

Commentary

The Work's Not Over—Roll Up Your Sleeves and Make a Difference!

by Mickey Sarquis, High School Editor, *Journal of Chemical Education*, 1979–1996

As my 17-year tenure as the first editor of the Secondary School Chemistry Section draws to a close, John Moore has invited me to share some reflections on my experiences. It's hard for me to believe that this many years have passed; in some ways, it seems like only yesterday that I took on this position. Looking back over my term as Section editor recalls wonderful memories, but it also stimulates me to seek out and take on new challenges as I move into a new phase of involvement in chemical education. In response to John's kind invitation, I'd like to share some of these memories and ideas with you who share my vision of quality chemical education, particularly at the secondary level.

In my first communication to the *JCE* readership (in October 1979), I called for a concerted effort to improve the *Journal's* visibility among high school chemistry teachers, a challenge embraced by substantial numbers of *Journal* readers. The result was both an increase in the number of high school chemistry teacher readers (to about 20% of *Journal* readership) and a corresponding increase in the number of pages dedicated to innovations in secondary school chemistry education. I'm honored to have been entrusted with the development and design of the Section and to have been encouraged to be a proactive member of Joe Lagowski's editorial team.

In addition to meeting the challenge of increasing the number of *Journal* pages dedicated to innovations at the secondary level and the number of high school teacher readers and contributors, over the last 17 years I've worked with the assistance of 42 different feature editors to establish the Section as the premier vehicle for disseminating innovations about the teaching of introductory chemistry, particularly at the high school levels, a quest in which I believe we have all succeeded.

In addition to reporting innovations, the Section has helped to increase recognition among the chemical education community of the efforts of high school teachers and of the importance of secondary school chemistry as an integral segment of our discipline. High school chemistry teachers play important leadership roles in the Division of Chemical Education and the ACS Education Division; the ACS-developed Chemistry in the Community was created as an alternative high school curriculum; high school and college chemistry teachers share ideas with each other through the Biennial Chemical Education conferences; chemical education has come to be envisioned as a continuum extending from elementary school through continuing education opportunities for adult learners; and more. So much has happened and so many people have contributed unselfishly to the cause that it is difficult to know where to start to give thanks: to the high school teachers who dared to accept the chal-

lenge presented them and the college instructors who were not only willing to give this experiment a chance but also to be initiators of the mechanism. To Tom Lippincott, Joe Lagowski, Jim DeRose, Bassam Shakhshiri, and so many other leaders of the Division of Chemical Education who conceived and birthed and proactively support the Section. To ACS, who provided the initial funding to get the Section up and running. To the skeptics who kept us on track. To the contributors, reviewers, feature editors, and members of the boards of publication with whom I've worked throughout the years. To Billie Gerzema and Victoria Burton, my invaluable editorial assistants. To all of you—bravo and thanks for a job well done!

Mixed Emotions, Many Questions

As I end this phase of my involvement with the *Journal*, I find myself experiencing mixed emotions. Of course, I feel a little sadness at leaving a position that has provided so many opportunities and adventures and that I have dearly loved, but I also feel a great deal of relief knowing the Section and the *Journal* are in good hands, excitement about new opportunities that will arise for us all, and awareness that we have met the original challenge issued some 17 years ago. Add to this list extreme pride in the Section's accomplishments, dedication toward the

Journal, fondness for the entire chemical education community (national and international), and pleasure in knowing that high school chemistry education is recognized as an integral part of our discipline. I am honored to have played a small part in this. (And yes, I also feel some frustration that funding initiatives have recently tended to look past the needs of high school chemistry education.) But my involvement with the Section and with chemical education does not end with this position: I am excited to have been involved in making a difference across the education spectrum, from elementary school to graduate school. But while I am delighted with national efforts that are considering the role of chemistry, chemical technology, and SMET education in the edu-

cation of our electorate and in school-to-work transitions, I am frustrated that initiatives at the high school level are apparently taking a back seat to these other efforts. Perhaps this is one of the biggest challenges that face us as we look forward to the 21st century—

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not to become complacent about the advances that have been achieved. For in spite of advances that have been made, I feel that chemical educators are still faced with many questions that will control the direction of our discipline well into the 21st century:

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- What advances in the understanding of brain chemistry will help us better understand how we learn?
- Will we gain more insights into that elusive factor in learning called motivation?
- When will teachers of high school chemistry be given the time to be creative?
- Will the teaching of chemistry come to parallel the doing of chemistry?
- What will the children of the 21st century do to investigate the nature of matter and its interactions?
- Will we learn to communicate with nonscientists in a way that builds interactions rather than bars them?
- Who will carry out the education research to advance our discipline beyond warm and fuzzy “It feels right” evaluation?
- In addition to learning from each other, will we dare to learn from our colleagues in the social sciences and education?
- When will the chemical education community as a whole embrace a curriculum that recognizes the unique values of the high school chemistry and college chemistry experiences and use this to provide a continuum of learning experiences that build on previous experience rather than assuming none?
- When will we build a network of coaches who work together to support our students as they meet the challenges in the transition from secondary to tertiary education?
- Where are the stadiums full of chemistry fans who swap chemistry trading cards and lead rallies for social causes that involve chemistry?
- Where are the electorate and the school boards who are calling for children to be provided with meaningful investigations of chemistry as a means of helping them understand and begin to take control of their world?

The questions are many and the answers obscured by our inability to see into the future, but it is clear that opportunities exist for each and every one of us to contribute to the solutions. Let's rally to use good science and good research methods to seek the answers.

Departing Challenges

“It's your section, too—let's work together to make it work.” While this quote is excerpted from my first communication as high school editor for the *Journal*, it's as true today as it was 17 years ago. So as my tenure as the first editor for the Secondary School Chemistry Section of the *Journal of Chemical Education* draws to a close, I invite you to *roll up your sleeves and make a difference*. We still have more than enough work to go around, even after the effort and the milestones reached in the last 17 years. So, as an active member of the chemical education community who has held positions at the high school, 2-year college, and university levels as well as in industry, I offer the following challenges:

- **To all chemical educators:** We share a commitment to this profession, and thus it is important that we be proactive in making a difference in our students' lives; engage our students in the learning experience that allows them to discover the joys and excitement of

chemistry; contribute for the benefit of chemistry education as well as for the benefit of society; be open-minded to talent and supportive of good ideas regardless of the gender, race, or academic accolades of the contributor; learn from our colleagues in the social sciences and education; and most of all, take time to multiply our efforts by sharing our contributions with everyone else. Understand your role in keeping the *Journal* the premier journal in the field and the only “living textbook” of chemistry education in the world; you have a professional responsibility to contribute as well as to subscribe. After all, this is your journal!

- **To high school chemistry teachers:** We share a common love of students and teaching that leads us to consider ourselves first as teachers, secondarily as teachers of chemistry, and maybe finally as chemists. Many of our colleagues at the college level or in industry do not understand the commitment embedded in this hierarchy. It is important that we not only help them to understand our priorities, but also that we open their minds to the rewards associated with impacting the lives of students. Let us also not forget our professional responsibility to quality in content and pedagogy.
- **To college and university chemistry faculty:** We share a common love of our science that drives us in our research and our interactions with students. Let us not forget how important our role as teachers is. Are we doing all we can to provide valuable learning experiences for *all* of our students? Are we making the difference we can and should be? Are we preparing our students to assume their roles as both voting citizens and valued employees?
- **To chemists in the private and public sector:** We share a drive to do good chemistry, the time and support to investigate and experiment, and an environment in which our contributions are both expected and rewarded. But are we making the time to make a difference in education and public outreach? Are we proactive about meeting responsible care objectives? How are we making a personal and professional difference?

Finally, I offer the following challenges to local, state, and federal funding agencies and government: to encourage and support partnerships that engage educators and scientists to work together to make a difference in science education. To provide funding for quality research undertaken by chemical educators into the teaching and learning of chemistry and to leverage reform that is built upon bona fide chemical education research. To initiate and sustain programs aimed at engaging and supporting research and scholarly activities in high school chemistry education; and finally to demand and expect that institutions receive and provide funding for basic research to provide evidence for rewarding good chemistry teaching and support scholarly activity in chemical education.

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Final Recognitions

As I wish you all the joy of making a difference, I want to recognize the following persons. They have donated their time and their professional talents to serve

as feature editors with the Section. Each person's name is listed with the name of the feature(s) he or she edited.

Raymond Bangs	Opportunities in Continuing Education	Albert Kirsch	Chemical Bonds
Gerard Baruch	The 50 Minute Experiment	Nancy LeMaster	What's Happening in Your Part of the Country—Southeast
Darrel Beach	Chemical of the Month	Doug Mandt	What's Happening in Your Part of the Country—Northwest
Henry Bent	Bench Remarks	Grace Fischer McGuffie	Curriculum Report
Muriel Boyd Bishop	Chemical Principles Revisited	Charles Mickey	Chemical Principles Revisited
Donna Bogner	Insights	Miriam Nagel	Safety Tips; Profiles in Chemistry
Marcia Bonneau	The Trading Post	Rod O'Connor	Brain Tingleers
David Byrum	Apparatus Review	Mary Virginia Orna	Thumbnail Sketches
Frank Cardulla	View From My Classroom	Frank Quiring	A Place for Chemists
Sheldon Cohen	Inflation Fighters	Ronald Ragsdale	Advanced Placement in Chemistry
Ron DeLorenzo	Applications & Analogies	William Rainey	View From My Classroom
Jim Ealy	What's Happening in Your Part of the Country—Northeast; Advanced Placement in Chemistry	Joe Rich	Inventory Control
Neil Ettinger	Going Beyond, Going Further	Joseph Schmuckler	Something New from the Past
Roger Festa	Profiles in Chemistry	Duane Sell	View From My Classroom
Harriet Friedstein	Chemical Bingo; AV Review; Media Exchange	James Schreck	Filtrates and Residues
Hal Harris	Chemical Principles Revisited; Inventory Control	Frank Schultz	Filtrates and Residues
Jan Harris	What's Happening in Your Part of the Country—South Central	Michael Slabaugh	Chem I Supplement
Dudley Herron	High School Forum	Douglas Smith	Ideas from Everywhere
George Kauffman	Products of Chemistry	Patricia Smith	Chemistry for Kids
Dan Keating	Safety Aspects in High School Teaching	Eric Streitberger	What's Happening in Your Part of the Country—Southwest
		Robert Suites	What's Happening in your Part of the Country—North Central
		Linda Woodward	Chemistry for Kids

Genesis of the Secondary School Chemistry Section

by Jerry A. Bell

The year 1978 was a watershed for high school teachers within the chemical education community. The Division of Chemical Education established its High School Chemistry Committee, chaired by a high school chemistry teacher, Jim DeRose. The American Chemical Society established its Office of High School Chemical Education, managed by a high school chemistry teacher, Sylvia Ware. (Now Sylvia directs the ACS Education Division, the Past Chair of the Division is a high school chemistry teacher, Ron Perkins, and a high school teacher, Frank Cardulla, chairs Subcommittee A on precollege education of the ACS Society Committee on Education.)

Also in 1978 a small, lively group from the Board of Publication and staff of the *Journal of Chemical Education* met at Earlham College to draft a proposal for funding to increase the number of *Journal* pages devoted to secondary school chemistry from 10 to 20 per year. Although a modest plan, it could not be bootstrapped from our own resources, which were constrained by decreasing advertising revenues. The proposal was successful, and Joe

Lagowski's editorial in October 1979 announced a \$125,000 grant from the ACS Board of Directors and the selection of a Secondary School Section Editor, Arlyne M. (Mickey) Sarquis. In 1978, there were existing columns largely written *for* and *to* high school chemistry teachers, but we wanted articles to be written mainly *by* high school teachers as well; an important role of the editor would be to find and cultivate high-school-teacher authors.

Joe Lagowski's October 1979 editorial said, "It is anticipated that interest in the new expanded Secondary School Section will lead to an increase in number of subscribers to become self-sustaining by the end of the [three-year] project. Only time will tell whether this strategy will be successful... ." Time has passed; you can judge the results for yourself and also through the eyes of the retiring Secondary School Section editor, Mickey Sarquis, hired with those grant funds we set our sights on eighteen years ago.

Jerry A. Bell, a AAAS program director, was Secretary of the DivCHED in 1978; in 1997 he begins a term as Chair of the Journal's Board of Publication.