

Arno B. Luckhardt, Physiologist

Arno Benedict Luckhardt was born in Chicago, Illinois, on 26 August 1885, the son of Gustav Adolph and Aurelia (Weber) Luckhardt. At the age of 12 he entered Conception College—then a Benedictine abbey—in Missouri, and in 1903 he entered the University of Chicago, from which he received the B.S. degree in 1906. This was followed by the Ph.D. degree in 1911 and the M.D. degree from Rush Medical College in 1912. On 24 April of the same year he married Luella Catherine LaBolle, and she and their three children—Hilmar Francis, Paul Gregory and Mary Aurelia (Miesse)—survive him.

His entire professional life was spent at the University of Chicago. Beginning as an assistant in bacteriology in 1908, he joined Anton Julius Carlson in the department of physiology in 1909 and advanced through the department, attaining the rank of professor in 1923 and the designation of Dr. William Beaumont Distinguished Service Professor in 1947. After retiring to the status of distinguished service professor emeritus in 1950, he continued his professional interests and activities to the end of his life. He died in Miami Beach, Florida, on 6 November 1957, and is buried near the former home of his wife, at Somonauk, Illinois.

This simple chronological statement does not begin to do justice to the talented, versatile, and dedicated person that was Arno Luckhardt. He was, first and foremost, a teacher and investigator in physiology. His pupils were many, and he was especially beloved by his graduate students, to whom he gave himself unstintingly. He will be best remembered for his introduction of ethylene gas as an anesthetic, but his contributions relative to the physiology of gastric secretion, gastrointestinal motility, the visceral sensory nervous system, and the function of the parathyroid glands were equally outstanding. As a result of his work, for example, it became possible for the first time to keep experimental animals alive

following complete removal of the parathyroid glands and to prevent and relieve parathyroid tetany, which customarily followed this operation; his methods were applied successfully in human surgery.

It was characteristic of Arno Luckhardt that when he became interested in the potential anesthetic properties of ethylene gas, which he was the first to recognize, and after having performed the appropriate experiments with animals, he and his associate, J. Bailey Carter, inhaled it and put themselves to sleep. A demonstration was given to physicians and surgeons on 14 March 1923, and within three days the gas was in use as an anesthetic at the Presbyterian Hospital of Chicago. Having become convinced that he had made a significant discovery, Luckhardt records the fact that he himself inhaled an ethylene-oxygen mixture to the point of anesthesia some 700 to 800 times, without any bad aftereffects. After 900 successful operations under ethylene-oxygen anesthesia had been recorded, it was given to the public and the profession free, and without patent rights to anyone; this is in striking contrast to the attempts at commercial exploitation that followed the introduction of ether anesthesia in 1846. Luckhardt's discovery not only resulted directly in the introduction of a new and improved anesthetic; it also gave added impetus to the search for other new agents and new methods of administering them, and to the steps leading to the creation of a new specialty of anesthesiology.

Arno Luckhardt was a man of many interests; he was attracted to the problems of dental care and cooperated actively with dentists and dental organizations in promoting higher professional standards in dental therapeutics and in dental journalism. He was also active in cultivating closer medical-dental relationships in the interest of obtaining a higher level of health care for the public. In 1930 he became a charter member of

the Council on Dental Therapeutics of the American Dental Association and served on this council until 1948. In recognition of his services to dentistry he was made an honorary fellow of the American College of Dentists in 1933. On 4 November 1957, two days before his death, he was made an honorary member of the American Dental Association, at its meeting in Miami Beach, Florida, and addressed the association in response.

His wide interests included the history of the medical sciences, and he made significant contributions in many areas, notably to the record of William Beaumont's studies of the physiology of digestion. He collected Beaumontiana, and also a large and important library of books and pamphlets related to the history of medicine. But he was more than a collector; his early education in Medieval Latin gave him the ability and the urge to read and enjoy many classics of medicine in the original. He collaborated with James Henry Breasted in the interpretation of the Edwin Smith surgical papyrus, "the oldest scientific book in America and the oldest nucleus of really scientific medical knowledge in the world." He acquired a unique collection of medical manikins, which gave him much pleasure.

Luckhardt served on the Council of the American Physiological Society; he was secretary from 1930 to 1932 and president from 1932 to 1934. He was president of the Federation of American Societies for Experimental Biology in 1934. He was active in the Society for Experimental Biology and Medicine and served on its editorial board and as associate editor of the *Proceedings*. As a Rockefeller fellow he visited Germany in 1924–25 and during his visit was elected to membership in the Kaiserliche Akademie der Naturforscher. For many years he was a member of the Chicago Literary Club, and he served a term as president. He was one of the founders of the Gamma Alpha graduate scientific fraternity.

Scientist, scholar, and teacher, Arno B. Luckhardt made a great contribution to his university, his profession, his fellow scientists, and his pupils. Physiology, medicine, surgery, and dentistry have been enriched by his contributions to human welfare. But the man was greater than the sum of his parts; his memory will live long with the many who admired, respected, and loved him and his works.

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