The AACC Celebrates Its 50th Anniversary

Excerpt from an article in the History Division Newsletter—prepared by Nathan Radin with input from Samuel Meites, Louis Rosenfeld, Wendell T. Caraway, and J. Stanton King.

To understand the need for the AACC 50 years ago, one must consider the development of technology that gave physicians an increasingly important tool for diagnosis and for following the course of disease and abnormal metabolic states of the human body. Otto Folin (1867–1934), Stanley K. Benedict (1884–1936), and Donald D. Van Slyke (1883–1971) are generally considered the earliest clinical chemists in the US. Indeed, they may be regarded [with perhaps Ivar C. Bang (1869–1918) in Sweden] as the founders of modern quantitative blood chemistry, with emphasis on practical microanalysis and rapid turnaround time suitable for medical diagnosis. Their students became the developers of both medical school biochemistry departments and hospital chemistry laboratories.

Van Slyke perfected instrumentation that permitted accurate and precise measurements of blood gases for the first time. Many years after completing his classic studies of gas exchange, Van Slyke defined clinical chemistry as including not only development of methods but study of all the phenomena of the body’s normal clinical processes and the alterations they undergo in disease. Many believe that the term “clinical chemistry” was first popularized in Van Slyke’s two-volume epochal work, Quantitative Clinical Chemistry, which he published with John P. Peters in 1931. Although others had previously published texts with the words “clinical chemistry” in the title, none of these books received such widespread interest as Van Slyke’s tome. The journal in which the work of the earliest clinical chemists (Van Slyke, Bloor, Benedict, Folin, Wu, Sperry, Schoenheimer, Bodansky, and others) was published is called the Journal of Biological Chemistry.

The book Practical Physiological Chemistry by Philip B. Hawk, a most widely used laboratory handbook, which was considered the original “cookbook” for clinical chemistry, first appeared in 1907 and was used during more than half of the 20th century. This book was designed for use in courses in practical physiological chemistry in schools of medicine and of science. The text, based on a manual Hawk prepared in 1904 for his teaching at the University of Pennsylvania, contained procedures for detailed analyses and descriptions of the medical utility of most tests. The book was first published by P. Blakiston’s Son & Co., Philadelphia. Beginning with the 9th edition (1926), some joint authors were Olaf Bergeim, Arthur G. Cole, and Bernard Oser. When Oser was a chemistry major at the University of Pennsylvania, he discovered the sixth edition of Hawk’s Practical Physiological Chemistry. He was intrigued and eventually became one of Hawk’s graduate students at Jefferson Medical College in Philadelphia. Oser was the senior editor of the 14th and last edition, renamed Hawk’s Physiological Chemistry and published in 1965 by the Blakiston Division, McGraw-Hill, New York.

Colorimetric procedures developed for the clinical chemistry laboratory early in the 20th century were used widely because they were less time-consuming than gravimetric and titrimetric methods. The Duboscq colorimeter became a predominant instrument for comparing the colors of unknowns with those of standard solutions; matching of colors depended on the technologist’s color perception. During the decade of the 1940s the development of photometers (e.g., by Klett and by Coleman), spectrophotometers (e.g., by Arnold O. Beckman, the Model DU spectrophotometer), and flame photometers enhanced the quality of colorimetric procedures. The modern era had begun to evolve: the electronic pH meter was developed (e.g., the Beckman pH meter, Model G); Samuel Natelson pioneered ultramicro blood chemistry and developed a gasometer that was simpler to use than the Van Slyke gasometers; Ernest Cotlove simplified the determination of the chloride concentration in blood with his electrochemical chloride meter; flame photometry (later to be replaced by atomic absorption spectrometry) simplified the determination of sodium, potassium, and calcium; Poul Astrup advanced the measurement of blood gases and developed a pH meter for measuring the hydrogen ion concentration in blood; simplified electrophoresis instrumentation permitted diagnosis of protein abnormalities; with the development of spectrophotometry, kinetic measurements of enzymes became possible, so that transaminase and lactate dehydrogenase determinations changed the way that physicians diagnosed and monitored cardiac disease and hepatitis; the adaptation of immunology to radioimmunoassay by Berson and Yalow permitted analysis of “nano-” concentrations of hormones, drugs, and specific proteins and opened a new era in clinical analysis; and, last but not least, the invention of the AutoAnalyzer® by Leonard Skeggs initiated the era of automation in the clinical chemistry laboratory. With the development of the sophisticated instrumentation and techniques described above, it is no wonder that the volume of testing began to rise dramatically after World War II, along with the medical profession’s new-found understanding of the usefulness of laboratory testing.

The advances in laboratory medicine practice led to the formation of three major organizations in the United States. The first organized group of laboratory practitioners was the American Society for Clinical Pa...
thology (ASCP), founded in 1922. This society began to publish the American Journal of Clinical Pathology in 1931. The American Chemical Society (ACS) also recognized the role of non-physician chemists in hospital laboratories, and in 1923 the ACS entered into an agreement with organized medicine to protect the right of non-physician chemists to practice their profession in a hospital environment. The College of American Pathologists (CAP) was organized at a constitutional convention that met on December 13 and 14, 1946. A Committee on Standards was created to consider new techniques, limits of error, choice of methods used to perform the technique, the type of training necessary for the technicians who perform the tests, and standardization of routine procedures. F. William Sunderman, Sr., MD, PhD, was a leader in setting up CAP surveys to test clinical laboratory performance.

Until 1948, clinical chemists in the United States had no professional organization to represent their unique interests; each worked in relative isolation in his own laboratory. In the 1930s and 1940s, a group of hospital chemists in New York City who had trained in physiological, organic, or analytical chemistry, as well as several physicians well-trained in chemistry, maintained a loose professional network. These individuals shared an interest in biochemical research, but they also assumed responsibilities for hospital laboratories. One of the sparks that led to the creation of the American Association of Clinical Chemists (subsequently renamed the American Association for Clinical Chemistry) was a 1947 report by Belk and Sunderman documenting the poor state of performance of clinical chemistry in the United States. The study found, for example, that many laboratories could not accurately perform a simple glucose analysis, and that proficiency studies were failing in their mission to ensure reliable results. After this report and with the increasing use of the clinical chemistry laboratory, clinical chemists thought of organizing a society, both for educational and political reasons.

Miriam Reiner (Mt. Sinai Hospital), Joseph Kahn (Maimonides Hospital), and Max Friedman (Queens General Hospital), three clinical chemists in New York City, took their idea for an organization of hospital chemists to Harry H. Sobotka, then the director of the chemistry laboratory at Mount Sinai Hospital. Sobotka enthusiastically agreed with their proposal. The first organizational meeting took place at 8:30 p.m. on December 15, 1948, in the board room of the Mount Sinai Hospital. Sobotka presided over this meeting and according to the minutes of this meeting, the attendance was as follows: A. Bodansky (Hospital for Joint Diseases), J.J. Carr (Metropolitan Hospital), Louis B. Dotti (St. Luke’s Hospital), Max M. Friedman (Queens General Hospital), Joseph Kahn (Maimonides Hospital), Mary H. McKenna (Harlem Hospital), Samuel Natelson (Brooklyn Jewish Hospital), Miriam Reiner (Mount Sinai Hospital), Albert E. Sobel (Brooklyn Jewish Hospital), and Harry H. Sobotka. A.J. Nydick, a legal advisor, was also present at the meeting. Max M. Friedman was elected temporary chairman; Louis B. Dotti was elected temporary secretary-treasurer.

The group met again on January 11, 1949, at the same location. Twenty-one clinical chemists, including Joseph Benotti from Boston (the first member from outside of the New York metropolitan area) attended this meeting, where they named the organization the American Association of Clinical Chemists. The third meeting, on February 1, 1949, again at the Mount Sinai Hospital, drew 18 people, including John G. Reinhold, from Philadelphia. Both Benotti and Reinhold were active in creating the Boston (Northeast) and Philadelphia sections, respectively. AACC membership grew to about 150 in 1949 and to 309 in 1950, reflecting the lively activity of the organizing group.

A constitution was written and a national organization, headquartered in New York City, was established. The opening statement of the constitution of the AACC was: “It is the aim and object of this Association to raise the level at which clinical chemistry is practiced in the clinical laboratory; to stimulate the development of new chemical methods... to encourage highly trained chemists to enter the field... to encourage those engaged in the field to use advanced studies... and to create and maintain a forum where chemists engaged in applying the science of clinical chemistry may exchange ideas and information”.

An executive committee—consisting of officers, three other elected members, and a representative from each section—governed the association from 1948 until 1967. During this period, the secretary and treasurer performed (gratis) many of the activities that the AACC eventually assigned to the executive director, a position created in 1968. The AACC structure also became bicameral in 1968 with the creation of the Council (later called the House of Delegates) and the Board of Directors. At this time, the Association also established tenure rules for committee members, which allowed three-year terms (two-term limit). In 1970, the governing bodies decided to have the AACC fiscal year and terms of office begin on January 1 rather than July 1. In the same year, the IRS reclassified the AACC from a professional or trade organization to a Section 501(c) exempt category.

As the AACC continued to grow in numbers and financial status, it became necessary to keep members informed about itself and about their colleagues activities. The AACC annual membership directory, initiated in 1968, now provides additional information including past and current officers, members of the Board of Directors, current committees, commissions, special groups, sections, divisions, an organizational chart, the
AACC constitution, bylaws, guide to ethics, awards, and conferences.

Major restructuring of AACC management occurred following the appointment of its first executive director, D.A.H. Roethel, a member of the American Chemical Society staff in Washington, DC, who served part-time from 1968–1970. He was followed by J. Stanton King in 1971, who served part-time through 1974. King also served as executive editor of the Association’s journal, Clinical Chemistry, with offices in Winston-Salem, NC. William J. Campbell, the first full-time executive director (1974–1981), set up the national office in Washington, DC and oversaw one of the major growth spurs of the AACC. Campbell was followed by Ronald E. Whorton in 1981–1990, and then in 1991 by today’s Executive Vice-President, Richard E. Flaherty. Today the AACC’s national office has 49 dedicated staff members serving the membership.

The rapid growth of the AACC and the clinical laboratory sciences over the past 20 years is reflected by AACC’s premiere product, Clinical Chemistry. To communicate with the membership, the AACC published six volumes of The Clinical Chemist (1949–1954), first as a newsletter and then as an official publication of the organization. Andre C. Kibrick was the editor of the first two volumes, and then Harold D. Appleton edited the remaining volumes of this series. The association’s journal Clinical Chemistry began as a bimonthly publication (1955–1963). Appleton served as the Chairman of the Board of Editors and Friedman edited a section from 1964 until 1965. Wendell T. Caraway was the Chairman of the Board of Editors for Volume 10 in 1964. In 1968, Friedman became the Chairman of the Board of Editors. When the 10-year publishing contract with the Hoeber Medical Division of Harper & Row Publishers, Inc. expired on December 31, 1969, the Association became its own publisher of Clinical Chemistry. Harold Appleton was connected with the publications of the Association from its inception. His meritorious service to the publications ended with Clinical Chemistry, Vol. 15, No. 12, issued in December 1969. Beginning with Vol. 16, No. 1, in January 1970, J. Stanton King, Jr. served as the Executive Editor of the journal through Vol. 36, No. 2, issued in February 1990. Along with the new arrangement for the publication of the journal, the appearance and format were changed from a green-covered 7" by 10" to a red-covered 8½" by 11¼" journal. King brought the journal onto the international scientific scene. As an example of the impact, in 1996, clinical chemists outside of the United States contributed 508 articles to Clinical Chemistry...

What lies ahead? During the next 50 years the AACC must cope with changing technologies and the way the health-care system will evolve in the United States. The new developing technologies will enable clinical laboratories accurately to predict risk factors on the basis of genetic research (especially from the Human Genome Project) being performed now. The developing changes in the health-care system are already having an effect on laboratory medicine because insurance providers (e.g., such as Medicare, and the private sector with nonprofit and for-profit insurance organizations) have imposed regulations that limit the variety of tests that physicians are permitted to order. Another effect of current health-system changes is the consolidation of the various disciplines with their formerly separate laboratories and specifically trained technologists and directors into a single “core” laboratory. As an example, because of the development of instrumentation, the disciplines of chemistry and hematology can be combined, and thus the technologists and director need to be knowledgeable in both disciplines. New technology being developed currently allows testing at the patient’s bedside, with the results reaching the attending physician more quickly.

Yes, AACC’s performance since its inception 50 years ago indicates that it has the capabilities of being influential in guiding clinical chemists into the realm of developing technologies and changes in the health-care system. During the 50th anniversary celebration, we can look back and learn from history how the organization became an important factor in patient care.

**AACC Meetings**

Diabetes Disease Management—Opportunities for the Laboratory, Washington, DC, June 15, 1998—AACC announces a one-day conference, “Diabetes Disease Management—Opportunities for the Laboratory” to be held on Friday, October 16, 1998, at the Sheraton Newport Beach Hotel in Newport Beach, California. The speakers include David B. Bernard, MD, Senior Medical Director for Health and Disease Management, University of Pennsylvania Health System, Philadelphia, Pennsylvania and William E. Winter, MD, Professor of Pathology and Pediatrics, University of Florida, Gainesville, Florida. Other expert presenters include a medical director who specializes in disease management; a clinical director of a leading diabetes center; a leading information specialist; and experienced laboratory professionals. The program will cover: what disease management is and examples of successful programs; how to implement a disease management program; the roles of benchmarking, clinical pathways, and outcomes in disease management; how the clinical data repository and LIS can turn lab data into valuable information; and how to communicate that information to the clinician. Using diabetes as a model, the conference will provide information on: how a clinical diabetes pro-
gram director views the laboratory’s role in clinical and economic outcomes and disease management; the best practice for diabetes management and intervention; how a fellow laboratorian developed a successful diabetes management program; which technologies support diabetes disease management programs; and how disease management improves economics and quality. Information and registration: Contact Peggy Abbott. Phone 800-892-1400; fax 202-887-5093; e-mail pabbott@aacc.org.

Clinical Chemistry Forum—“Issues in Genetic Testing”, Washington, DC, June 23, 1998—AACC, in cooperation with the Association for Molecular Pathology (AMP), sponsors this two-day examination of the legislative, regulatory, professional, and scientific issues involving genetic testing and how they affect the clinical laboratory field. The conference will be held November 3–4, 1998, at the Washington National Airport Hilton in Crystal City, VA. The speakers include federal regulators who will explain how they currently regulate such testing and what to expect in the near future. Key legislative staffers will explain the two bills currently being considered by Congress and what effect each would have on genetic testing data. Conference participants will also hear about ongoing research and about the Human Genome Project, its discoveries, what it expects to find, and how its scientific breakthroughs are being applied to laboratory medicine. Experts will discuss the unique ethical and legal problems that laboratories face with genetic testing and how to address them. Legal experts will explain the laboratory’s responsibilities when performing such testing and how to prevent costly litigation. This is the eight annual Clinical Chemistry Forum. It has become a forum for important public policy debates on timely topics in laboratory testing. Information: Contact Peggy Abbott. Phone 800-892-1400; fax 202-887-5093; e-mail pabbott@aacc.org.

Other Meetings

Laboratory Automation Symposium, November 20, 1998, at Medica 1998 held in Munich (November 18–22, 1998). DM 70 (about $40) includes access to the trade fair. Information: Prof. Dr. Med. Georg Hoffmann, Trillium GmbH, Hauptstrasse 12b, 82284 Grafrath, Germany. Phone 49-8144-9147; fax 49-8144-98169; e-mail ghoffmann@trillium.de; http://www.trillium.de. Address of the organizer: Gerd Fischer, Medica e.V. Postfach 70 01 49, 70571 Stuttgart, Germany. Phone 49-711-76-51454; fax 49-711-76-6992; http://www.medica.de.