Charles Norwood Reilley was born in Charlotte, North Carolina on March 2, 1925, the son of Eugene Homes Reilley and Marie Norwood Reilley. He died December 31, 1981. The friend, teacher, student and colleague of almost everyone who ever worked with him, he was a scientist of unlimited imagination. Host of al l, he was a generous human being who gave more than he took.

Charles entered the University of North Carolina as a freshman and graduated in 1947 with a B.S. in Chemistry. As a sophomore, junior, and senior, he received undergraduate awards sponsored by Alpha Chi Sigma, the professional chemistry fraternity. During his junior year he was elected to Phi Beta Kappa and also received the Archibald Henderson medal in mathematics. After college, he joined the faculty of Queens College in his home town of Charlotte.

In 1949 Charles Reilley began graduate work at Princeton University with Dr. N.H. Furman, one of the most distinguished analytical chemists of that generation. At Princeton Charles was a leader among a group of except ional students who later revolutionized analytical chemistry. Reilley earned his M.A. degree in 1951 and his Ph.D. in 1952. He also won the national competition for the prestigious Merck Prize in 1952.

Returning to Chapel Hill as Instructor in 1951, he was promoted to Assistant Professor in 1953 and Associate Professor in 1956. During the following year, at the urging of nominators from across the country, he was awarded an unsolictied and unrestricted grant from the Research Corporation to further his research interests.

In 1961 he became Professor, and spent the year at Basel on a Guggenheim fellowship. In 1963 he was named Kenan Distinguished Professor. In 1979 he was elected to the National Academy of Sciences, the first analytical chemist in nineteen gears to receive this honor and only tbe second *since* tbe early *years of* tbis centarg.

Charles entered the field of analytical chemistry at a tine of changes in that discipline: he must have perceived this when he made the choice to enter the field. He was a leader in the transition from classical and tedious analytical methods to the excitement of instrumental and computer-interfaced techniques. He dreamed of what could be taught and set about the business of doing it. He lectured widely on what should be done with analytical chemistry in the curriculum and directed the task force that revised and modernized the UNC curriculum in chemistry.

His efforts were nationally recognized when he won the Manufacturing Chemists Association Award for undergraduate instruction in 1975. That award is the highest national award for teaching in chemistry.

Professor Reil ley's accomplishments as a scientist spanned thirty years of productivity and the birth of modern analytical chemistry. As an analytical chemist of extraordinary breadth, he made pioneering contributions in the fields of electrochemistry, multidentate chelating agents, nuclear magnetic resonance of ligands and metal complexes, gas-l iquid chromatography, and applications of computers to laboratory data acquisition. Professor Rei l ley's research was published in 201 research articles. He also wrote or contributed to 17 books during his career.

Professor Reil ley's early interests were in electrochemistry and he published several classic and definitive papers in this field. One of these set forth the appropriate theoretical model for high frequency titrimetry. In so doing he put to rest many misconceptions and several controversies surrounding the subject at that time. His explanation of this topic in a guest chapter in New Instrumental Methods in Electrochemistry (by Paul Delahay) had an enormous influence on teaching of electrochemical fundamentals over a fifteen-year span. In another seminal paper he presented a new, controlled current electrochemical technique called chronopotentiometry. This idea stimulated a great deal of work by others and developed into one of the major branches of electrochemical methods. Reil ley's theoretical concept of response function additivity, a procedure which greatly simplified theoretical derivations for mass transfer processes, again stimulated extensive research by other workers. His practical as well as fundamental contributions led to the important example of a galvanic membrane electrode assembly which permits simple, inexpensive analysis of dissolved oxygen in rivers and lakes. This device was patented and marketed, and remains in widespread use.

Professor Reilley made repeated significant contributions to multidentate metal complex chemistry. His works include numerous innovative methods for the analysis of metals by electrochemistry, complementary tristimulus colorimetry and other spectrophotometric titration end point methods, titrations with current polarized electrode detectors, and numerous sophisticated metal complex equilibrium schemes, allowing masking and de-masking of mixtures of metals to

avoid interferences by one in the determination of others. Moreover, Reilley developed a corplexing agent for the titration of calcium in the presence of magnesium, used today in many laboratories.

Professor Reilley stands as a giant in the analytical applications of multidentate metal complexes. Much of our understanding of the underlying basis for the "chelate effect", the exceptional stability of metal complexes where the ligands have several donor sites to the metal, comes from Reilley's work. He both articulated the nature of the chelate effect qualitatively and supported his ideas quantitatively by measuring the heats and entropies of formation of complexes with polyanine and polyamine-carboxylate ligands.

Reilley's early nuclear magnetic resonance studies of metal complexes were also seminal and directed subsequent thinking on the dynamics of metal-ligand bond breaking/making with multidentate ligands. He developed a way to represent chemical shift patterns for the ligands as various sites became protonated when solution acidity is changed. Through this work, Reilley articulated clearly the meaning and importance of microscopic protonation equilibria in polybasic ligands. In the latter stages of his career, Reilley published several definitive papers on contact and dipolar shifts which exist in many metal complexes because of the odd electron structure of the metal. With experimental documentation, theoretical rules were set down for the contact shift term. This led to significant insights into conformational aspects of several rare earth complexes.

Chromatography was yet another area of analytical chemistry in which Professor Reilley showed his fundamental insights and creastivity. He was the first to explain and effectively use sequential and mixed bed combination columns in gas-liquid chromatography. Their importance in design of experiments for optimum separation has since become so pervasive in chromatography that their origins have been lost to most workers. Reilley's description of gas chromatographic response as a function of sample input profile gave birth to the method called inverse (or vacancy) chromatography.

Computers have had a far-reaching impact on the chemical sciences, and Professor Reilley contributed to their development in many ways. His fundamental work on applying pattern recognition techniques to the interpretation of chemical data allows the computer to recognize the interrelation of chemical structure with response of various structurally-sensitive methods, like mass spectrometry and infrared spectroscopy, and to deduce the probable structure of unknown molecular samples.

Professor Reilley's last ambitious undertaking was in the design and application of very small computers, called microcomputers, to store, acquire, and interpret data in the laboratory from other more conventional scientific instruments. The fruits of this research are yet to be fully felt, since papers on the subject were still in press at the time of his death.

Reilley not only saw the beauty of science with his special eye, but participated in it to the fullest extent. His students and colleagues span the globe and multiply his accomplishments. Several chemical companies considered him the finest of industrial consultants.

Charles Reilley could have been any kind of scientist he wished and, once established could have gone anywhere to pursue his research. He chose to be an analytical chemist at a time when analytical chemistry was a less than distinguished field and to work at North Carolina when this was a less than distinguished chemistry department. Both analytical chemistry and North Carolina have changed their images dramatically and one very important reason was the influence of this man. When Charles Reilley was asked 'What is analytical chemistry?" he answered, 'Analytical chemistry is what analytical chemists do." When analytical chemistry was at a low ebb, Reilley was foremost among chemists to publish and talk about excellent new science in the area. He guided the Chemsitry Department at Chapel Hill in its development, in hiring outstanding young staff in all areas and in reviving a classical undergraduate curriculum so that it became a leader in producing baccalaureate chemists. Many other institutions tried to entice Charles Reilley to join their faculties, but he had an intense loyalty to the State and to his University. He believed that each man should build his own establishment and not wait for someone else to come along and give it to him.

It is difficult to realize that Reilley was only 56 at the time of his death, because his influence has been so great in chemistry for so long. His ideas and philosophy, his sharing with students and colleagues and, most of all, his manner were things that will not be soon forgotten.

Honors and Awards of Charles N. Reilley

Merck Fellowship in Analytical Chemistry, 1951; Simon P. Guggenheim Fellow, 1962; Kenan Professorship, 1963; American Chemical Society fisher Award in Analytical Chemistry, 1965; Reily Lecturer, Notre Dame, 1966; Clark Lecturer, Yest Virginia, 1967; Distinguished Visiting Lecturer, Iowa, 1967; Herty Medal, 1968; Phillips Lecturer, Pittsburgh, 1968; Phi Lambda Upsilon Lecturer, Louisville, 1968; Valkenburg Memorial Lecturer, Colorado, 1969; Stone Award, 1971; Henry and Camille Oreyfus Lecturer, Kansas, 1971; Torbern Bergmann Lecturer, Stockholm, 1971; ANACHEM Award in Analytical Chemistry, 1972; Highlands Lecturer, Virginia Polytechnic, 1972; Manufacturing Chemists Association College Teacher Award, 1975; National Academy of Sciences, 1977; Kolthoff Award in Analytical Chemistry, 1979; Baker Lecturer, Cornell, 1979.

Maurice M. Bursey
Royce W. Murray
William F. Little
Thomas L. Isenhour

[reprinted from J. Electroanal. Chem. 136 (1982)1-5]

PROBLEMS WITH LATE ABSTRACTS

Steve Weber reports that several electrochemical papers which would have been of interest to Pittsburgh Conferees were not accepted because their abstracts were received too late. Weber and Johannes Coetzee lobbied hard but unsuccessfully to have them included. Apologies are offered but with the adronition that authors should be sure to meet the Abstracts deadline for next year's Pittsburgh Conference.

****

ONE LAST REMINDER: SEAC OPEN MEETING

Again, don't forget the open meeting following the Reilley Awards Symposium:

Wednesday Afternoon
Harch 11, 1'387
Ballroom C, Atlantis

****

ATTENTION SEAC BOARD MEMBERS!

Board of Directors Meeting following the open meeting on Yednesdav, March 11, 1987.