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Henry Ruth: Pioneer of Modern Anesthesiology

Henry Rosenberg, M.D., Jean K. Axelrod

ALTHOUGH anesthesia had been practiced since Morton's demonstration in 1846, the roots of modern anesthesia practice can be considered to have originated in the 1920s and 1930s. It was during that time that physicians began to limit their practice to administration of anesthetics. Pioneers such as Francis Hoeffer McMechan, James Gwathmey, and Elmer McKesson advanced the specialty considerably during the early part of the century.

Ralph Waters, Paul Wood, Ralph Tovell, Emery Rovenstine, and John Lundy are mentioned frequently in standard textbooks of anesthesia as being the professionals whose organizational skills as well as their medical expertise fostered the emergence of the specialty from the shadow of surgery during the third and fourth decades in the United States.

Another anesthesiologist in the forefront of the growth and development of professionalism in anesthesia, although often overlooked, was Henry Swartley Ruth (fig. 1). While practicing his entire professional life at Hahnemann Medical College and Hospital in Philadelphia, he became a nationally recognized figure for his part in founding the organizations that led to the development of modern anesthesiology as well as in founding and serving as first editor of the journal ANESTHESIOLOGY.

Henry Ruth was born on August 12, 1899, in Lansdale, Pennsylvania, a suburb of Philadelphia, where his father was president of a small bank. After attending the local public schools, Henry entered Swarthmore College in 1917 and completed his premedical education at Hahnemann's School of Science in 1919 with a bachelor's degree. He then completed medical training at Hahnemann Medical College and Hospital, graduating with honors in 1923.

Ruth had been trained by Everett A. Tyler, a 1913 Hahnemann graduate who had administered anesthesia at several Philadelphia hospitals and had become the first full-time medical anesthetist* in the city. Tyler was assisted in his early work by two part-time anesthetist/general practitioners, Wayne Killian and James Godfrey, the latter heading Hahnemann's anesthesia department until his retirement in 1942; Henry Ruth succeeded him in that post.

In 1923, the year of Ruth's graduation, there were no formally established or accredited residency pro-

Henry Swartley Ruth.

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Address reprint requests to Dr. Rosenberg: Professor and Chairman, Department of Anesthesiology, Hahnemann University Hospital, Broad and Vine Streets, Mail Stop 310, Philadelphia, Pennsylvania 19102-1192.

* Medical anesthetist is the term used throughout the early part of this century to designate a physician whose principal activity was administration of anesthetics.

grams in anesthesia. Instead, knowledge was obtained by observing anesthetic procedures in the operating rooms of various institutions. Hahnemann had ten elective lectures and four lecturers in anesthesia; by 1926 Ruth was one of the most popular lecturers, not only for his knowledge in a little-recognized branch of medicine, but also for his limitless enthusiasm toward extending the horizons of the field *via* research, especially in the area of regional anesthesia.

One of the great training grounds for all physicians of that era was Philadelphia General Hospital (PGH) which, with 2,200 beds and some 20,000 patients a year, many indigent, offered a wealth of knowledge and experience unavailable in most hospitals in the country. In fact, many of the most prominent physicians in the land lectured and practiced at PGH without recompense. Ruth was one such physician; he worked as a staff medical anesthetist at both PGH and Hahnemann after graduation, and from 1933 until 1940 was chief of PGH's division of anesthesia.

That hospital, like others across the nation, was fearful of greatly increased costs should the department be directed by medical anesthetists. Ruth was adamant in his disagreement, citing significant figures in his ongoing crusade to convince hospitals, whatever their size, to establish anesthesia services. Using PGH as a case in point, he wrote: "At the Philadelphia General Hospital in 1932, the anesthetics were given by technicians and internes [sic]. In 1934, a medical specialist was put in charge on a visiting basis only, and the anesthetics were administered by one resident, one technician, and the internes. On July of the latter year, a second resident was added to the division. In 1934, the cost of anesthetic gases was reduced 55 percent from the 1932 figure, and the cost of ether decreased 60.9 percent. This reduction was accomplished in spite of a 53 percent increase in the use of gases, a 47.6 percent increase in the number of patients receiving ether, and a 48 percent increase in the use of gas-ether combinations."[1]

Ruth also proposed that anesthetists educate medical personnel, mainly surgeons, to the merits of a department of anesthesia. He had to tread delicately when he stated: "Many surgeons may initially resent the anesthetist making suggestions concerning the agent and method, for it is a time-consuming process to impress them with the efficacy of sharing this selection. Only too few know that it is a matter of routine for us to adapt the anesthetic procedure to the pathology of the patient, the requirements of the operation, and the individual requirements of the surgeon. The average surgeon does not, until taught by experience, realize that the more authority he imposes on a capable and proficient anesthetist, the more startling will be the improvement in the results obtained."[1]

In 1933 Ruth also gained the title of Clinical Professor of Anesthesia at Hahnemann Medical College.

Ruth's Role in the Growth of Organized Anesthesia

From the start of his career, Ruth was in close communication with other anesthetists who wished to share their clinical findings and their ideas of unity in the field. One result of such bonding was the Anesthesia Travel Club of which Ruth was a charter member from its 1929 founding until 1954. The members, scattered at hospitals around the country, met periodically at each other's headquarters to observe operative procedures, lecture to students, discuss proposed curricula, and exchange ideas to add to the prestige of the specialty.

The first meeting was held in Rochester, Minnesota, where John S. Lundy was chief medical anesthetist at the Mayo Clinic. Most of this elite group traveled together on the Broadway Limited, the experience being so convivial that they continued to use that train as their "travel club."

In the early 1950s the Anesthesia Travel Club was renamed the Academy of Anesthesiology.

The American Board of Anesthesiology

Many of the Travel Club members were instrumental in the formation of the American Board of Anesthesiology in April 1938, organized as an affiliate of the American Board of Surgery to grant official recognition of physicians competent to practice and teach anesthesiology.

While board members had understood that eventually they would have to sever ties with their peers in surgery to gain accreditation in their fields, the affiliation came by invitation of the American Board of Surgery; Henry Ruth was appointed Vice Chairman and Liaison Officer to the surgical board.

The founding group copied with permission the constitution and plans of the American Board of Urology. Establishing regulations and examinations for a separate specialty required the input of anesthetists with a variety of backgrounds—clinical, educational, research-

trained. At the time, major contributions in the field were being made by scientists with backgrounds in chemistry, pharmacology, and physiology, and basic science was becoming an integral part of the specialty.

Thomas Buchanan of the New York Medical Center–Bellevue Hospital was named President of the American Board of Anesthetists, Inc.; Henry Ruth, Vice President; and Paul Wood, Secretary-Treasurer. The other board members were John Lundy, Emery Rovenstine, Harry Stewart, Ralph Tovell, Ralph Waters, and Philip Woodbridge.

Shortly after his installation, Buchanan died, and Ruth succeeded to the presidency in 1942.[2]

Paul Wood said of the newly formed board: "The composition of a board is of utmost importance. Geography, finance, physical status, personality, educational background and type of practice must be weighed. . . . It takes an average of 3 years for new members to adjust to the routine, learn the regulations of the board and become useful members. To render sound judgments, fair decisions and accurate impartial investigations of irregular or unusual situations requires full attendance and open-minded and reasonable attitudes. These attributes have characterized the specialty boards in general and the Board of Anesthesiology in particular."[3]

In 1941, the American Board of Anesthesiology was recognized as a separate major specialty board.

At that time, few physicians were devoting their full service to the specialty, yet the fledgling organization was intent upon gaining recognition and equality with other specialties. Even a century after having proven its benefits to mankind, anesthesiology was still considered a subspecialty at best, beholden to surgery. Henry Ruth claimed that, 100 yr after Morton, anesthesiology had just reached its adolescence. "Perhaps another 100 years or more will be required before mankind will know why and by what mechanism anesthesia can be produced."[4]

The first board certifications in the founding year yielded 105 diplomates; in 1942 the list of diplomates had grown to 182. After World War II, the ranks of newly board certified anesthesiologists began to rise; by 1950 there were 706 American Board of Anesthesiology diplomates. Today the number of American Board of Anesthesiology diplomates stands at well over 20,000.

Ruth served as President of the board from 1942 to 1944 and remained a staunch member of the board until his retirement.

Establishment of the Journal ANESTHESIOLOGY

At an early meeting of the American Society of Anesthetists, Inc. (ASA), in which Ruth and other members of the American Board of Anesthesiology were active participants, the need for an official organ as an outlet for its activities as well as for scientific articles was discussed. Francis McMechan had been the foremost organizer of the first journal devoted solely to anesthesia, *Current Researches in Anesthesia and Analgesia*, founded in 1922.

McMechan was also a stalwart member of the International Anesthesia Research Society. An ongoing dialogue between this group and the ASA about joining forces never led to fruition, nor did efforts of the two groups to publish a journal in common. McMechan had held a strong conviction that there was no place in organized anesthesia for nurse anesthetists and refused to be part of an organization that tolerated or endorsed that group (as did the American Medical Association). Moreover, the McMechan group was international, and many in the ASA thought that a national organization and a national journal were needed.

Thus the ASA undertook publication of a journal to be entitled ANESTHESIOLOGY. An editorial board was selected with Henry Ruth as Editor-in-Chief, Ralph Tovell and Emery Rovenstine as Associate Editors, and Paul Wood as Business Editor. An editorial policy committee consisted of John Lundy, Ralph Waters, F. W. Clement, and Philip Woodbridge.

It is interesting to note that there had been discussion about whether the dues for ASA membership should be increased $1 or $2 *per annum*, bringing the total dues to $11 or $12 to include the cost of the journal. Previously, 10 members out of 500 had dropped their membership in ASA when the dues were raised from $5 to $10.

A letter from Ruth to his editorial board prior to initial publication asked that consideration be given to separating the journal into sections on research, clinical studies, review articles, and abstracts. Early journals reflect the research atmosphere of the times.

Drs. Ruth, Tovell, and Rovenstine shared responsibility for editorial review of manuscripts with the final decision on suitability left to Ruth.

The journal did very well financially from the outset, as disclosed by a financial report from Paul Wood in August 1941. Advertising pages numbered 16 for the introductory issue; subscribers numbered 1,022 by the time the second issue was published that year.

For several years the journal was assembled in the kitchen of the Ruth home in suburban Philadelphia, with Ruth serving not only as editor but also as layout artist and general factotum. It was also Henry Ruth who selected and negotiated with Lancaster Press to be the printer. The fact that ANESTHESIOLOGY was launched a mere 9 months after the decision was made for it to become a reality is an indication of the commitment that Ruth made to the venture with which he is most widely associated. Paul Wood's work as business editor was no less prodigious. Ruth's tenure as Editor-in-Chief was the longest of any editor.

During this time the world went to war, an event that changed the course of American medicine immeasurably. The importance of anesthesiologists at the sites of battle was immediately recognized by the armed forces, and courses of instruction for medical officers in both military and civilian hospitals were initiated. During the war years, many of the journal's editorials addressed the problem of the greatly reduced number of anesthesiologists available to care for the civilian population and the immediate need for hospitals to use the best of whatever personnel might be available to administer anesthesia. This precept was, of necessity, in direct opposition to Ruth's ongoing crusade for hospitals to utilize only medically trained personnel. (With the exception of guest editorials written by representatives of other specialties, the journal's editorials were unsigned; while authorship is debatable, the editorials reflect Ruth's and the editorial board's deep concerns.)

Post-war planning for anesthesiology had to be investigated as the war drew to a close. In an article in the *New England Journal of Medicine,*[5] Ruth advocated that hospitals increase significantly the numbers of residencies in anesthesiology, noting that surgeons who had never had the experience of operating under conditions provided by physician anesthetists now could act in their behalf.

The article also contained Ruth's criteria for residency training, including a thorough knowledge of basic sciences as well as experience in spinal, regional, and intravenous techniques. "The days are past when a physician could call himself an anesthesiologist only because of his ability with inhalation agents and technics [sic]," he wrote.[5]

During and after the war, editorials in ANESTHESIOLOGY reflected the need for more public awareness of the benefits of the specialty. This need was intimately involved with economic considerations, inasmuch as anesthesiologists were asking for recompense commensurate with their ability and training. Ruth, writing in the same *New England Journal of Medicine* article stated: "Attempts have been and will continue to be made to enlist the services of physician anesthetists at full-time salaries at a level only slightly above that allotted for technicians. . . . If anesthesiologists cannot expect a financial return comparable to other specialties, the desirable type of young physician will little desire to enter or remain in the field."[5]

Other Major Political and Clinical Involvements

Despite the editorial demands on Henry Ruth during the war years, his clinical and teaching responsibilities took on an added dimension. He was the driving force in Philadelphia behind fulfilling the U.S. Surgeon General's dictum requiring all U.S. Army officers take a 2-week basic course in fundamental surgery (formerly required only of medical officers) followed by a curriculum in anesthesiology. The latter consisted primarily of clinical work in the operating rooms and other portions of the hospital, conferences, seminars, and lectures. Headquarters were at Hahnemann Hospital; cooperating in the instruction were Philip D. Woodbridge of Temple University Hospital, Frederick P. Haugen of Presbyterian Hospital, and Robert D. Dripps, Jr., of the Hospital of the University of Pennsylvania, all in Philadelphia.

The student officers were required to administer anesthesia, first under direct supervision and then on their own. They were also on call to treat emergencies, including overdose of drugs, and for resuscitative procedures and obstetric anesthesia and analgesia.†

Ruth was a severe taskmaster in a field almost totally foreign to many of his students, yet he can be credited with bringing some of those he taught into the specialty after World War II. He had remained in touch with many of his military students, urging them not only to consider medicine but also to consider further training in anesthesiology, and he continued to offer courses in anesthesiology after the war while he was civilian consultant to Philadelphia Naval Hospital.

Ruth was first delegate from the Section of Anesthesiology of the House of Delegates of the American Medical Association, representing the specialty in that body

† From the Course of Instruction in Anesthesiology at Hahnemann Medical College and Hospital, under the direction of Henry S. Ruth, M.D. for Officers of the U.S. Army.

from 1941 to 1955. During his tenure he was called upon to defend the position that anesthesia constituted a branch of medical practice. Because of his and his colleagues' persistence in countering the American Hospital Association, which considered anesthetists to be hospital employees and thus unable to bill for professional services, anesthesiologists can today submit professional fees and be reimbursed by the patient or a third party.

Adding to his laurels, and his burdensome schedule, in 1937 Ruth was named Vice President of the ASA, and President the following year. He received the society's Distinguished Service Award in 1952. Locally, he served as President of the Philadelphia Society of Anesthesiology, 1947–1948, and the Pennsylvania Society of Anesthesiologists, 1948–1949.

In 1936, Ruth founded the Anesthesia Study Commission of the Philadelphia County Medical Society, the first instance of a representative body of organized medicine forming a group to analyze the causes and incidence of specialty-related morbidity and mortality. His deep commitment to this cause, both ethically and scientifically, was a measure of his feeling for patients. His desire was not to unearth incriminating evidence but rather to teach preventive anesthesia.

Ruth wrote in *The Journal of the American Medical Association,* his thoughts on the value of such a study group: ". . . a constant interchange of thought is indicated between surgeon, internist and anesthesiologist in the best interests of patients. Intramurally this is accomplished by staff conferences. The formation of anesthesia study groups achieves the same object between institutions by a discussion of fatalities occurring from anesthesia and other interesting anesthetic situations. . . . In addition, no new anesthetic agent or method can be truly evaluated until a large series of administrations is consummated."[6]

Because details of individual fatalities were reported anonymously during the Philadelphia commission's quarterly meetings, the majority of larger hospitals in the area cooperated, but a fair number of small hospital staffs did not participate. As late as 11 yr after founding the commission, Ruth wrote again in *JAMA*: "Many hospitals in this country and abroad are using methods of anesthesia rather similar to those employed one hundred years ago. In many surgical amphitheaters, attempts to employ newer methods of anesthesia by poorly qualified personnel have resulted in an even greater incidence of death."[7]

With the compilation of impressive data on preventable deaths, greater attention began to be paid to assigning responsibility to anesthetists for the welfare of the patient undergoing surgery. In one shocking statistic, the commission voted as preventable six of eight cases of cardiorespiratory failure, 12 of 33 cardiac failures, 12 of 18 respiratory failures, 13 of 46 instances of shock (most frequently through inadequate or improper fluid replacement therapy), and 22 of 25 deaths from anoxia.[7] The fact that such statistics are surprising to today's practitioners can be attributed in part to Ruth's impassioned crusade for more rigorous training in anesthesiology and for disseminating knowledge.

In such a listing of professional attainments, one wonders how Henry Ruth also had the time and inclination to be a competent and caring clinician. Nonetheless, he always claimed that his patients came first, and he pleaded for the return of humanistic medicine. He advocated consultations between surgeon, internist, and anesthesiologist preoperatively. He is also remembered for his visits to the patient's bedside the day or evening before surgery to learn of potential complications and to offer reassurance. He was especially concerned for patients with uncontrollable pain; as early as 1932 he experimented with adding ethyl alcohol to procaine to increase the duration of nerve blockade in inoperable cancer.‡

Ruth's bibliography§ lists authorship of 54 articles, more than half of which dealt with clinical subjects. He also served as author of the section on anesthesia and Associate Editor of the *Cyclopedia of Medicine* from 1939 to 1952. Further, he wrote the section on regional anesthesia in F. W. Bancroft's *Operative Surgery* (1941 edition).

Ruth held memberships on the boards of innumerable anesthesia and surgical societies, from the regional to the international, and acted as consultant for a medical exhibit at the 1939 World's Fair.

The Personal Side of Henry Ruth

Extensive interviews with Henry Ruth's two surviving children (his firstborn died in infancy) suggest that he was a man with many interests outside his profession in his early years but whose dedication to advancement

‡ Ruth HS: Experimental nerve block for the relief of pain in inoperable carcinoma, Proceedings of the Homeopathic Medical Society of the State of Pennsylvania, 1932. Hahnemannian Monthly January: 1–9, 1933.

§ Bibliographical Directory, Academy of Anesthesiology.

of the specialty was eventually harmful to himself and his family relationships.

Why he went into medicine is an unanswered question. None of his forebears, nor any of his offspring, were physicians, although daughter Pat begged to be allowed to study medicine. Ruth, who catered to her many whims including ownership of a horse, forebade her that study, claiming that it was too all-consuming and she would never have a normal life. He did allow her to come with him to Hahnemann's operating theater on several occasions, and he readily answered her questions about his anesthetic techniques. She remembers seeing him "make a game" of administering anesthesia to pediatric patients, having the child reach up, take the mask in his hands and put it over his face himself. She claims that children were always cooperative.

Ruth loved music, and his musical talent was so evident that his alma mater, Swarthmore College, offered him a position on its music faculty after graduation. During his medical school days he was the director of the Hahnemann Glee Club. He was also a talented photographer, so much so that a Swarthmore upperclassman, future radio commentator Drew Pearson, asked Ruth to take pictures for him so that Pearson could join the staff of the college's yearbook.

A common love of music led to marriage to Lola Zendt (known as "Wodie"), whom he met in a choir. Sadly she did not share his interest in medicine and had an aversion to medical talk, which grew as Henry's social circle narrowed almost exclusively to Hahnemann colleagues, physician neighbors, and of course, his fellow anesthetists throughout the country.

Wodie died at age 55 of leukemia. Six months later Henry Ruth too was dead of a cerebral concussion with edema and hemorrhage following a fall at home at age 56. He had retired the preceding year because of failing health; an autopsy revealed a healed stomach ulcer, and son Henry Jr. ("Hank") related that his father had had four myocardial infarctions before age 42, a fact unknown to many of his colleagues.

Kenneth Keown (renowned himself for his pioneering role in cardiac anesthesiology) recalled the private Henry Ruth in a tribute at the time of his untimely death. He said: "Henry Ruth had some unique habits, at least to a young naive Midwesterner. For example, he had his clothes made by a tailor who came to his home at night for selection of materials, measurements and subsequent fittings. . . . Henry dressed in style, enjoyed his appearance, and was a most attractive man. . . . His barber came to his home to cut his hair. When he felt the need for a massage, the masseuse as well came to his home. . . . He loved big and expensive cars and drove always with complete control, but never—let me repeat, never—at or less than the posted speed limit."

In summary of Ruth's contribution to his specialty, Keown stated: "I firmly believe there have not been many members of the specialty of anesthesiology who have given so generously and unsparingly of their time, their efforts, their expertise, or themselves as did Henry Ruth. . . . Perhaps it was because of his unfailing labors and his concern for the specialty that his death June 7, 1956, came at such an early age."‖

The authors give special thanks to Drs. Leroy Vandam and Seth Fisher; Judy Baker; and Patrick Sim.

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‖ From the eulogy delivered at Henry Ruth's funeral in June 1956.