GEORGE S. HAMMOND Celebrates His 70th Birthday

George Simms Hammond, born on May 22, 1921 in Auburn, Maine, celebrated his seventieth birthday this year. Considering the frenetic pace of his present activities, a progress report on his impact to science seems warranted; the final chapters may not be written until a few more decades have passed.

George's initial experiences with potato farming and Maine winters convinced him to execute the first of many vocational changes. As a result, he was graduated magna cum laude with a B. S. degree in chemistry from Bates College in 1943. His lifelong interests in polymers and free radicals were initiated at Harvard University,[1] where he received his M.S. and Ph.D. degrees (1947) in chemistry under the mentorship of Paul D. Bartlett. After a postdoctoral stint with Saul Winstein at UCLA, George exchanged his potatoes for corn and accepted a position as Assistant Professor at Iowa State University. His work there in physical organic chemistry, especially the benzidene rearrangement,[2] the mechanisms of free-radical reactions,[3] and processes involving substitution and elimination reactions[4] led to rapid promotions to the rank of Professor and formulation of the often quoted (and more often, misquoted) "Hammond's postulate".[5] Many scientists have reactions, physical laws, plots, buildings, and so forth named after them. It seems appropriate that Hammond is linked to a postulate, a curriculum, and to a "mafia" of former students and associates whose representatives are present at virtually all photochemistry meetings.

After a sabbatical stint at Oxford and Basel as a Guggenheim and NSF Senior Postdoctoral Fellow, he co-authored his first book ("Quantitative Organic Analysis") with James Fritz, packed his bags, and moved to Caltech in 1958 as Professor of Organic Chemistry. The following year, his classic textbook, "Organic Chemistry," co-authored by

Donald Cram, appeared. Its conceptual approach offered an alternative to the functional group organization common to many textbooks. It also marked George as an educator who recognizes the responsibility to pass on modes of thought as well as facts to students. His educational philosophy pervades the other books he has co-authored. ("Chemical Dynamics" with Joseph Dence and Harry Gray in 1968 and "Models in Chemical Science" with Janet Osteryojng, Thomas Crawford and Harry Gray in 1971).

Although Hammond's famous series of papers, "Mechanisms of Photoreactions in Solution", began in 1961,[6] the first of his articles devoted to the subject was published in 1959.[7] He has also been a co-editor of the highly respected series, "Advances in Photochemistry", since its inception. During the 1960's, especially, many of the scientists who were to become leaders in photochemical research worked in Hammond's labs. Even today, a large fraction of the photochemists in the U.S. can trace their academic roots to George Hammond or Howard Zimmermann.

Many of the techniques described in organic photochemistry textbooks and employed routinely for the investigation of the mechanisms of photochemical reactions were developed at Caltech by Hammond and his students. They were applied to innumerable unimolecular and bimolecular reactions and processes involving both organic[8] and inorganic[9] molecules. It was not uncommon for a Hammond student or postdoc to initiate an academic research program by exploiting ideas which originated at Caltech. Photochemistry research programs proliferated from seeds sown at Hammond group meetings.

As the field was being developed, George began to garner a large number of well-deserved honors: the ACS Award in Petroleum Chemistry, 1961; election to the U.S. National Academy of Sciences, 1963; election to the American Academy of Arts and Sciences, 1965; the James Flack Norris Award in Physical Organic Chemistry by the Northeastern Section of the ACS, 1968; the Priestley Medal of the ACS, 1976; election as Foreign Fellow of the Indian National Science Academy in 1976 and the Brazilian National Science Academy in 1977. Caltech made him Arthur Amos Noyes Professor of Chemistry in 1964. George has also received the Harbison Award for Gifted Teaching by the Danforth Foundation (1971) and the ACS Award in Chemical Education (1974). It seems appropriate that the first honorary doctorate degree was bestowed upon George by an excellent small undergraduate institution, Wittenberg University in Springfield, Ohio (1971). It was followed by others from the State University of Ghent (Ghent, Belgium, 1973), from his alma mater, Bates College (1973), and from Georgetown University (1985).

In 1972, after serving as Chairman of the Division of Chemistry and Chemical Engineering at Caltech for four years, George moved to the University of California at Santa Cruz where he was both Professor and Vice-Chancellor for Sciences until 1975. From 1974-78, he was Foreign Secretary of the National Academy of Sciences and is credited with expanding the Academy's activities outside the U.S.

Rather than returning to academia, George accepted a new challenge and joined Allied Chemical Corporation in 1978 as its Associate Director of Research for Physical and Organic Chemistry. Until his retirement from Allied-Signal in 1986, George was able to display his breadth of talents and his disregard for interdisciplinary barriers by acting at various periods as Director or Acting Director of Chemical Dynamics, the Energy and Chemical Process Laboratory, the Integrated Chemical Systems Laboratory, the Molecular and Applied Genetics Laboratory, the Biosciences Laboratory, and the Metals and Ceramics Laboratory for Allied-Signal.

His "retirement" served as a convenient excuse to become quite active in the affairs of the American Chemical Society, the American Association for the Advancement of Science, and the National Academy of Sciences. It also allowed him to re-establish his consultancy for several of Allied's competitors and become an active participant in two research groups[10] while holding formal academic positions at Georgetown University and Bowling Green State University.

For any normal human being, the accomplishments of George Hammond during his first 70 years would be more than sufficient. George is not normal. He shows no signs of stopping after 300 or so publications, after mentoring many, many successful scientists, and after influencing enormously the way in which chemistry is taught. Virtually all who know George remark that he is one of the finest scientists of our time. Throughout his career, he has remained unpretentious and available to all who are intrigued by science. Perhaps it is that combination of qualities which is responsible for the respect and friendship his colleagues have for him. George nurtured the people around him by providing a creative, free environment in which they could grow. Remarkably, he continues to grow, also. When Auburn, Maine lost a farmer, science gained a gifted educator, researcher, and advocate. Happy Birthday, George and thanks from all you have influenced thus far.

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