

# The Chicago School of Hand Surgery

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**Abstract:** The Chicago School of Hand Surgery played a pivotal role in the genesis of the specialty of hand surgery in the United States and abroad. Drs. Alan Kanavel, Sumner Koch, Michael Mason, and Harvey Allen were among the first “modern” surgeons to carefully and systematically assess the care and treatment of hand injuries and hand pathology. This article highlights the lives and contributions of the founders of the Chicago School of Hand Surgery. (*J Hand Surg* 2003;28A: 724–728. Copyright © 2003 by the American Society for Surgery of the Hand.)

**Key words:** Hand surgery, history, Chicago School of Hand Surgery, Alan B. Kanavel, Sumner L. Koch, Michael L. Mason, Harvey S. Allen.

Drs. Allen Kanavel, Sumner Koch, Michael Mason, and Harvey Allen were the embodiment of the Chicago School of Hand Surgery. A review of the biographies of these men reveals several similarities. All were raised in small country towns. All were Northwestern Medical School graduates and continued on the faculty to attain professional ranks. All were associated closely with Passavant Hospital and Cook County Hospital. All were Fellows of the American College of Surgeons. All had extensive wartime experience in the U.S. Army Medical Corps. All had trained in general surgery. Drs. Kanavel, Koch, and Mason were long-time editorial staff members of *Surgery, Gynecology and Obstetrics*. Drs. Kanavel and Koch were sons of ministers.

Allen Buckner Kanavel (Fig. 1) was born in 1874 in Sedgwick, Kansas, the son of a Methodist minister. After his graduation from Northwestern University Medical School in 1899, he traveled to Vienna to further his medical education. On returning to Chicago he completed his internship at Cook County Hospital and

established a private practice on the south side of Chicago in 1901. Thanks to Dr. Weller Van Hook, the chairman of the Department of Surgery at Northwestern University Medical School, Dr. Kanavel was permitted to assist in pre- and postoperative anesthesia management at Wesley Hospital—but he was not permitted in the operating rooms. Dr. Kanavel was eventually allowed to join the staff of Wesley Hospital and went on to become, in 1920, the chairman of the Department of Surgery of Northwestern University. Dr. Kanavel was initiated into surgical practice at a time when few surgeons specialized; Dr. Kanavel, however, has been described as a specialist in many fields of surgery. His early association with Dr. Franklin Martin (who would go on to found the American College of Surgeons and *Surgery, Gynecology, and Obstetrics*) afforded him an opportunity to acquire a wide experience in gynecologic surgery. He became keenly interested in neurologic surgery, developing an original method of approaching the pituitary fossa by an intranasal route. He also skillfully performed surgeries on the trigeminal nerve for the relief of tic douloureux. He was known as a master surgeon and made outstanding contributions to the fields of abdominal, thoracic, and reconstructive surgery.

Early in his surgical career Dr. Kanavel was struck by the haphazard treatment accorded patients with severe infections of the hand. This led to his anatomic study of the tendon sheaths and fascial spaces

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Figure 1. Allen Buckner Kanavel.

of the hand by injecting them with an opaque material and carefully observing the route and spread of the extension of the injected material. These studies were done during a period of nearly 10 years and were incorporated in 1912 in a monograph entitled *Infections of the Hand*<sup>1</sup> (Fig. 2). These studies, as they were applied to clinical practice, revolutionized the treatment of hand infections. The book was accepted widely throughout the world and its popularity is attested to by the publication of 7 editions through 1939. It was the only practical textbook on the care of the hand during World War I. To this day it is considered the seminal work on this common and often serious condition.

Dr. Kanavel, in addition to his many other duties and obligations, served as associate editor and then editor of *Surgery, Gynecology and Obstetrics*. He retired from surgical practice in the early 1930s. Allen Kanavel's life ended abruptly in an automobile accident as he traveled from Chicago to California in 1938; he was 64 years old.

Sumner Leibnetz Koch (Fig. 3) was born in 1888 in Cavalier, North Dakota, the son of a Lutheran minister. He attended Northwestern University Medical School and also interned at Cook County Hospital. He was 14 years younger than Dr. Kanavel. After his internship at Cook County Hospital, he joined Dr. Kanavel at Wesley Hospital and Northwestern University Medical

School. During World War I, he entered the Army Medical Corps and served in France from 1917 to 1919. At the same time, Dr. Kanavel served as a consultant in surgery overseas. Dr. Koch was a surgeon on the staff of the U.S. Army 12th General Hospital. After his wartime experience, he resumed his surgical practice with Dr. Kanavel at Wesley Hospital in Chicago. In 1929, Dr. Kanavel, Dr. Koch, and their new associate, Dr. Michael L. Mason, moved from Wesley Hospital to the newly opened Passavant Hospital and Northwestern University Medical Center.

Throughout his career, Dr. Koch maintained a close relationship with Northwestern University, Passavant Memorial Hospital, and Cook County Hospital. At the latter, he established the Hand Clinic and the first organized burn service.

The essential precepts of wound care described by Dr. Koch in the article "Injuries of the parietes and extremities,"<sup>2</sup> published in 1943, were followed by our medical military services during the second half of World War II. The basic teachings put forth in this work

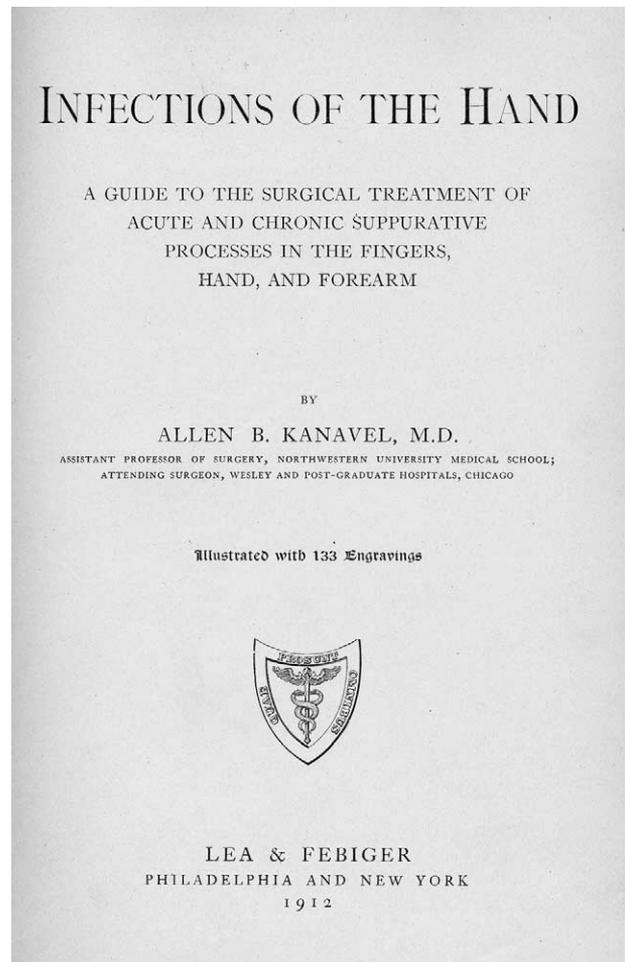


Figure 2. Title page of the first edition of *Infections of the Hand*.

still form the basis of fundamental wound care. "Healing in the minimum period of time" was stressed in that timely monograph. The standard treatment of burns, in both civilian and military practice, has followed the general principles of wound care advocated by Koch.

Dr. Koch's dedication to teaching influenced the field of surgery through the many surgical residents and hand surgery fellows who attained great heights in their chosen fields of general, orthopedic, plastic, and hand surgery. Indeed, from the late 1940s through the 1960s, the Chicago School became a center of hand surgery in the United States. The School was visited frequently by surgeons interested in developing their skill in the new specialty of hand surgery. A hand surgery fellowship was started at the Chicago School and many of the Schools' fellows went on to make significant contributions to hand surgery and to the American Society for Surgery of the Hand. Two notable examples are Drs. James Strickland and Robert MacFarlane, both of whom became presidents of the American Society for Surgery of the Hand.

Michael Livingood Mason (Fig. 4) was born in 1895 in Rossville, Illinois, the son of Dr. Francis Marion Mason. As a student at Northwestern University, he was recruited into the Army and was assigned to the 12th General Hospital, which was staffed by members



Figure 4. Michael Livingood Mason.

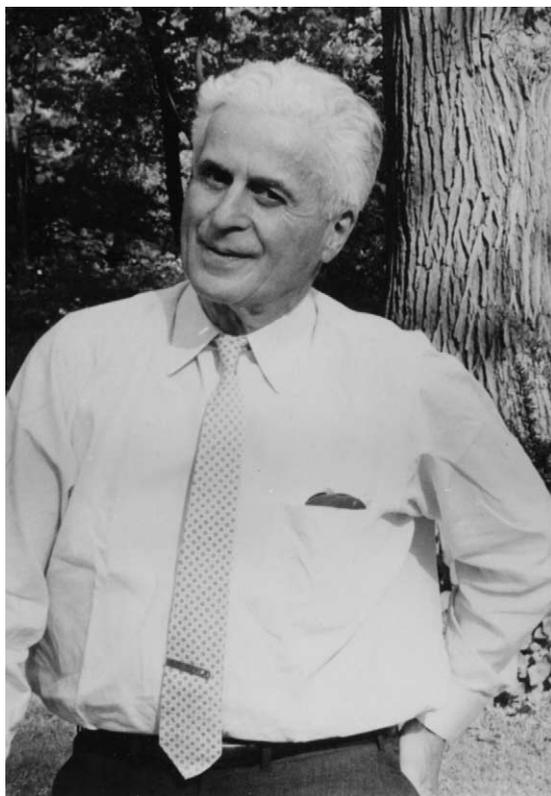


Figure 3. Sumner Leibnetz Koch.

of the faculty of Northwestern University Medical School, including Dr. Koch. He rose to the rank of operating theater sergeant and had the privilege of observing Dr. Koch's sterling work. This experience led him to study medicine and ultimately to his association with Drs. Koch and Kanavel.

Michael Mason received his PhD in anatomy in 1923 and graduated from Northwestern University Medical School in 1924. He interned at Cook County Hospital and then, in 1925, traveled to Vienna, Austria, to study pathology. This interest in pathology culminated in a series of both experimental and clinical pathology treatises on various surgical disorders of the hand.<sup>3-5</sup> He returned to the United States in 1926 and joined the practice of Drs. Kanavel and Koch at Wesley Hospital and Northwestern University Medical School. One of Dr. Mason's most significant contributions to the field of hand surgery is the study of the rate of healing of tendons.<sup>6</sup> His research encompassed the histologic and biomechanical characteristics of repaired canine flexor tendons and is considered an important milestone in our understanding of flexor tendon healing. This study



**Figure 5.** Harvey Stuart Allen.

stemmed from Dr. Mason's belief in primary flexor tendon repair.

Other major contributions of Drs. Kanavel, Koch, and Mason to surgery of the hand are outstanding articles on the surgical treatment of Dupuytren's contracture,<sup>7</sup> the treatment of tuberculous tenosynovitis,<sup>8</sup> and the management of tumors of the hand.<sup>9</sup>

The next to join the group was Harvey Stuart Allen (Fig. 5), who was born in 1906 in Livingston, Montana. After graduating from Northwestern University Medical School, he trained at both Passavant Hospital and at the Lahey Clinic. He then joined Drs. Kanavel, Koch, and Mason in 1936.

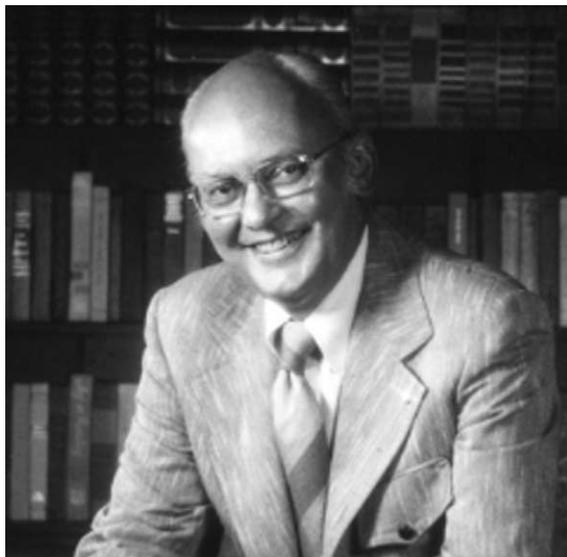
Dr. Allen worked with Dr. Mason on research for "The rate of healing of tendons".<sup>6</sup> He took charge of the Cook County Hand Clinic and served on the Cook County Hospital Children's Surgical Ward. During World War II, he joined Dr. Mason in the management of the 12th General Hospital, North African-Mediterranean Theater, with Dr. Mason being the chief of the hospital and Dr. Allen acting as assistant chief. During their overseas tour, Drs. Mason and Allen developed the universal hand splint, which is still in wide use today. After their return to civilian life in 1946, Dr. Allen joined Drs. Koch and Mason at Northwestern and Passavant Hospitals. Dr. Allen gained great experience in the management of burns while working on the Cook County Hospital burn unit. One of Dr. Allen's major contributions to surgery of the hand was his advocacy of early excision of the full thickness burn eschar and early skin grafting. In 1949, Dr. Allen was advocating excision of hand burn eschar as early as 5 days after a burn and burn coverage with skin grafting as early as 1 week after a burn.<sup>10</sup>

Dr. Allen was awarded a Fulbright Professorship in Denmark in 1954. During his stay in Denmark he helped create the foundation on which Danish hand surgery would be built. Dr. Allen returned from Denmark and died of coronary artery disease after a very short illness in 1955; he was only 49 years old.

Dr. John Bell (Fig. 6) had the privilege of receiving a major part of his surgical and hand surgery training



**Figure 6.** John L. Bell, MD, and Michael Mason, MD, the American College of Surgeons panel, 1956.



**Figure 7.** Dr. William B. Stromberg Jr.

with Drs. Koch, Mason, and Allen and joined them in practice in 1952. Dr. Bell relates that he had the opportunity to know Drs. Koch, Mason, and Allen intimately and noted the following personal traits of each man. “Although many of their interests were along the same lines, there were some major differences in their personalities and mannerisms. Dr. Koch was a very quiet and thoughtful man who was very methodical. (He was known as ‘whispering Jesus’ by the operating room staff.) His surgical technique was flawless. His motto—‘not how quickly but how well done’—was posted in the operating suite at the Children’s Hospital at Cook County.”

Dr. Mason was a very gentle, quiet man. He was kind and thoughtful and was known as a surgeon’s surgeon. His opinion was respected widely throughout the surgical and medical world. He had a true scientific inquiring mind. His dedication to basic science is evidenced by the fact that he received his PhD in anatomy before entering medical school. Dr. Mason was also a meticulous technician with excellent surgical judgment.

Dr. Harvey S. Allen was a very dynamic person who had boundless energy. He worked 7 days a week at full speed. He was an excellent technician. He did things very rapidly but also very carefully. Some of his results after flexor tendon surgery are among the best Dr. Bell had ever seen.

Drs. Koch, Mason, and Allen were among the founders of the American Society for Surgery of the Hand. Dr. Koch became the second president of the Society in 1947, and Dr. Mason ascended to that post, as the sixth president, in 1951. Dr. Bell became

the 27th president of the American Society for Surgery of the Hand in 1972.

After Dr. Allen’s untimely death in 1955, Dr. William B. Stromberg Jr (Fig. 7), an orthopedic surgeon, joined Drs. Koch, Mason, and Bell in practice and that association continued until Dr. Mason suffered a massive stroke in 1959 that left him completely aphasic. Dr. Mason died in 1963. Dr. Koch quietly passed away in 1976 at the age of 88.

During the years since Dr. Allen’s death, the Chicago School’s clinical and educational activities have continued under the guidance of Drs. Bell and Stromberg and their successors. Dr. Gerald D. Harris, a plastic surgeon and son of a minister, joined the practice in 1979 after completing a fellowship with Dr. Harry Buncke. Dr. Daniel J. Nagle, an orthopedic surgeon, joined the practice in 1984 after completing his fellowship with Drs. Kleinert and Kutz. Dr. Stromberg took an early retirement, moved to Galena, Illinois, and died on March 7, 1991. Dr. Bell retired in December of 1987, moved to Pinehurst, North Carolina, and died on February 3, 1998. Dr. Thomas Wiedrich, a plastic surgeon and son of a minister, joined the practice in 1992 after completing a fellowship in hand surgery at the Indiana Hand Center. Dr. John Stogin Jr, an orthopedic surgeon, completed his hand fellowship at the Indiana Hand Center in 1991 and joined Drs. Harris, Nagle, and Wiedrich in 1996 to continue the legacy of the Chicago School of Hand Surgery.

This article is based in part on the lecture “Historical Review – The History of Hand Surgery in Chicago” presented by John L. Bell, MD, to the American College of Surgeons on May 14, 1987, at the Westin Hotel, Chicago, Illinois.

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