Peter Parker (1804-1888), a Yale University–trained missionary and physician, founded the first Western-style hospital in China, the Ophthalmic Hospital in Canton (now known as Guangzhou), on November 4, 1835. During its first 3 months, Parker treated 1061 patients, of whom 1020 (96.1%) had ocular illnesses. Since then, the Ophthalmic Hospital in Canton has become a comprehensive institution that is affiliated with Sun Yat-sen University and is one of the largest hospitals in China. In 1965, the Department of Ophthalmology, which originally employed only 2 ophthalmologists, expanded to become an ophthalmic hospital. In 1983, it joined the Eye Research Institute and the Office of Prevention of Blindness to form the Zhongshan Ophthalmic Center. The center currently employs nearly 800 staff members and provides care to more than 500,000 patients annually. The first Western-style hospital in China has survived and thrived; it is now one of the most prestigious ophthalmic institutes in the world.

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The first Western-style hospital in China was the Canton Hospital, better known as the Ophthalmic Hospital in Canton. It was founded by Peter Parker (1804-1888), at Factory No. 7, Fung-taihong San-taulan (Green Pea) Street, a site near the foreign-owned factories in Canton (now known as Guangzhou), on November 4, 1835 (Figure 1). The building was owned by Wu Bingjian Howqua (1769-1843) (Figure 2). He was the richest of the hong (narrow street or lane) merchants and the only one who extended his relationships with Western individuals beyond strictly business associations. He waived the rent for the hospital, which, in 1835 currency, had been set at the equivalent of $500 per year.

PARKER AND THE OPHTHALMIC HOSPITAL IN CANTON

Parker (Figure 3), a missionary, physician, and diplomat who graduated from Yale University, is praised as the father of medical missions in China and is the founder of the Ophthalmic Hospital in Canton. Although this article focuses on the Canton Hospital, it should be noted that the Yale-China Association, founded in 1901 (http://www.yalechina.org), established another of the earliest Western medical hospitals in China, the Xiangya (Yale-China) Hospital, in 1906 (http://www.xiangya.com.cn/). Parker received 2 degrees from Yale, one from the Divinity School in January 1834 and the other from the Medical School in March of the same year. Two months later, he was ordained as a Presbyterian minister in Philadelphia, Pennsylvania. Although medical specialties were not clearly delineated at the time, Parker had a keen interest in ocular illnesses. His doctoral dissertation discussed purulent ophthalmia, and he had received a week of training in ophthalmic surgery at the New York Eye Hospital/Infirmary (now known as the New York Eye and Ear Infirmary) before he boarded the ship Morrison bound for China. Reaching Canton on October 26, 1834, Parker spent his first winter in Singapore and Malacca, where he learned Cantonese, one of the primary dialects of the Chinese lan-
language. He returned to Canton in January 1835 and opened the Canton Hospital, known in Cantonese as Pu Ai Yi Yuan, or the Hospital of Universal Love, on November 4, 1835.5

During the Qing Dynasty (1644-1911), Canton was the only place trade could be undertaken between European and Chinese merchants. The trade monopoly ended after the first Opium War (1839-1842), which had begun in response to the attempt of the Qing government to halt the illegal smuggling of opium by foreign, mainly English, ships in Canton. The failures of the Qing government during the war not only allowed the English to resume drug trafficking within China but also paved the way for the opening of lucrative Chinese markets to businesspeople and of Chinese society to missionaries.

The southern border of the Ophthalmic Hospital of Canton grounds was bounded by the Pearl River; the hospital was cut off from the general population by the city’s well-guarded wall, located in the claustrophobic foreign-owned factory sector of the city. The hospital had a frontage of 82 feet, extending back 420 feet, with proper drainage and other hygienic advantages. The building had Chinese-style architecture and extended from the shore to the hongs of the shops and factories. Parker described the layout of the building in the hospital’s first quarterly report6(p.100): Its retired situation and direct communication with a street, so that patients could come and go without annoying foreigners by passing through their hongs, or excite observation of the natives by being seen to resort to a foreigner’s house, rendered it a most suitable place for the purpose. Besides a large room in the second story, where 200 may be comfortably seated and prescribed for, the house can afford temporary lodgings for at least forty patients.

All the legal trade between Chinese and Western businesspeople was carried out in this sector. Parker believed that his hospital, positioned in the midst of this commercial hive, could actually facilitate “social and friendly intercourse” between the Chinese and non-Chinese individuals and ultimately replace the “pitiable superstitions” of the Chinese with Christianity. As he saw it, the key to reaching the “millions of this partially civilized yet ‘mysterious’ and idolatrous empire” was that his work must be performed entirely free of charge.7-9 Parker focused on treating patients with ocular diseases (Figure 4), and as a result, the hospital was named the Ophthalmic Hospital. Parker stated,6(p.150)
The dense population of Canton rendered it possible that a single class of diseases would furnish as many applicants as could be treated and accommodated; however, it [the hospital] was designed to admit exceptions in cases of peculiar interest and promise. Diseases of the eye were selected as the most common in China; and being a class in which the native practitioners are most importent, the cures, it was supposed, would be as much appreciated as any other. The anticipation that a single class of diseases would furnish full employment for one physician was soon realized, and patients in great numbers have been sent away because no more could be received at that time.

During the first 3 months in which the hospital was open, Parker treated 1061 patients, of whom 1020 (96.1%) had ocular illnesses. He stated that ocular diseases appeared to have been the most numerous and that he had performed the couching procedure (in which the natural lens is pushed back into the vitreous cavity to achieve a clear optic pathway) on 8 patients with cataract in a single afternoon.3,6 A report in the Chinese Repository in November 1836 stated that the Ophthalmic Hospital in Canton had treated 85 cases of amaurosis, 153 of acute ophthalmia, 106 of chronic ophthalmia, 59 of purulent ophthalmia, 2 of scrofulous ophthalmia, 150 of cataract, 171 of entropion, 3 of ectropion, 41 of trichiasis, 100 of pterygium, 60 of opacity and vascularity of the cornea, 101 of albugo, 33 of leucoma, 78 of staphyloma, 8 of scleral staphyloma, 11 of onyx, 40 of iritis, 39 of lippitude, 3 of night blindness, 7 of glaucoma, 4 of exophthalmos, 62 of atrophy, and 148 of complete loss of both eyes.4 Thirteen years after the opening of the Canton Hospital, Parker wrote in his 14th report that 7571 patients had been examined from July 1, 1845, through December 31, 1848. Although the number of cases of other types of disease had increased, ocular diseases were still predominant at 5669 cases, or 74.9% of the total.6 This is a remarkable number of patients for a new hospital, particularly in a country whose native-born residents were typically suspicious of foreign individuals and in which few Chinese individuals had received Western-style physician training.10 One of Parker’s patients, on whom he had performed a successful cataract operation, wrote,4(p.393)

With grateful heart, with heaving breast, with feelings flowing o’er,
I cried, “Oh lead me quick to him who can the sight restore!”
To kneel I tried, but he forbade, and forcing me to rise,
“To mortal man bend not the knees,” then pointing to the skies,

The offering, token of my thanks, he refused; nor would he take
Silver or gold—they seemed as dust; ’Tis but for virtue’s sake
His works are done. His skill divine, I ever must adore,
Not lose remembrance of his name till Life’s last day is o’er.

JOHN GLASGOW KERR AND THE BOJI HOSPITAL

When Caleb Cushing, the first commissioner from the United States to visit China, arrived in 1844, he appointed Parker as secretary to the delegation. In 1854, John Glasgow Kerr (1804-1901), a graduate of Jefferson Medical College in Philadelphia and a Presbyterian medical missionary, arrived in Canton.11 A year later, Kerr succeeded Parker as the leader of the Canton Hospital (Figure 5), and remained there until his death. Soon, the hospital was renamed the Boji Hospital (Figure 6), and in 1886, it established the Boji Medical School.12 The Boji Hospital and Boji Medical School began to treat more patients with nonophthalmic illnesses. The hospital reports from 1848 to 1851 documented a total of 17,320 treated patients, of which 8024 (46.3%) had ocular illnesses. It was estimated that, during his tenure at the Boji Hospital, Kerr had treated 780,000 patients and performed 48,000 operations.13 Kerr had also translated 34 volumes of medical text into Chinese and trained 150 Chinese medical students. Sun Yat-sen (Zhongshan), the first president of the Republic of China, had received medical training at the school in 1886. Several unsuccessful attempts were made to move the classrooms out of the hospital and to establish a defined campus for the medical school. Failures related to

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Figure 5. Photograph of John Glasgow Kerr (1824-1901) (fifth from the left, front row), the successor of Peter Parker, and the staff at Boji Hospital and medical students at Boji Medical School, taken in 1894 in Canton, China. Courtesy of the Sun Yat-sen University Medical Museum, Guangzhou, China.

Figure 6. Photograph of the Boji Hospital, originally known as the Canton Hospital, Canton, China. Courtesy of the Sun Yat-sen University Medical Museum, Guangzhou, China.
funding, textbooks, recruitment of faculty members and students, and language barriers were common, and the school finally closed in 1914. Nevertheless, the Boji Hospital continued to grow and to treat more patients with systemic diseases that required medical and surgical intervention.

During this time, Rev Andrew P. Happer, who had graduated from Jefferson Medical College in 1835 and had studied theology at Western Theological Seminary in Pittsburgh, Pennsylvania (1840-1843) and medicine at the University of Pennsylvania (1843-1844), traveled to China and eventually settled in Canton. Happer had raised funds to establish an institution of higher education there. He founded the Christian College in China on March 28, 1888, and 30 students were selected by entrance examination results from a pool of 80 candidates for the first class. On December 13, 1893, the college received approval for incorporation by the regents of the University of the State of New York who used the name of Trustees of the Christian College in China, Lingnan Foundation; the incorporation documents were signed in Albany, New York. In 1903, the Christian College in China changed its English name to Canton Christian College and adopted a Cantonese title, Lingnan (Class). The college built a new campus at Kangle Cun, Henan, Guangzhou. In September 1912, the college changed its Cantonese name to Lingnan Xuebao (School). By 1918, it offered university-level programs and had awarded certificates to its first 3 graduates. Fifteen renowned universities, including Harvard, Yale, Columbia, Stanford, and University of Toronto, recognized the degrees of Lingnan School graduates. On March 26, 1926, the regents of the University of the State of New York approved a change of name to Lingnan University (Lingnan Da Xue).

When the Nationalist government prohibited foreign individuals from operating universities in China, the Lingnan University Board of Trustees elected Zhong Rongguang (Chung Wing-Kwong, 1869-1942), a prominent Chinese educator, as president. In 1928, Zhong became the head administrator of Boji Hospital, which, in 1936, became the College of Medicine of Lingnan University. By that time, the Ophthalmology Department had become small. In August 1948, after World War II, Chen Xujing (1903-1967), a well-known academic, economist, and advocate of Western thought, became the new president of Lingnan University. He was determined to make the university the most academically rigorous and prestigious institution of higher education in the country. He recruited a considerable number of renowned faculty members from prestigious institutions, including Tsinghua University and Peking Union Medical College in Beijing. Lingnan University attracted the brightest minds of contemporary China. In 1950, two US-trained ophthalmologists, Eugene Chan (Chen Yao-Zhen, 1899-1986) and his wife, Winifred Mao (Mao Wen-Shu, 1910-1988), arrived as new faculty members (Figure 7); they joined 2 other staff members in the Ophthalmology Department at the Medical College. The department treated 30 outpatients every day and had only 2 hospital beds.

ZHONGSHAN OPHTHALMIC CENTER

UNIVERSITY MergERS AND CHANGING LEADERSHIP

In 1953, the College of Medicine of Lingnan University and the Medical College of Sun Yat-sen University (founded by its namesake in 1924) merged to become the College of Medicine of South China, which was later joined by the Guangdong Guanghua College of Medicine in 1954. Sun Yat-sen University has had many names during the years, including Guangzhou Medical College, Southern China Medical College, and Zhongshan Medical College. The Ophthalmology Departments from the 3 medical schools were combined into 1, the chairperson of which was Eugene Chan. Soon, the department grew rapidly to house more than 70 hospital beds; a few specialty divisions were also established, including Glaucoma, Cataract, and Retina.

With support from the Chinese central government, a proposal for an ophthalmic hospital was approved on October 31, 1964. The Eye Hospital, housed in a 6-story building, was opened on October 1, 1965. It was the first university-affiliated ophthalmic hospital in China and had 5 wards and 135 hospital beds. From September 1 to December 31, 1965, the hospital received 16,514 outpatients and 629 inpatients, and 1899 operations were performed.

In March 1964, the Chinese Department of Health approved the opening of 18 research institutes in Bei-
jing Medical College, Shanghai First Medical College, and Zhongshan Medical College. The right to establish the Eye Research Institute, the only one of its kind in China, was granted to Zhongshan Medical College. The Eye Research Institute included 4 laboratories: Physiology, Biochemistry, Pathology, and Clinical Diseases (Glaucoma, Cataract, and Retinal Detachment). The official opening of the Eye Research Institute was postponed due to the Cultural Revolution (1967-1977). The institute was officially opened in 1982, and Winifred Mao served as its director.\textsuperscript{18,20} In 1983, the Office of Prevention of Blindness was added. On June 28, 1983, the Chinese Department of Health approved the establishment of the Zhongshan Ophthalmic Center, which combined the Eye Hospital, the Eye Research Institute, and the Office of Prevention of Blindness. Winifred Mao became its director and Eugene Chan its honorary director in 1983. The Zhongshan Ophthalmic Center was the first of its kind in China.\textsuperscript{20}

In 1985, Zhongshan Medical College became the Sun Yat-sen University of Medical Science. The school has developed into a comprehensive medical university with multiple schools and various degree programs, achieving national recognition and remarkable research successes in various medical specialties, including ophthalmology. Examples of such successes include the discovery of a major susceptibility locus on chromosome 4 for familial nasopharyngeal carcinoma by Yi-Xin Zeng and colleagues at the Cancer Center\textsuperscript{11} and an article on visual acuity and quality of life in rural southern China.\textsuperscript{22} This article highlighted the fact that patients were not benefiting from modern cataract surgery, and as a result, remedial training efforts were implemented to improve the performance of local ophthalmic surgeons. The Department of Ophthalmology was one of the most treasured and renowned in the university. After the continued economic reform and opening up of China to foreign influence and investment in the late 1990s, the Chinese government realized that the newly emerging knowledge-based economy would require competent, highly qualified, professional workers. It believed that the changing domestic, regional, and global socioeconomic environment had rendered its higher education systems inadequate and less competitive in the global marketplace. In order to improve the “global competence” of its citizens and to make its higher education system more efficient, higher education restructuring and multiple university mergers were launched in the late 1990s.\textsuperscript{23} In 2006, Zhongshan Ophthalmic Center was selected to be the only Chinese State Key Laboratory of Ophthalmology, directed by Jian Ge, who still holds the position today.\textsuperscript{19,20} The Key Laboratory cost 600 million RMB (US$91,491,356), encompasses 43,056 square feet, and employs 59 researchers. Its research focuses on preventive ophthalmology, molecular genetic
mechanisms of ocular diseases, mechanisms and treatment of cataract, ocular surface and corneal diseases, neuroprotection and myopia, and vitreous and retinal diseases. During the same year, a third, 8-story, building, including an underground parking garage, was opened. The new addition and the 2 other buildings provided the center a total of 376,737 square feet and 316 hospital beds (Figure 9). In 2010, the center treated 80,499 outpatients and performed 34,428 operations; its staff published 76 articles in Science Citation Index journals. Currently, 724 staff members, including 170 ophthalmologists, work in the center. A new, 462,848-square foot hospital is being built, the inauguration of which is planned for 2011.

During the past 176 years, the first Western-style hospital in China, the Ophthalmic Hospital in Canton, has survived and thrived (Table); it has become the leading ophthalmic institute in the country and one of the largest and most prestigious in the world. It has been a place of healing for millions of patients with ocular diseases and has trained many prominent ophthalmologists in China and worldwide, including Shaozhen Li, MD (cataract and prevention of blindness), Lezheng Wu, MD (electrophysiology and retina), Jiaqi Chen, MD (cornea), Jian Ge, MD, PhD (glaucoma) (Figure 10A), Niling Wang, MD, PhD (glaucoma and epidemiology), Zugou Liu, MD, PhD (ocular surface diseases and cornea), Peizeng Yang, MD, PhD (uveitis), Yizhi Liu, MD, PhD (cataract) (Figure 10B), Shibo Tang, MD, PhD, MBA (retina), Junwen Zeng, MD, PhD, MBA (optics and hospital administration), Qingjiong Zhang, MD, PhD (genetics), and Mingguang He, MD, PhD, MPH (epidemiology and prevention of blindness) (eTable; http://www.archophthalmol.com).

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Correspondence: Chi-Chao Chan, MD, National Eye Institute, National Institutes of Health, 10 Center Dr, Bldg 10, Room 10N103, Bethesda, MD 20892-1857 (chanc@nei.nih.gov).

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<table>
<thead>
<tr>
<th>Year</th>
<th>Name (Event)</th>
<th>Leader/Affiliation</th>
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<tbody>
<tr>
<td>1835</td>
<td>Ophthalmic Hospital in Canton</td>
<td>Peter Parker</td>
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<tr>
<td>1855</td>
<td>Boji Hospital</td>
<td>John Glasgow Kerr</td>
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<tr>
<td>1866</td>
<td>Boji Medical School&lt;sup&gt;a&lt;/sup&gt;</td>
<td>John Glasgow Kerr</td>
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<tr>
<td>1928</td>
<td>Boji Hospital (change in leadership)</td>
<td>Zhong Rongguang</td>
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<td>Lingnan University</td>
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<tr>
<td>1953</td>
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<td>Lingnan University, Sun Yat-sen University</td>
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<td>1954</td>
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<td>Jian Ge</td>
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<sup>a</sup>Closed in 1914.
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