Fifty Years of Clinical Chemistry, Three Pioneering Editors

By
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Dr. Harold D. Appleton, a Dedicated Beginning

When Dr. Harold D. Appleton took over the small, semi-regular newsletter, The Clinical Chemist, from Dr. Andre Kibrick, he “ate, drank and slept The Clinical Chemist,” according to Irving Sunshine, PhD. Dr. Appleton took over as editor in 1950 after working for 1 year as assistant editor under Dr. Kibrick. During his editorship, Appleton developed the newsletter into an excellent format of 12–20 pages per issue that included short review articles, abstracts, and descriptions of methods as well as news of the American Association of Clinical Chemists (AACC) (1). In addition, he introduced more advertising so that the newsletter could become self-supporting (1).

Meeting several times between 1952 and 1954, the executive board of the fledgling AACC discussed whether an archived journal in clinical chemistry would be a viable endeavor and finally agreed to initiate one in 1954. In the September 1952 issue of The Clinical Chemist, Dr. Appleton foreshadowed the coming of our Journal by writing, “With the increase in membership dues in 1953 earmarked for the expansion of the newsletter, we hope to bring to our readers review articles of current scientific interest written by noted investigators and to slowly open our pages to original research. This will serve as the nucleus for a future “Journal of Clinical Chemistry.” In this same issue he urges AACC members to recruit advertising for The Clinical Chemist and wrote, “A page of advertising means another 2000 word article.” At its April 14, 1954, Executive Committee meeting the association approved beginning a journal, Clinical Chemistry. This was announced by Dr. Appleton in the June 1954 issue of The Clinical Chemist, when he wrote, ‘this more elaborate effort [the expanded Clinical Chemist] also proved inadequate for the needs and the Association has now decided to move into the “major league” with a regular journal.’ At that time he also wrote, “With the publication of Clinical Chemistry we may well feel that our specialty has come of age.” Interestingly, part of the decision to start Clinical Chemistry came from a policy change at the Journal of Biological Chemistry (2). The “JBC,” the journal of choice for publishing new methods in clinical chemistry, decided it would no longer publish methods or clinical papers and would consider only papers dealing in basic research. On the other hand, medical journals during this time considered clinical chemistry papers to be too “chemical”, leav-
ing the field wide open for an increasing number of new clinical chemistry methods and presentations.

Dr. Appleton was the champion of the new journal and became its first Chairman of the Editorial Board. According to Bernard Klein, PhD, "he was an aggressive canvasser of materials from his colleagues to fill the pages of this new endeavor". That first year six issues and 432 pages were published.

By the time 1960 rolled around, the journal was 643 pages and full of advertising. Because of the outstanding growth of the Journal and because his appointment as Chair of the Editorial Board was coming to a close after a 6-year limit, the association created the position of Managing Editor for Dr. Appleton. Clinical Chemistry went from bimonthly to monthly publication in 1964.

Truly dedicated, Dr. Appleton and his wife did much of the work at home on their kitchen table, according to his successor, J. Stanton King (3). Dr. Appleton’s meritorious service to AACC and Clinical Chemistry ended with Vol. 15, No. 12, in December 1969. In that year the journal published 1273 pages. Dr. Appleton, by his enthusiasm and devotion, had brought our Journal into the “Golden Years of Clinical Chemistry”.

Dr. Appleton obtained his PhD in the laboratory of Dr. Bernard Brodie at New York University. This NYU laboratory was located on Welfare Island in the middle of the East River and focused on antimalarial drugs. Dr. Appleton’s studies involved the detection of these and other drugs in tissues and postmortem fluids, among other things. His fellow students in the laboratory during that time included three future pioneers—renowned clinical chemist and member of the AACC Board of Directors, Irving Sunshine; Sidney Udenfriend, founder of the Roche Institute of Molecular Biology; and Nobel Prize winner Julius Axelrod.

Dr. Appleton’s first professional appointment was as head of clinical chemistry at Goldwater Hospital on Welfare Island, and in 1954 he moved to Metropolitan Hospital, New York, as head of clinical chemistry. He also had a teaching appointment at New York Medical College, with enzymology as his area of expertise. An interesting “claim to fame” for the first editor is that his name, inscribed on the window of his hospital office, appears in the movie “Hospital”, starring George C. Scott.

Dr. Appleton spent a good deal of time discussing the relationship between clinical chemists and the medical profession, often with Dr. Bernard Klein. They also discussed whether clinical laboratory work should be considered part of the practice of medicine.

Those who served as Chairs of the Editorial Board during Dr. Appleton’s tenure included Julius Sendroy, PhD; Wendell Caraway, PhD; and Max Friedman, PhD.

J. Stanton King—Considering the Reader

J. Stanton King, called Stan by all who knew him, served as editor of Clinical Chemistry from January 1970 through December 1989. After serving in World War II, King completed his undergraduate work in chemistry at Berea College and the University of Chicago. This was followed by employment with the SE Massengill Company as he pursued his PhD in biochemistry from the University of Tennessee. Leaving Massengill, King joined the ranks of academia, teaching at the Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, North Carolina. After 14 years of teaching and research, King moved to his ultimate position as executive editor of Clinical Chemistry in 1970 (4).

During his career, King contributed to more than 100 publications and received honors such as the American Association for Clinical Chemistry (AACC) Award for Outstanding Contributions to Clinical Chemistry in a Selected Area of Research (1981), the Miriam Reiner Award (Capital Section, AACC), the Bernard Gerulat Award (New Jersey Section, AACC), and a Career Development Award from the National Institutes of Health (4).

King was based in Winston-Salem from 1956 until his death in October 2001, living there even during his term as the last part-time executive director of the AACC (1971–1974). King’s impact on the profession was huge. The growth and effectiveness of clinical chemistry were displayed well in Clinical Chemistry under his 20-year tenure as editor-in-chief. For many of those involved in the Journal and the association during the 1970s and 1980s, J. Stanton King was an icon, and many were privileged to share in his crystal-clear view of the Journal and where it and the profession were heading. He was an
unwitting proponent of the Atkins diet long before it was invented, his favorite meal being “three martinis and a piece of red meat”.

Although his pen could be biting and the man himself occasionally exasperating, all of those attending the roast in his honor at the 1989 AACC meeting cannot help but smile at his name. He did not suffer fools well and often was in conflict with the administration of AACC and the advertising company used by the journal. Luckily, in typical King fashion, there never was a lingering effect from these disagreements. For example, in 1989, he forgave one of his northern opponents by saying, “Just living in New York takes up all their energy.”

Probably all of those who submitted papers during his tenure as editor had a dose of the King’s English. Many authors wrote colleagues complaining about the harsh treatment of their manuscript, but King treated all papers in the same fashion regardless of who wrote them, always with the reader of Clinical Chemistry in mind.

One has to smile at the comment of one of the members of the editorial board who said, “Stan rues the day that they stopped making quill pens.” Perhaps he did, but he used all of his pens in the service of AACC for 20 years, and all those who knew him are better off for it. When he died, the AACC set up the Dr. J. Stanton King Scholarship Fund at Berea College, Berea, Kentucky. When King retired, he bequeathed some cartoons containing sound advice to his successor, Dave Bruns; some examples are interspersed throughout this article.

At the end of this History, Clinical Chemistry reprints Dr. King’s last essay in “The Clinical Chemist” column of Clinical Chemistry. Significantly, it was reprinted once before, in Current Contents by Eugene Garfield, the founder of the Institute for Scientific Information.

David E. Bruns, MD—Looking to the Future

Dr. David Eugene Bruns, the third and current Editor of Clinical Chemistry, started life in St. Louis, Missouri, and received all his formal education there. He obtained a BS degree in Chemical Engineering and an AB in Arts and Sciences from Washington University in St. Louis.

Working as a research chemist for the Sigma Chemical Company, developing clinical chemistry assays, gave him his first taste of laboratory medicine. This experience proved to be invaluable in his early days as a clinical
chemist and also exposed him to scientific writing, as part of his duties included copyrighting publications on a variety of clinical assay methods.

Attending medical school at St. Louis University, Bruns graduated with his MD degree in 1973. After interning in laboratory medicine at Barnes Hospital and Washington University School of Medicine from 1973 to 1974, he undertook residency and fellowship training in laboratory medicine, experimental pathology, and clinical chemistry while still at Washington University.

This exceptional training program under the overall direction of Dr. Leonard Jarrett proved to be fertile ground for a long stream of clinical pathologists and clinical chemists. Dr. Bruns owes much to Leonard Jarrett and also to Dr. Jack Ladenson, Head of Clinical Chemistry, who provided him with a solid foundation in laboratory medicine. This training program also gave him the time, opportunity, and stimulation to become deeply involved in basic research, which led to several excellent publications on calcium binding to adipocyte plasma membranes and endoplasmic reticulum.

A fellow at Washington University, Dr. Jay Mac Donald, who was a couple of years ahead of Bruns, has also had a distinguished career in pathology. He and Bruns spiced up their years as residents and fellows with many practical jokes—most often at Dr. Jarrett’s expense. Bruns has a great sense of humor, which has added much to his charm as a colleague and friend. John Savory has also been the butt of several of Dr. Bruns practical jokes—but more on that later.

Some of Bruns’s time in St. Louis is shrouded in mystery. He did play the electric bass in a medical school band known as Orifice and the Sphincters, and it is interesting to speculate as to which sphincter he named himself. He often talks about a mystical character known as Sweeney, who appeared to be a philosophical type of a chap. Who Sweeney is remains a mystery, but Dr. Bruns is fond of quoting him and his philosophy.

Dr. Thomas Tillack, a senior faculty member in the Pathology Department at Washington University, quickly recognized Dr. Bruns’s talent. In 1976, when Dr. Tillack moved to the University of Virginia School of Medicine in Charlottesville as Chair of the Department of Pathology, he recruited Dr. Bruns as a faculty member in Clinical Chemistry. John Savory was recruited at the same time as Director of Clinical Chemistry and thus began a 26-year collaboration. One year later, Dr. James Boyd was also recruited, and the three have had a solid quarter of a century of harmonious, congenial, and productive collaboration. Bruns’s excellent training in St. Louis stood him in good stead, and he has played a key role in developing the Clinical Chemistry and Toxicology program at the University of Virginia.

Always bearing a quiet confidence in his knowledge of the field but never arrogant or pompous, Dr Bruns interacts exceptionally well with the medical students, house officers, and clinical faculty. Bruns and his wife, Dr. M. Elizabeth Bruns, established their research laboratory during the late 1970s and began a long and productive program on the roles of calcium-regulating hormones in reproduction in mice and humans, funded by the NIH. Bruns also made many important research contributions to the field of clinical chemistry. He purified a unique form of amylase, developed a monoclonal antibody to this enzyme, and used both in one of the first monoclonal assays in clinical enzymology.

About this time, in the course of reviewing laboratory results, he noticed an unusual number of burn patients with high anion gaps and eventually discovered that these were attributable to poisoning by polyethylene glycol (PEG), a constituent of burn cream. This revelation eventually led to Food and Drug Administration action on the use of PEG in burn creams. Dr. Bruns was a key player in establishing a Molecular Diagnostics Laboratory at the University of Virginia as well, an event that occurred more than 20 years ago when this field was in
the early stages of development. Dr. Bruns’ current research interests are focused on evidence-based laboratory medicine and on scientific publishing.

Dr. Bruns has always been an avid reader of the medical and scientific literature, a fact providing the first clue that he might be interested in editorial activities. He can quote chapter and verse of much of the recent literature in a wide field of medicine and related sciences, reading with an inquiring and analytical mind. This attention to detail has served him well as an editor.

In 1988 he broached the subject of perhaps becoming Editor of Clinical Chemistry. Around the time that Dr. J. Stanton King was considering retirement, Jack Ladenson suggested that Bruns might enjoy taking over this responsibility. This was a big step because Dr. King was still working full-time as the Editor, and Bruns had other responsibilities, including basic research activities and the day-to-day running of the Clinical Chemistry Laboratory as well as developing the Molecular Diagnostics Laboratory. He decided to apply for the position, however, helped in this decision by Dr. James Boyd, who agreed to come on board as an Associate Editor. Boyd’s participation was important because the Editorial Office was slated to be located in Charlottesville in a building adjacent to the Medical School. This on-site support from Dr. Boyd has helped Dr. Bruns immensely in his position as Editor.

Dr. Bruns has been the Editor of Clinical Chemistry since 1990, and the Journal’s impact factor has more than tripled since then. Its coverage has expanded to include molecular biology and other new and nontraditional areas of clinical chemistry.

As mentioned above, Dr. Bruns has a wonderful sense of humor. He loves to relate the stories of one of his secretaries, affectionately named ‘Amazing Grace’, who started a letter with “Dear Sir or Madman” and who once told him “Dr. Bruns, Mrs. Burns just called.” Bruns has a real knack for telling a joke; he wears a slight smile, a glint in his eyes, and a chuckle at the punch line.

John Savory had been on the faculty at the University of Virginia for only a few days when Bruns pulled a great practical joke on him, much to his chagrin. At the time, Savory was Secretary/Treasurer of the American Board of Clinical Chemistry (ABCC), and Bruns managed to acquire from his desk some official notepaper and an envelope with the ABCC letterhead. He then wrote an “official” note to Dr. Tillack, the Chair, stating that John Savory’s ABCC certification had been revoked due to lack of college education. Dr. Tillack left the letter on Savory’s desk. It was a shock, of course, especially as Savory had just arrived in Charlottesville. Dr. Tillack phoned Savory, however, explaining that coming from Washington University helped him be “wise” to Bruns’s jokes. He asked Savory to keep his knowledge of the whole affair to himself for a couple of days. Savory did this, much to Bruns’s vexation, as he certainly expected more of a response.

Dr. Bruns has served several scientific societies with distinction and has garnered numerous awards. In 1987, he received both the AACC Award for Research in a Selected Area and the Association of Clinical Scientists (ACS) Clinical Scientist of the Year Award. He received the AACC Award for Outstanding Contributions to Clinical Chemistry (1998) and an AACC Presidential Citation (2001). Sections of AACC have given him the Bernard Gerulat and Norman Kubasik Awards and, most recently, the Miriam Reiner Award from the Capital Section. He received the 1990 Israel Diamond Lectureship, the 2001 Richard Gadsden Memorial Lectureship Award (Medical University of South Carolina), the 2003 Mayer Bodansky Award (University of Texas Medical Branch), and the 2003 Donald J. Campbell Award (Alberta Society of Clinical Chemists).

Dr. Bruns served as president of the ACS in 1985–1986 and as President of The Academy of Clinical Laboratory Physicians and Scientists (ACLPS) in 2004–2005. He has served as Visiting Professor at universities and as keynote speaker at national and international meetings. He has published more than 100 peer-reviewed articles and several books, including Molecular Diagnostics in Laboratory Medicine (2002). He is currently working on the fourth edition of the Tietz Textbook of Clinical Chemistry and Molecular Diagnostics.

Dr. Bruns has a wonderful and close family. Both his son and daughter are lawyers, and he has four beloved grandchildren. Throughout his career, he has been supported by his lovely wife Liz who, as mentioned above, is a distinguished scientist in her own right. They live in a gorgeous part of Virginia on the eastern edge of the Blue Ridge Mountains. According to Savory, Bruns has been a highly supportive and congenial colleague for the past quarter of a century. His contributions to the University of Virginia and to the field of clinical chemistry have been, and continue to be, outstanding.

References
Remonstrance, Apostrophe, and Valedictory

Now comes the time when I must bid you adieu, leaving you in the hands of Cosmas and Damian (the patron saints of medicine) and of my successor, who has my best wishes. He will find that the laws of Parkinson, Murphy, et al. apply with a vengeance, especially these:

- nothing is as easy as it looks;
- everything takes longer than you think it will;
- if anything can go wrong, it will;
- nothing is impossible for the man who doesn't have to do it himself; and, of course,
- the last person who quit or was fired will be held responsible for everything that goes wrong—until the next person quits or is fired.

On the other hand, my successor will find the work easy and challenging in some ways. Because his handwriting is invisible, he can, like most professionals, work only as hard as his conscience dictates. There will be intervals of sheer tedium, such as seeing an evaluation of the nth procedure for serum glucose. He must resign himself to these as he would resign himself on looking up from the operating table and finding that his surgeon is parkinsonian. Everything is done indoors, and no heavy lifting is involved. He will have an opportunity not to add to the world’s extraordinary profusion of injustices. His objectivity must be beyond question.

Intellectually, an editor can be the lowest common denominator in a sense: if he cannot understand what an author is trying to say, then a good many other readers probably also cannot, so something needs fixing. He should continually try to think of ways to make this journal more interesting and more useful, but he must be as convincing as a seductress and must make his bosses believe that any change he suggests is really their idea if he is to have any realistic chance of it being effected.

He should remember, but never say out loud, that he is working for you, the readers, and not, in the final analysis, only to please contributors or the various panjandrums who hold sway over him, most of whom are convinced that the job is a simple one and are confident that they could do better than he.

If he (and the reviewers) do their job properly—i.e., do not merely dispense soothing unctuous—he (and they) occasionally will evoke the wrath of an author. This is not surprising for one who, in effect, makes his living by criticizing other people’s babies. The wrath usually vanishes once the paper is printed—the smiling baby now appearing in ribbons and bows, with all (or most) surface defects missing.

He should be prejudiced in favor of excellence, which usually simply means taking extra pains.

He will deal with some incredibly careless authors who never trouble to learn and will be content to allow him to spend more time editing their papers than they did writing them. Such contributors, like a recalcitrant mule, will need hitting with a figurative plank to get their attention. (It isn’t called a “discipline” for nothing.)

He will be certain of a spiritual lift at least once a month when—mirabile dictu—the journal appears, an achievement buttressed by a monthly backup stack of paper as high as himself.

So much for sage admonition and alaramus. Such platitudes hardly need illumination, and I apologize for rehashing them.

Of the sundry employers I have had over the years, none has, on the whole, been as kind, supportive, and pleasant to work for as have the officers and members of this Association. Not the least of the fringe benefits has been the freedom (license?) to put in this space, every month, anything that fancy dictates, especially my prejudices with respect to government stupidity, bureaucratic interference in our lives, throwaway journals, careless authors, and megalomaniacs. (Mark Twain said: “It may be thought that I am prejudiced. Perhaps I am. I would be ashamed of myself if I were not.”)

Honors and kind words were bestowed on me last July at the national meeting (and, during these last months, by many contributors). I am grateful. I especially thank Drs. Carl Burtis and Jack Ladenson for their role in a particular surprise: a scholarship in my name granted by the Association to Berea College, that unique Kentucky work-study school where, in Depression days, one of my jobs was in the College Press.1 There I acquired, along with the prewar part of my education, an unusual appreciation for the mechanics of how the printed word is produced (what changes since then?) and how it can be made more aesthetically pleasing.

Being Executive Editor of this journal (and, for a time, AACC’s Executive Director) has been the world’s best job. But now, after 243 months, the sacred fires have cooled a little. Someone is needed who is closer to the laboratory bench. And I sense that the days of the conventional printed scientific journal (costwise a relatively inefficient way of communicating information)2 may be numbered.

I have been unusually blessed with skilled and dedicated colleagues in this editorial office, for most of the

1 During 1920–1980, 134-year-old Berea, which is committed to and draws most of its 1500 students from the farms and coal fields of Southern Appalachia, reportedly ranked second in the South (3rd in the nation) in the proportion of graduates who went on to earn doctorates. It was rated by U.S. News and World Report the number one U.S. college in its category for the third consecutive time in 1988. In 1988 and 1989, Wake Forest University, here in Winston-Salem, ranked no. 1 in its category. In 1989, it ranked third in a more comprehensive category. With all tuition, it costs the average freshman the least (thanks to endowments, gifts (nearly $12 million last year), scholarships, and the work program) of any U.S. college, except for the military/Naval/air force academies, for which of course you, the taxpayers, foot the bills.

2 Studies show that a small proportion of any journal’s contents is read and used by any given reader. See also “Has the medical journal a future?” (Lock S, Trans Med Soc Lond 1897:32).
years two and never more than three, to whom I cannot give enough credit for their diligence and cheerful tolerance of sometimes unreasonable demands.

I must also thank the thousands of reviewers, who have kept us on the right path.

When I compare volume 16, no. 1, with current issues, I can only be proud—of us and of you. May your profession continue this astonishing evolution! You are benefactors to the world, continually making your part of health care more cost-efficient, reliable, and effective. It has been a long time now since the physician could validly choose to believe only those results that fit his or her preconceptions, if those results emanate from a good laboratory.

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A prominent medical journal with a similar number of text pages, far less well edited than this one in terms of observing international recommendations, lists a staff of 35 on its masthead. But then there are more of them (i.e., physicians) than us, and they're a good deal richer.

An example: the thankless task of typing in camera-ready form the entire text of one of the 35 or so AACC books that have been prepared for press in this office. Another: the agonies of “computerizing” this office, the agony from which, once accomplished, has proved gratifying. It is a satisfaction to leave such a congenial and smoothly functioning office.

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