Century; the local introduction of even such an important diagnostic tool as the ophthalmoscope (invented in 1851) seems to have gone unrecorded. A similar gap exists in our knowledge of eye surgery by Island doctors and their treatment of such common conditions as cataracts and glaucoma a century ago. Even relatively recent developments are hard to track down: although major advances have occurred in optics, optometry, and ophthalmology since the 1930s (including new drugs, innovative diagnostic and surgical techniques, and improved corrective lenses), little or nothing has been published regarding their introduction in Hawai'i.

Notwithstanding these omissions from the record, important progress in eye care in the Islands is evident. The nature of eye ailments may have changed since 1778 or 1830—less infectious conjunctivitis, for example, and more VDT (video display terminal) fatigue—but visual defects and diseases still have to be diagnosed and treated. Fortunately, the knowledge, techniques, and resources for such care have advanced greatly, and promise to continue doing so.

NOTES

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- ³ D. M. Kaaiakamanu and J. K. Akina *Hawaiian Herbs of Medicinal Value*, trans. Akaiko Akana (Honolulu: Territorial Board of Health, 1922; facs. rpt. Rutland, Vt., and Tokyo: Charles E. Tuttle, 1972) 55-56.
- ⁴ J. C. Beaglehole, *The Journals of Captain James Cook on His Voyages of Discovery*, vol. III, *The Voyage of the Resolution and Discovery* (Cambridge: Published for the Hakluyt Society at the University Press, 1967), part one, lxxxiv, and part two, 1499.
- ⁵ Joseph Nathan Kane, *Famous First Facts*, 4th Ed. (New York: H. W. Wilson, 1981) 348; James R. Gregg, O.D., *The Story of Optometry* (New York: Ronald Press, 1965) 46, 48, and 161.
- ⁶ Andrew Bloxam, *Diary of Andrew Bloxam* (Honolulu: Bernice P. Bishop Museum, Special Publication 10, 1925) 39.
- ⁷ HMCS, *Missionary Album*, Sesquicentennial Ed. (Honolulu: HMCS, 1969) 198-199.
- ⁸ Mercy Partridge Whitney Journal, 1819-1835 ts., 217, entry for 1 December 1830, HMCS.
- ⁹ Mercy Whitney Journal 216-217 and 221-222.
- ¹⁰ Missionary Letters, ts., vol. 7, 2219, HMCS.
- ¹¹ Letter from Lydia Brown to Levi Chamberlain, 17 September 1839, HMCS; *Missionary Album* 56-57.
- ¹² Alonzo Chapin, M. D., "Remarks on the Sandwich Islands; their Situation, Climate, Diseases, and their suitability as a resort for individuals affected with or predisposed to Pulmonary Diseases," *The Hawaiian Spectator*, 1.3 (July 1838) 255. Reprinted from *American Journal of the Medical Sciences*, 20.39 (May 1837) 43-59.
- ¹³ Ronald Takaki, *Pau Hana, Plantation Life and Labor in Hawaii, 1835-1920* (Honolulu: U of Hawaii P, 1983) 10.
- ¹⁴ Mercy Partridge Whitney Journal, 1819-1835, entries for 29 December 1829, 25 January 1830, 7 February 1830, 4 August 1830, 1 November 1830, 1 December 1830, 8 January 1831, and 17 April 1831.
- ¹⁵ Francis John Halford, M. D., *9 Doctors & God* (Honolulu: U of Hawaii P, 1954) 184.
- ¹⁶ "Census of the Hawaiian Islands—From Official Documents—Taken January, 1849," *P*, 10 November 1849: 101; "Census of the Hawaiian Islands, taken January, 1850," *P*, 4 May 1850: 202.
- ¹⁷ Mary Atherton Richards, *The Chiefs' Children's School* (Honolulu: privately printed, 1937) 121.
- ¹⁸ Halford, *9 Doctors & God* 110.
- ¹⁹ Halford 114; Gerrit P. Judd IV, *Dr. Judd, Hawaii's Friend* (Honolulu: U of Hawaii P, 1960) 82, 135, 239, and 240.
- ²⁰ *SLN*, 9 September 1846: 4; to 26 October 1848: 208.
- ²¹ *P*, 14 June 1851: 19; to 14 August 1852: 56.
- ²² *PCA*, 15 January 1870: 1.
- ²³ HMCS, *Missionary Album* 68, 76, 110, and 144.
- ²⁴ Maria P. Chamberlain Journal ms., entry for 19 August 1855, HMCS.
- ²⁵ Telephone conversation with Roger Rose, Bernice P. Bishop Museum, 16 August 1984; Mission Houses Museum, index cards.
- ²⁶ This daguerreotype has been published a number of times. One of the clearest reproductions appears in Joseph G. Mullins, *Hawaii 1776-1976, The Bicentennial Years* (Honolulu: Mutual, 1976) 22.
- ²⁷ Kristin Zambucka, *Kalakaua, Hawaii's Last King* (Honolulu: Mana and Marvin/Richard, 1983) 167; Roger Rose, Bernice P. Bishop Museum, telephone conversations, 16 January and 16 August 1984.

- ²⁸ Patu Nolan, Queen Emma Summer Palace, telephone conversation, 25 January 1984.
- ²⁹ Kristin Zambucka, *Princess Kaiulani, The Last Hope of Hawaii's Monarchy* (Honolulu: Mana, 1982) 56; Ray Jerome Baker, *Princess Kaiulani* (Honolulu: privately printed, 1954) unpagged; Maxine Mrantz, *Hawaii's Tragic Princess* (Honolulu: Aloha Graphics and Sales, 1980) 4.
- ³⁰ *PCA*, 18 March 1865: 2; *PCA*, 13 January 1866: 4.
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- ³² *HG*, 14 May 1879: 3; Passenger Index, AH. Kraft's advertisements appeared regularly for many years; for example, see *HG*, 17 December 1884: 2. For definitions of *optician* and related terms, see *Webster's Seventh New Collegiate Dictionary* (Springfield, Mass.: G. & C. Merriam, 1976) 584, 592, and 593.
- ³³ *Hawaiian Star*, 1 April 1893: 2.
- ³⁴ *Husted's Directory and Hand-Book of Honolulu and the Hawaiian Islands [1899]* (San Francisco: F. M. Husted; Honolulu: Hawaiian Gazette Co., 1898) 518.
- ³⁵ *HG*, 24 March 1866: 3, advertisement and news item: *PCA*, 24 March 1866: 2; *HG*, 15 September 1866: 3; *F*, April 1867: 32; Passenger Index, AH, Dr. J. Bechtinger, *Ein Jahr auf den Sandwich-Inseln* (Wien: published by the author, 1869) 2 and 174; *PCA*, 23 October 1875: 2; *Ward Register, Sixth Ward of the City and County of San Francisco . . . August 1, 1876* (San Francisco: published by authority, 1876) 6. Bechtinger's initial was given as *G* in the *HG* and *PCA* 1866 advertisements but as *J* in other references.
- ³⁶ *PCA*, 9 November 1872: 2.
- ³⁷ *The Hawaiian Kingdom Statistical and Commercial Directory and Tourists' Guide, 1880-1881* (Honolulu and San Francisco: George Bowser, 1880) iv.
- ³⁸ *HG*, 26 October 1881: 3; *HG*, 2 November 1881: 3; *PCA*, 21 January 1882: 4; Passenger Index, AH.
- ³⁹ *Hawaiian Directory 1896-7* (Honolulu: B. L. Finney, n.d.) 269, 360, and 497; *Husted's Directory and Hand-Book of Honolulu and the Hawaiian Islands [1896-97]* (San Francisco: F. M. Husted, 1896) 373 and 490. See also Sloggett's advertisements in *PCA*, beginning 28 December 1896: 1.
- ⁴⁰ *F*, March 1899: 21; *PCA*, 1 June 1899: 5; *Husted's Directory of Honolulu and Hawaiian Territory, 1900-1901* (Sacramento: News Publishing, n.d.) 230; *Husted's Directory of Honolulu and Territory of Hawaii, 1903* (Oakland: F. M. Husted, 1903) 206; "Dr. Sloggett Falls Dead," *PCA*, 25 March 1905: 1. The Infirmary was listed in the Honolulu directory from 1900-1901 through 1905-1906.
- ⁴¹ *Polk-Husted Directory Co.'s Directory of Honolulu and the Territory of Hawaii, 1916*, vol. XXIII (Honolulu: Polk-Husted, 1916) 773 and 1243.
- ⁴² *Laws of the Territory of Hawaii, Regular Session 1917*, Act 187, 342-346.
- ⁴³ Hawaii State Department of Commerce and Consumer Affairs, Board of Optometry, information on licenses provided 5 April 1984; Hill correspondence in AH file, "Pinkham—Territorial Depts., Optometry, Board of, Pharmacy, Board of."
- ⁴⁴ Jack Bryan, "Big Island's 'Doc' Hill Dies at 79," *HSB*, 6 June 1970: A1 and A7.
- ⁴⁵ "Hill Reveals Origin of 'Doc' Title," *HA*, 27 May 1954: C1.
- ⁴⁶ Bryan, "Big Island's 'Doc' Hill Dies at 79," states that Hill "quit school after the fifth grade." Gwenfread E. Allen, ed., *Men and Women of Hawaii*, vol. 8 (Honolulu Star-Bulletin, 1966) 212, mentions only "Moscow, Ida., grammar sch." George F. Nellist, ed., *Men of Hawaii*, vol. IV (Honolulu Star-Bulletin, 1930) 239 and 241, states that Hill was "educated in Idaho at the Moscow High School." The AH file, "Pinkham—Territorial Depts., Optometry, Board of," contains a 1917 affidavit attesting to Hill's

- graduation from Northern Illinois College of Ophthalmology and Otiology in 1911 and also a photostatic copy of his diploma.
- ⁴⁷ Nellist, *Men of Hawaii*, vol. IV, 239 and 241; Allen, *Men and Women of Hawaii*, vol. 8, 212; Bryan, "Big Island's 'Doc' Hill Dies at 79."
 - ⁴⁸ Jean Scott MacKellar, *Hawaii Goes Fishing* (New York: Graphic Books, 1956) 78-79; "Kanakas Divers versus Gutta-percha Armor-clad divers," *F*, 1 May 1867: 36; Otto von Kotzebue, *A New Voyage Round the World, in the Years 1823, 24, 25, and 26*, vol. II (London: Henry Colburn and Richard Bentley, 1830; facs. rpt. Amsterdam: N. Israel and New York: Da Capo Press, 1967) 233.
 - ⁴⁹ *P*, 14 November 1840: 90-91.
 - ⁵⁰ Lorrin Andrews, *A Dictionary of the Hawaiian Language* (Honolulu: Henry M. Whitney, 1865) 531; H. R. Hitchcock, *An English-Hawaiian Dictionary* (San Francisco: Bancroft, 1887) 97.
 - ⁵¹ John N. Cobb, "The Commercial Fisheries of the Hawaiian Islands," in *Bulletin of the United States Fish Commission*, vol. XXIII for 1903, part II (Washington: Government Printing Office, 1905) 740.
 - ⁵² Alexander Wetmore, "Bird Life Among Lava Rock and Coral Sand, The Chronicle of a Scientific Expedition to Little-Known Islands of Hawaii," *National Geographic Magazine* (July 1925) 85; Winifred Allen Scott, "The Coral Man Answers Questions," *PP*, April 1930: 8-9.
 - ⁵³ Robert C. Schmitt, "Some Firsts in Island Leisure," *HJH* 12 (1978) 112.
 - ⁵⁴ Mutual Telephone Company, *Honolulu and Island of Oahu Telephone Directory*, November 1921, yellow pages 12 and 22, and April 1936, yellow pages 22.
 - ⁵⁵ Margaret M. L. Catton, *Social Service in Hawaii* (Palo Alto: Pacific Books, 1959) 114-116.
 - ⁵⁶ Gregg, *The Story of Optometry* 196.
 - ⁵⁷ Territorial Bureau of Sight Conservation and Work With the Blind, *Their Tomorrows Have Become Our Todays 1935-1951* (1952) 1; *Hawaii Medical Journal*, January-February 1949, 224; telephone conversation with Dr. Kenneal Y. C. Chun, 2 March 1984; Hawaii State Department of Commerce and Consumer Affairs, Business Registration Division, information provided 30 August 1984.
 - ⁵⁸ Telephone conversation with James C. Tannehill, 23 April 1984.
 - ⁵⁹ Telephone conversation with Dr. Y. K. Look, 2 March 1984.
 - ⁶⁰ *Laws of the Territory of Hawaii, Regular Session 1949*, Act 183: 165-171.
 - ⁶¹ Patrick Robinson, *The Book of Firsts* (New York: Clarkson N. Potter, 1974) 229; Gregg, *The Story of Optometry* 251-256; Kane, *Famous First Facts* 348; Ray Coll, Jr., "Contact Lens Can Aid Shy, Timid Personality," *HA*, 21 February 1957: C8.
 - ⁶² Mutual Telephone Company, *Honolulu and Territory of Hawaii Telephone Directory*, Summer 1946, yellow pages 50; telephone conversation with Dr. K. C. Choy, 10 September 1984.
 - ⁶³ Mutual Telephone Company, *Telephone Directory, Island of Oahu, 1950*, yellow pages 102; *Polk's Directory of City and County of Honolulu, 1951* (Honolulu: R. L. Polk, 1951), Classified Buyers' Guide 123.
 - ⁶⁴ Telephone conversation with Dr. Y. K. Look, 2 March 1984; T. P. Frissell, M. D., "Contact Lenses," *Hawaii Medical Journal*, September-October 1961, 36-37.
 - ⁶⁵ "Transplanted Cornea Allows Islander to See Again," *HSB*, 28 November 1956: 17.
 - ⁶⁶ Hawaiian Telephone Co., *1964 Telephone Directory, Honolulu, Island of Oahu*, 87; "Fast Teamwork Helps Save Sight of Island Patients," *SSB & A*, 1 May 1966: B2; "Sight saving eye bank is sought for use in Isles," *HSB*, 6 February 1967: A16; Territorial Bureau of Sight Conservation and Work with the Blind, *Their Tomorrows Have Become Our Todays*.

- ⁶⁷ "The Makana Foundation for Organ Transplants," *Hawaii Medical Journal* (March-April 1971) 101.
- ⁶⁸ "Corneal Emergencies Occur Once Every 3 Weeks," *HSB*, 25 May 1984: D1; telephone conversation with Elizabeth Dixon, Hawaii Lions Eye Bank and Makana Foundation, 6 June 1984.
- ⁶⁹ Data were taken from the following reports by the U. S. Bureau of the Census: *Fourteenth Census of the United States: 1920, Bulletin, Population: Hawaii, Occupation Statistics* (1921), table 10, p. 7; *15th Census of the United States: 1930, Outlying Territories and Possessions* (1932), table 4, p. 84; *16th Census of the United States: 1940, Population, Second Series, Characteristics of the Population, Hawaii* (1943), table 13, pp. 16 and 18; *U. S. Census of Population: 1950, Detailed Characteristics, Hawaii*, Bulletin P-C 52 (December 1952), table 53, pp. 106 and 107; *U. S. Census of Population: 1960, Detailed Characteristics, Hawaii*, Final Report PC(1)-13D (1962), table 120, pp. 183 and 185; *1970 Census of Population, Detailed Characteristics, Hawaii*, PC(1)-D13 (July 1972), table 170, pp. 295 and 298; *1980 Census of Population, Detailed Population Characteristics, Hawaii*, PC80-1-D13 (October 1983), table 217, pp. 153 and 158; *U. S. Census of Business—1948, Retail, Wholesale, and Service Trades, Hawaii*, Bulletin No. 1-RWS-51 (undated), table 101, p. 51.02; *1958 Census of Business, Retail Trade, Hawaii*, BC58-RA52 (1960), table 101, p. 7; *1967 Census of Business, Retail Trade, Hawaii*, BC67-RA13 (1969), table 2, p. 7; *1977 Census of Retail Trade, Hawaii*, RC77-A-12, (June 1979), table 1, p. 8; *1982 Census of Retail Trade, Optical Goods Stores*, RC82-I-39(P) (May 1984), table 3, p. 3.
- ⁷⁰ Mutual Telephone Company, *Honolulu and Territory of Hawaii Telephone Directory, Summer 1946*, yellow pages 58; Hawaiian Telephone Co., *1984 Oahu Yellow Pages* 557-558. "Ophthalmology" first appeared in the 1961 directory.
- ⁷¹ Territorial Bureau of Sight Conservation and Work with the Blind, *Their Tomorrows Have Become Our Today's*; Barbara Vobejda, "Learning in a Silent World," *HA*, 12 July 1982: A3; Sheila Hisamoto, "Library Has Special Aid for the Blind," *HSB*, 28 July 1981: C1; "Eye of Pacific's Founder Cited," *HA*, 16 November 1966: A8; "Hawaii Federation of the Blind Changes Name to The Hawaii Association of the Blind," *HSB*, 27 September 1983: A7, advertisement; telephone conversations with Jane Egi, Services for the Blind Branch, 12 June 1984, and Warren Toyama, Hawaii Association of the Blind, 13 June 1984.
- ⁷² *Hawaii Revised Statutes, 1982 Replacement, Tables of Disposition, Index* 207-208, 389-390 and 602-603.
- ⁷³ Territorial Bureau of Sight Conservation and Work with the Blind, *Their Tomorrows Have Become Our Today's*; Hawaii State Department of Social Services and Housing, Services for the Blind Branch, unpublished tabulations provided 14 May 1984.
- ⁷⁴ *Statistical Supplement, Department of Health, State of Hawaii, 1982* (October 1983) 62, 63, 68 and 69.