Pioneer Chinese Anesthesiologists

American Influences

Patrick Sim, M.L.S.,* Bing Du, M.D.,† Douglas R. Bacon, M.D., M.A.‡

FOR more than 2 decades after the founding of the People's Republic of China in 1949, Chinese-American relations were antagonistic. The Americans have a long history, before the establishment of the communist state, of bringing Western medicine to the Chinese. However, with the "doors" of China closed after the "red" revolution, American influence should have waned, yet three leading Chinese anesthesiologists modeled their academic departments after similar departments in American universities in the late 1940s and early 1950s. The careers of Drs. Jone J. Wu, Deyan Shang, and Yung Shieh, all trained in midwestern America and who returned to China to create academic anesthesiology within their homeland, were largely responsible for the development of modern Chinese anesthesiology. With considerable effort, these men defined an infrastructure reflective of American anesthesiology, which is yet uniquely Chinese. Through their efforts, mainland Chinese anesthesia gradually assumed excellence in clinical and scientific research through education, publication, and professional organization, a blueprint they established and implemented. Accomplishments initiated by these pioneers were evidenced by the founding of a medical specialty journal to provide a forum for communication, and the formation of a national professional society that was eventually recognized by the world professional community when it was invited to join the World Federation of Societies of Anesthesiologists (WFSA). How did these men create this infrastructure adaptive to domestic requirements in China? How did American influence flourish, despite antagonistic national political boundaries, in the development of Chinese academic anesthesiology?

Nineteenth and Early Twentieth Century American Influences

When imperial China was forced by the West to open its doors for trade and Christian evangelism, Western medicine, especially American medicine was brought along as an effective and powerful means to facilitate religious missions. Surgical anesthesia is a prime example. Peter Parker, who received degrees from both the Yale divinity and medical schools, introduced ether anesthesia into China a year after it had been publicly demonstrated in Boston. At first, using a hastily made Chinese apparatus, the Rev. Dr. Parker extirpated two tumors from the arms of two patients. On October 4, 1847 he anesthetized a middle-aged farmer with use of an apparatus received from Dr. Charles Jackson of Boston for the separation of the eyelids in a case of symblepharon. Within a year, Parker had learned about chloroform anesthesia from a pamphlet written by Dr. James Young Simpson, and used the new agent successfully in 8–10 additional cases.1

Peter Parker and other medical missionaries were appalled at the serious void in medicine and science in a country that was so rich in culture and scholarship. They were troubled by the status of the Chinese physician who was socially relegated to the categories of astrologer and fortune teller. To these missionary physicians, the nineteenth century Chinese society was deprived of the basic human rights for its people to alleviate suffer-
ing and enjoy good health through medicine. Not only would these missionaries cure, but also move to further develop and execute a concept of trusteeship for the well-being of a society they served. They would entrust the “sons and daughters of the host country” to care for their own by training them in the healing art, and by establishing hospitals to facilitate such care. It was through such ideals that medical missions began to take root in China.2

Medical education in China commenced in a modest way in the tradition of apprenticeship with the medical missionaries in their hospitals. Peter Parker had his senior pupil, an apprentice named Kwan-Taou, extirpate a tumor and tie three arteries in 4 min during the first induction of anesthetic, performed using Charles Jackson’s apparatus.3 British medical missionary Dr. Kenneth Mackenzie established the first medical school in China in Tientsin in 1881. It had a very small core group of seven students who had been recalled from studying abroad by the government to enroll in this program and who were personally instructed by Mackenzie both in English and in clinical medicine. It was supported by the provincial government of Chili and named the Peiyang Medical College. Six years later in 1887, Sir Patrick Manson became the first dean of another medical school, the Hong Kong College of Medicine, which was very closely connected with the London Missionary Society. Among those of the faculty were returning Chinese physicians who were trained abroad and local physicians trained in Mackenzie’s program. One of its prominent alumni was Dr. Sun Yat Sen, the founding father of the Republic of China. Entering the twentieth century, the China Medical Missionary Association established the first medical school using Chinese as its teaching medium. Appropriately by coincidence, the site of this new medical school was in Tsinan, the capital city of the Shantung province, the home province of Confucius. The Tsinan Medical School was founded in 1917, with support from all medical missions in China, including the China Medical Board of the Rockefeller Foundation.4

Perhaps the greatest symbol of American medical missionary zeal was the work of John D. Rockefeller, Jr., in the first decades of the twentieth century. Wishing to help develop a model for Chinese higher education, Rockefeller and his associates decided to begin with the teaching of medicine. On November 30, 1914 the China Medical Board was created to oversee, coordinate, and operate a formal medical school in China. Peking (Beijing) was selected as the city to host this new, Western-style medical school. The China Medical Board purchased the existing Union Medical School from the London Missionary Society and renamed it the Peking Union Medical College (PUMC) in July 1915.5

Raymond B. Fosdick, a former president of the Rockefeller Foundation, compared the founding of the PUMC with that of Johns Hopkins University in the United States almost 50 yr before. Expectations of the quality of education for the students were similar; Rockefeller and his staff were not parsimonious with funds. Fosdick reported that the Rockefeller Foundation spent more of its funds on PUMC than it did anywhere else in the world outside of the United States.5

The organization of anesthesiology at PUMC was similar to that at Johns Hopkins and other major American universities of the time. For the majority of cases, two nurses, Helen Holland and Mary Swisher (who later married the Chief of Surgery at PUMC, Harry Loucks), with aid from the junior surgical staff, provided anesthesia. Ether and nitrous oxide were the predominant anesthetics, although chloroform was used for trauma cases. Surgeons developed an active local and spinal anesthetic practice as an alternative to general anesthesia.6

The China Medical Board also looked to Shanghai to establish another medical school. A charter had been secured from the State University of New York Board of Regents in April 1913. However, World War I forced the board to abandon this project. The land remained in the hands of the Rockefeller Foundation until 1934, when its ownership was transferred to the Chinese government. The sale of this parcel of land in the city allowed for the purchase of another piece of land in Feng Lin Chiao, a suburb of Shanghai in which the National Shanghai Medical College was built, and a substantial endowment fund was established using proceeds from the sale of the original land in the city.5 Thus, the Rockefeller Foundation was instrumental in the establishment of a medical education system based on models from the United States.

Invariably, it was through such framework, established by American medical missionaries, that three Chinese physicians received their training before the Communist revolution. Almost simultaneously, in the late 1940s during the old regime, these physicians embarked for America for further training through government endorsement and support to advance Chinese anesthesiology. Their paths converged in midwestern America. Their anesthesiology training in one way or another was associated with the Waters tradition, which emanated from Madison, Wisconsin. Wu went to study with the master himself at the University of Wisconsin; Shang arrived in Chicago.

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where an aqualumnus taught at the University of Illinois College of Medicine; Shieh received his training in Detroit with yet another Waters disciple at Wayne State University. By remarkable coincidence, these three American-trained anesthesiologists returned to China to serve their people during a new political system almost at the same time. Their careers and their impact on modern Chinese anesthesiology are elaborated in the context of their adaptation of American anesthesiology to China.

**Pioneer Chinese Anesthesiologists with American "Roots"**

*Jone J. Wu, M.D.*

Pre-World War II anesthesiology in China kept pace with its American and European counterparts. As soon as new agents were introduced in America, such as cyclopropane and thiopental, they were translated from the English literature and reviewed pharmacologically in China. The Chinese began to manufacture their own anesthesia machine in the 1930s. Interns and junior surgical residents were trained to administer anesthesia, but no formal structured residency program existed. Anesthesiology was not organized as it was in North America and Europe—no professional societies existed promoting the “art and science” of anesthesiology. There was no formal textbook for anesthesiology, nor were there journals devoted to anesthesia.

The desire of the Chinese medical community for the organization and development of the specialty of anesthesiology was reflected in grants made by the Ministry of Education, Peking, to send promising physicians to North America to be trained. It was hoped that these physicians would return from America with knowledge and expertise to ensure the growth of anesthesia in China. One such recipient of the Ministry of Education grant was a 1938 graduate of the National Shanghai Medical College, Dr. Jone J. Wu (fig. 1). Wu pursued a career as an instructor in pharmacology at his alma mater for almost a decade. In 1947, he won a Ministry of Education scholarship to study anesthesiology in the United States, and for 2 yr, from September 1, 1947 until August 31, 1949, he studied at the University of Wisconsin in Madison with Ralph Milton Waters (fig. 2). This anesthesiology department was the first in the United States and the world to be fully integrated in the university, and in many ways created academic anesthesiology.

No doubt Wu was exposed to Waters’s famous dictum “To teach other doctors to go out and teach” (Morris L: Motto from the trunk of the Aqua Alumni Tree. Wood Library-Museum of Anesthesiology Collection, Park Ridge, Illinois). After completing his training in Madison, Wu spent another clinical year at the University of Utah.

In 1950, Wu returned to China and the National Shanghai Medical College, which was renamed Sun Yat Sen Medical College, in Feng Lin Chiao at the outskirts of Shanghai. He was appointed lecturer of pharmacology, and later associate professor of pharmacology and anesthesiology. As a self-proclaimed “apolitical” medical practitioner, he began to build the specialty of anesthesiology around the precepts he had learned in Madison. By 1954, Wu founded the first independent academic department of anesthesiology in China, which clinically served the six hospitals affiliated with the medical school. By 1956, Wu was appointed as a full professor, a title he held for 3 decades until his retirement in 1986. He was credited with having elevated the national standard of anesthesia in clinical training, research, and ed-
Fig. 2. Aqua Alumni 1949: Ralph Waters and the residents from the University of Wisconsin. Dr. Jone J. Wu is the first person on the left in the front row. Photograph courtesy of the Wood Library-Museum.

Chinese anesthesia experienced some stagnation during the decade of the Cultural Revolution (1965–1975), when acupuncture anesthesia was the only popular form of practice. Wu left the field of anesthesia to assume work unrelated to his medical practice during the revolution, and he resumed his practice at its conclusion (Jone J. Wu, Biographical Data. Wood Library-Museum Archives, Park Ridge, Illinois).

Wu’s career is notable in two areas. First, he combined his basic scientific interest in pharmacology with his clinical interest in anesthesia. He published articles in both fields, with more than 100 articles in the peer-reviewed literature, including 10 in English. In 1954, Wu published the first Chinese-language anesthesia text (fig. 3), with a second, expanded edition appearing in 1959. Reminiscent of the teaching of Waters, Wu required an anesthesiologist to have a strong basic science background, specifically with the mastery of the essentials in pharmacology, physiology, and biochemistry. Clinically, he thought the anesthesiologist must be prepared to treat the effects of surgical trauma and any complications that might ensue.9 Wu established the first blood bank in China and helped to develop the first Chinese ventilator. He was instrumental in establishing postgraduate training in anesthesia and, like Waters, personally trained more than 150 residents. On his eightieth birthday, his colleagues, friends, and former residents gathered to celebrate with him and establish the Jone J. Wu Educational Foundation to annually recognize the best article published in anesthesia. It was a lasting tribute to the professor.10

Fig. 3. First Chinese Text on Anesthesia by Jone J. Wu, M.D. Photograph courtesy of the Wood Library-Museum.
At the time of his retirement, Wu reflected on the influence Waters and his teaching had on his career. Waters’s leadership by example, his inquisitiveness, his hands-on practice, his scientific mind, and his application of basic science to everyday clinical concerns inspired Wu. In Wu’s opinion, Waters elevated the specialty of anesthesiology to an advanced level in medicine through the association of scientific research and its application to clinical medicine. Waters described the inquisitive attribute of an anesthesiologist as his valuable sixth sense. Wu incorporated Waters’s principles and ideals for anesthesiology and tried to instill these principles in his trainees (letter from Jone J. Wu to Roderick Caverley, October 30, 1986. Caverley Papers, Wood Library-Museum of Anesthesiology Collection, Park Ridge, Illinois). Finally, his fellow aqualumni ensured that Wu would remain current with the latest innovations in American anesthesiology by paying for his subscription to the journal Anesthesiology (personal communication L. Morris, October 19, 1998).

Deyan Shang, M.D.§

In 1918, Deyan Shang (fig. 4) was born from humble origins in Shenyang, an industrial city in the province of Liaoning in northeastern China. The family relocated several times during his childhood, which inevitably interrupted his education. However, it also provided an opportunity for Deyan to attend a French-language school in Beijing for 3.5 yr. The Shang family finally settled in Lanchou, another major industrial city in the province of Kansu in northwestern China, where Deyan attended Lanchou University in 1937. He attended a 5-yr medical program and received his medical degree in 1942. As a gifted linguist, Shang was well-versed in French and English and was proficient in Russian and German.

At graduation from medical school, Deyan served as a surgeon at his medical school, becoming chief resident surgeon in March 1945. Anesthesia service at the time was nonexistent in Lanchou. The chief executive officer of Lanchou Central Hospital persuaded young surgeon Shang to consider anesthesia training in America and dispatched him to Chicago for an anesthesiology residency program at the University of Illinois College of Medicine in 1948 (Wang, Teng SJ, Liu J: A biography of professor Shang Deyan, pioneer of modern Chinese anesthesia; translated and edited by Patrick Sim, 1999, unpublished manuscript). Shang began his anesthesia training at the American Hospital, part of the University of Illinois program, on the north side of Chicago. The program had two influential members, Max Sadove and William H. Cassels. Sadove was trained at the University of Maryland, Baltimore, with pharmacology researcher John C. Krantz, who was no stranger to anesthesia. Sadove was known for, among other things, his audacious self-experimentation and clinical introduction of fluoromar, an untested drug he received from his mentor Krantz. Cassels, who was chair of the department at Illinois, was an early aqualumnus. Their training program stressed many of the principles advocated in Madison (Bamforth B: Aqualumni Scrapbook, Archive Collection, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois). The research activities, idealism, and audacity of the anesthesiologists at Illinois had an influence on Shang. Originally believing that anesthesiology would

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§ Some of the information regarding the career of Shang highlighted herein was based on unpublished research material in Chinese by Guyan Wang, M.B., Fu Wai Hospital, Beijing, China. Wang was the 1999 Rod K. Calverley Fellow of the Wood Library-Museum, Park Ridge, Illinois.
only be a temporary shift in vocation, Shang embraced the field and became a member of the American Society of Anesthesiologists (Biographical File Deyan Shang, Archive Collection, Wood Library-Museum of Anesthesiology, Park Ridge, Illinois).

Shang returned to China in 1949 and joined the department of anesthesia at the National Lanchou Hospital, where he had trained as a surgeon. He was an associate professor of anesthesiology at the medical school and the director of anesthesia for the hospital. He began to establish a research program in clinical anesthesia, critical care medicine, and resuscitation. While holding several simultaneous academic appointments at this point in his medical career, Shang edited and published articles about clinical anesthesia, compiled teaching materials about military surgery, taught anesthesiology to residents and medical students, and visited anesthesia centers in northwest China as consultant and lecturer. During the Korean War, Shang published articles about anesthetic treatment of the wounded, including the results of his clinical research of spinal anesthesia, resuscitation, and care of the critically wounded.

In 1954, the medical division of the National Military Council established in Liaoning a surgical research center for end-stage wounded patients. Shang was named director of anesthesia of this research center and continued his service in Lanchou. From August 1954 to July 1955, Shang coordinated with other research departments of the center in clinical care, teaching, and research. In clinical care, he could proudly claim that none of the end-stage mortalities was a result of anesthetic complication. In education, he helped to establish clinical rotations for military surgeons, requiring a mandatory 1-month rotation in anesthesia. During this rotation, fundamental anesthetic administrations were taught and the functions and cares of anesthetic equipment demonstrated. In research, anesthetic care of the wounded was studied, and comparative reviews of inhaled anesthetics were documented. He wrote book chapters and contributed to surgical journals regarding anesthesia for wounded patients on the battlefield and translated many foreign anesthesia articles into Chinese.

By 1956 Shang moved from Lanchou to Beijing and the Fu Wai hospital, a major teaching affiliate of the Peking Union Medical College where Shang's career blossomed. He began to develop considerable experience with cardiac anesthesia. Research endeavors soon followed, with notable publications in the Chinese literature regarding the effects of extracorporeal circulation, cardiac resuscitation, and the treatment of patients undergoing cardiothoracic surgery. In 1957, Shang established the first animal research laboratory in China to investigate invasive cardiothoracic anesthetic management, hypothermic anesthesia for cardiac surgery, and other resuscitative studies. His laboratory also developed the first plant to manufacture nitrous oxide, which responsibility was later transferred to the Beijing National Oxygen Manufacturer.

With excellence in research came the establishment of the Chinese Academy of Medical Sciences at Fu Wai, and Shang was named the academy's first director (letter from Jin Liu, M.D., Chairman, Department of Anesthesiology, Fu Wai Hospital, Cardiovascular Institute, Peking Union Medical College, to Patrick Sim, M.L.S., December 15, 1997, author's personal collection). At the academy Shang's research activities intensified and expanded to include cooperative development of extracorporeal circulation apparatus and the study and trial of glucose, salt solution, and other blood substitutes for cardiothoracic surgery and anesthesia. His research endeavor continued into the 1960s until the advent of the cultural revolution in 1965. Shang's expertise and talent, however, was recognized by the government even at the time of political upheaval. He was called to serve the health care and emergency needs of political leaders in Beijing and was able to continue his clinical research during the 1970s.

Shang traveled extensively and trained many residents at home, and in the Third World countries in Vietnam, Algeria, and Albania. He established international contacts, and broadened his professional horizons. Working in the nation's capital enabled to him to develop an infrastructure for anesthesiology in China. Two major contributions ensued. First, Shang helped found the Chinese Society of Anesthesiologists in 1979. He was elected president of the society in the same year, and held the post for the next 5 yr. In 1984, Shang was named emeritus president and counsel of the society. Second, Shang helped to establish the Chinese Journal of Anesthesiology in 1981. He served on the editorial board as an associate editor. He continued his work with the journal until his death in 1985. Truly, Shang followed the Wisconsin credo of teaching other doctors to go out and teach.
Yung Shieh, M.D. Photograph courtesy of the Wood Library-Museum.

Yung Shieh, M.D.

Yung Shieh (fig. 5) is another central figure trained in the United States in the development of post–World War II Chinese anesthesiology. Graduating from the Tung Chi University School of Medicine in 1946, he traveled to the United States and found training in midwestern America. Going to the Detroit Receiving Hospital in Michigan, which was affiliated with Wayne State University, Shieh began his anesthesia instruction under the guidance of Ivan Taylor, a fellow alumnus of Cassels who headed the Illinois program that Deyan Shang attended. Taylor trained in the mid 1930s in Madison, Wisconsin, with Waters. He developed an academic department of anesthesiology at the University of Pennsylvania (Philadelphia) before coming to Detroit. In 1946, Taylor established the Department of Anesthesiology at Wayne State University and its teaching affiliate, the Receiving Hospital. After leaving Wayne State University, it was believed that Shieh received additional training in Pittsburgh, Pennsylvania, before returning to China in 1950. He was appointed lecturer in anesthesiology at the Peking Medical University. A year later, Shieh received a concurrent appointment at the Peking Union Medical College as a consultant. As a native of western Yunan, Shieh traveled to his home province in 1952 to develop anesthesiology in the southwest region of China. He selected Kunming, the capital city, to develop his plan. Hitherto, Yunan had not experienced formal anesthesia service, except for the pioneer work of Hu, beginning in 1947. At arrival in Kunming, Shieh conducted an anesthesia training class of 15 persons, and Hu was among this group. Only Hu chose to continue his practice in Yunan, whereas the rest of Shieh’s trainees left anesthesiology. For the next 3 yr, Hu provided anesthesia service and imparted the knowledge and skill he learned from Shieh to other healthcare personnel throughout the entire province. He taught and practiced intravenous procaine to achieve general anesthesia, a procedure that continued to be popular in China as late as the mid 1980s. Other procedures he learned from Shieh and actively practiced were tracheal intubation and refrigeration analgesia. Unique for Chinese anesthesia, Hu’s practice in Yunan reflected a pragmatic approach in an era when anesthesia service was scarce. Hu was in charge of major surgical anesthesia, whereas minor cases were handled by junior house officers and other attending physicians under Hu’s supervision. Such a practice arrangement was reminiscent of the anesthesia service provided by skilled nurses in the 1930s at Peking Union Medical College. The difference in the Yunan experience was that formal anesthesia training was accompanied by teaching, whereas the anesthetic service provided by nurses Holland and Swisher were simply service to surgery without a long-term goal. Although Shieh returned to Beijing to continue his teaching and writing, Hu became a steady force of anesthesia in Yunan. He was joined by Dr. Kuang Xian in 1955, who has since carried on and continued Hu’s development of anesthesiology in Yunan (Patrick Sim, oral personal communication with Professor Kuang Xian, October 12, 1999, Dallas, Texas).

At the arrival of Shang in Beijing in 1956, Shieh started a collaborative relationship with Shang, which benefited Chinese anesthesiology (Zorab JSM: Citation on behalf of Professor Shieh Yung on his admission as an Elected Fellow of the College of Anaesthetists, [WFSA]; March 19, 1991. Zorab Papers, World Federation of Societies of Anesthesiologists Archive, Wood Library-Museum Collection). Like his contemporaries Wu and Shang, Shieh was noted for research accomplishments: the publishing of more than 70 articles and seven textbooks. He was appointed associate professor at Peking Medical University in 1957 and became a full professor 10 yr later. By
1981 Shieh was appointed deputy director of the Institute of Clinical Medicine at his university. He was a member of the National Ministry of Health from 1981 to 1986. Indeed, Shieh succeeded in bringing anesthesiology into the realm of mainstream Chinese medicine.

Shieh was the founding editor-in-chief of the Chinese Journal of Anesthesiology. Along with Wu and Shang, Shieh helped define, through the journal, the scope of Chinese anesthesiology. Editorials and communications, especially from Wu and Shang, reflect Waters’s teaching. These three anesthesiologists thought that their specialty would reach its potential only when the medical community recognized, accepted, and respected anesthesiology. Their views and their professional activities on behalf of their chosen specialty to enhance anesthesiology in China were no different from Waters’s, Cassels’s, or Taylor’s some 40 yr previously.

Shieh succeed Shang as president the Chinese Society of Anesthesiologists in 1984. He continued the work started by Shang and brought the society to the next level to become a part of the international anesthesiology community. Using his organizational talents, and with enormous patience and diplomatic skill, Shieh guided this national society to become a full member of the World Federation of Societies of Anesthesiologists in 1988. It was a struggle that took Shieh 8 yr to accomplish. In recognition of this achievement, the World Federation of Societies of Anesthesiologists inducted him as a fellow of the College of Anaesthetists in 1991 (Zorab JSM. Citation on behalf of Professor Shieh Yung on his admission as an Elected Fellow of the College of Anaesthetists [WFSA], March 19, 1991. Zorab Papers, WFSA Archive, Wood Library-Museum Collection).

Conclusions

American physicians have had an ongoing influence in Chinese anesthesiology. From the work of Parker and the first anesthetics in China, through the work of the China Medical Board and the Rockefeller Foundation, to the training of three young anesthesiologists, America has helped to define Chinese anesthesiology, despite many obstacles. Wu, Shang, and Shieh lived the Waters philosophy they were taught in the Midwest. Each chose a career in academic medicine, published extensively, involved themselves in organized medicine, and established strong training programs for the next generation of physicians. Like their American mentors, these physicians also trained anesthesiologists from across the country and throughout the world, especially in the eastern European block and the Third World countries.

In a vast and geographically diverse country such as China, particularly at the time its society had undergone political and philosophical transformation in a momentous era in the mid-twentieth century, it is necessary to evaluate other forces in medicine that helped to shape Chinese anesthesia. The development of anesthesia, with consideration of indigenous conditions and requirements, was prominently exhibited by Shang’s contribution to cardiothoracic anesthesia and the anesthetic treatment of wounded patients. Since the early 1950s, the practical use of intravenous procaine to induce general anesthesia has been popular, accounting for 45% of the general anesthetics administered annually, largely because of its long-lasting anesthetic effect and low cost. Its popularity continued for more than 3 decades, and it was frequently observed during a “people-to-people” exchange visit of international anesthesiologists in Beijing, led by Dr. John S. M. Zorab of the United Kingdom in 1987. In addition to procaine intravenous anesthesia, Zorab’s group also noted that muscle relaxation was only used for tracheal intubation. A recovery room near the operating room was nonexistent. Regarding anesthetic human resources, the visiting delegation reported that there were 30,000 anesthetic service providers, but only 15% were physician anesthesiologists. The majority of anesthesia personnel in China were nurses and technicians (Zorab JSM, Delegation Leader. People to People Anesthesiology Delegation to the People’s Republic of China and Hong Kong, November 13, 1987. Zorab Collection, WFSA Archives, Wood Library-Museum of Anesthesiology). Chinese anesthesia has its unique system to provide adequate service to a large surgical patient population. In addition to the formal 5-yr physician anesthesiology program, Chinese anesthesiology also includes anesthesia nurses who assume the role of the technician in the care of surgical patients. There are also anesthesia medical assistants who can prescribe simple drugs for simple procedures (Patrick Sim, personal communication with Professor Kuang Xian, October 12, 1999, Dallas, Texas). The number of anesthesia service providers certainly was very small for a vast population in China. This fact makes Shieh’s effort in Yunan in 1952 all the more significant in the development of anesthesia service in the remote southwest region of China. Waters in midwestern America taught his disciples to teach other doctors; Shieh followed that philosophy despite the fact that only 1 person of a class of 15 carried on his mission.

Wu, Shang, and Shieh developed the essential infra-

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structure to allow Chinese anesthesiology to prosper. In addition to their training programs, they established the 
Chinese Journal of Anesthesiology and founded the Chinese Society of Anesthesiologists. Each worked within
the Chinese system to elevate the status of anesthesiology, similar to the work of Waters and colleagues in 
America in the 1930s and 1940s. Shieh especially brought the Chinese into the World Federation of Soci-
etics of Anaesthesiologists, thus joining the Chinese with their American colleagues in collegial cooperation. Al-
though not always evident, American influences in Chinese anesthesiology are present and run deeply through 
the fabric of the specialty. Mindful of the indigenous conditions, these three American-trained pioneers 
served Chinese anesthesiology with intelligence, fortitude, and pragmatism.

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