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,1 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.2

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.3 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.4 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-

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guage. 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 “pitable 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 impotent, 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 coughing 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. A report in the *Chinese Repository* in November 1836 stated that the Ophthalmic Hospital in Canton, China. Courtesy of the Sun Yat-sen University Medical Museum, Guangzhou, China.

**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. 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 1866, it established the Boji Medical School. 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.
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 recognized the degrees of Lingnan University. By that time, the Ophthalmology Department at the Medical College of South China, which was merged into 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 1,899 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 estab-
lish the Eye Research Institute, the only one of its kind in China, was granted to Zhongshan Medical Col-
lege. 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.18,20 In 1983, the Office of Prevention of Blindness was added. On June 28, 1983, the Chi-
inese 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 di-
rector in 1983. The Zhongshan Oph-
thalmic Center was the first of its kind in China.20

In 1985, Zhongshan Medical Col-
lege became the Sun Yat-sen University of Medical Science. The school has developed into a comprehen-
sive medical university with mul-
tiple schools and various degree pro-
grams, achieving national recognition and remarkable research successes in various medical specialties, in-
cluding ophthalmology. Examples of such successes include the discovery of a major susceptibility locus on chromosone 4 for familial nasopharyngeal carcinoma by Yi-Xin Zeng and colleagues at the Cancer Center11 and an article on visual acuity and quality of life in rural southern China.22 This article highlighted the fact that patients were not benefit-
ing from modern cataract surgery, and as a result, remedial training ef-
forts were implemented to improve the performance of local ophthal-
mic surgeons. The Department of Ophthalmology was one of the most treasured and renowned in the un-
iversity. After the continued eco-
nomic reform and opening up of China to foreign influence and in-
vestment in the late 1990s, the Chi-
inese government realized that the newly emerging knowledge-based economy would require competent, highly qualified, professional workers. It believed that the chang-
ing domestic, regional, and global socioeconomic environment had ren-
dered 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.21 In 2001, the original Sun Yat-sen University and Sun Yat-sen University of Medi-
cal Science, both strong institutions, merged and used the name Sun Yat-

sen University. The merger helped to improve efficiency, but some imple-
mentation problems existed related to funding and resource distribution. The original Boji Hospital was re-
named Sun Yat-sen Memorial Hospi-
tal, or the Second Affiliated Hospital of Sun Yat-sen University. The De-
partment of Ophthalmology is a small component of this comprehensive af-

diated hospital.

THE MODERN ERA OF GROWTH AND DEVELOPMENT

After the deaths of Chan and Mao, the Zhongshan Ophthalmic Center (originally named the Ophthalmic Hospital in Canton) continued to de-
velop with the leadership of Shao-
zhen Li (1932-2001) (Figure 8), the first ophthalmologist elected as a member of the Chinese Academy of Sciences. In 1994, a second, 17-
story, building was constructed, mainly to house the Research Insti-
tute of the Ophthalmic Center. In March 1997, an Optometry Depart-
ment and an Optic Shop were also added. In 2006, Zhongshan Oph-
thalmic Center was selected to be the only Chinese State Key Laboratory of Ophthalmology, directed by Jian Ge, who still holds the position to-
day.19,20 The Key Laboratory cost 600 million RMB (US$91 491 356), en-
compases 43 056 square feet, and employs 59 researchers. Its re-
search focuses on preventive oph-
thalmology, 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.

Table. Key Names and Events in the Evolution of the Ophthalmic Hospital in Canton

<table>
<thead>
<tr>
<th>Year</th>
<th>Name (Event)</th>
<th>Leader/Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1835</td>
<td>Ophthalmic Hospital in Canton</td>
<td>Peter Parker</td>
</tr>
<tr>
<td>1855</td>
<td>Boji Hospital</td>
<td>John Glasgow Kerr</td>
</tr>
<tr>
<td>1866</td>
<td>Boji Medical School</td>
<td>John Glasgow Kerr</td>
</tr>
<tr>
<td>1928</td>
<td>Boji Hospital (change in leadership)</td>
<td>Zhong Rongguang</td>
</tr>
<tr>
<td>1936</td>
<td>College of Medicine of Lingnan University</td>
<td>Lingnan University</td>
</tr>
<tr>
<td>1953</td>
<td>College of Medicine of South China (merger of College of Medicine of Lingnan University and Medical College of Sun Yat-sen University)</td>
<td>Lingnan University, Sun Yat-sen University</td>
</tr>
<tr>
<td>1954</td>
<td>College of Medicine of South China, Guangzhou Medical College, Southern China Medical College, Zhongshan Medical College</td>
<td>Lingnan University, Sun Yat-sen University, Guangdong Guanghua College of Medicine</td>
</tr>
<tr>
<td>1965</td>
<td>Zhongshan Medical College Eye Hospital, Zhongshan Medical College</td>
<td>Eugene Chan, Winfred Mao</td>
</tr>
<tr>
<td>1982</td>
<td>Eye Research Institute</td>
<td>Winfred Mao, Eugene Chan</td>
</tr>
<tr>
<td>1983</td>
<td>Zhongshan Ophthalmic Center, Zhongshan Medical School</td>
<td>Winfred Mao, Eugene Chan</td>
</tr>
<tr>
<td>1986</td>
<td>Zhongshan Ophthalmic Center, Sun Yat-sen University Medical Sciences</td>
<td>Shaozhen Li</td>
</tr>
<tr>
<td>1997</td>
<td>Department of Optometry and Optic Shop</td>
<td>Jian Ge</td>
</tr>
<tr>
<td>2006</td>
<td>Zhongshan Ophthalmic Center, Sun Yat-sen University (designation as Chinese State Key Laboratory of Ophthalmology)</td>
<td>Jian Ge</td>
</tr>
</tbody>
</table>

aClosed in 1914.

Figure 10. A, Photograph of Jian Ge, MD, the current director of the Zhongshan Ophthalmic Center, in the Key Laboratory, courtesy of Jungwen Zeng, MD, PhD, MBA. B, Photograph of Yizhi Li, MD (center), the current executive deputy director, in the operating room, with Lixia Luo, MD, PhD (left) and Bo Qu, MD, PhD (right). Courtesy of Dr Zeng.

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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