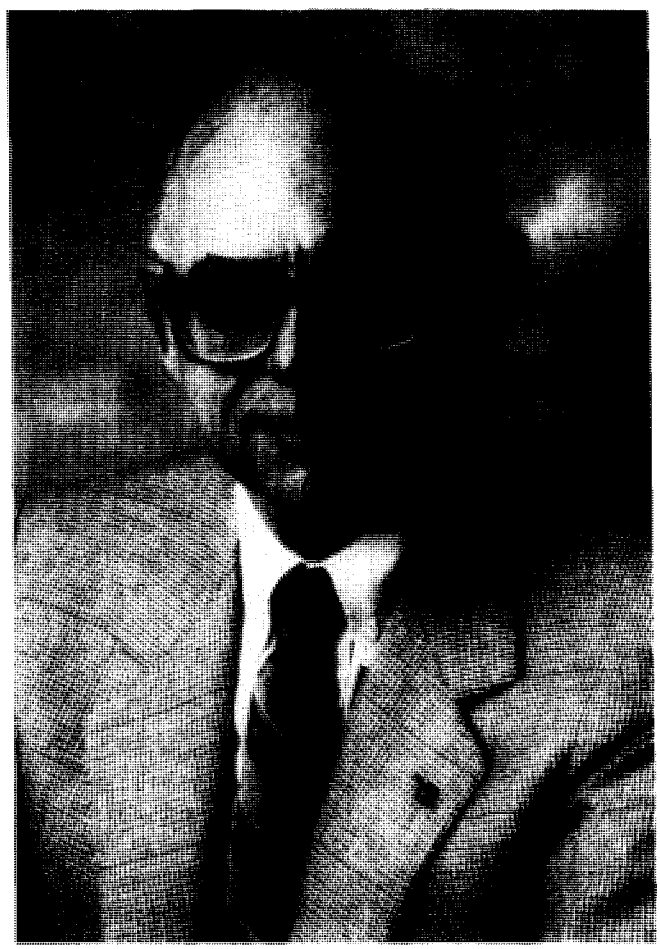
ELSEVIER

Inorganica Chimica Acta 229 (1995) 1–3

Inorganica Chimica Acta

Preface



Frank Albert Cotton was still an Instructor in Chemistry when I first learned about his talents. I had come to M.I.T. to do 'radiochemistry'. However, Charles Coryell, who supported my 1957 summer research effort, pointed out to me that I might consider pursuing graduate research in transition metal coordination chemistry with this bright young Harvard Ph.D. who had already demonstrated to the M.I.T. faculty in one year that promotion to Assistant Professor should occur. Thus Bill Horrocks and I joined the group of people which included Jack George, the late Joe Leto, Dick Holm, Doug Meyers, Roch Monchamp and the late Ron Francis as students who were destined to obtain their Ph.D. under Al's supervision. Eric Bannister, R.V. (Dick) Parish, David and Margaret Goodgame, Franco Zingales and Fausto Calderazzo were among the postdoctoral associates that would join us in producing chemistry with Al that led to his promotion and tenure at M.I.T. by 1960. This was followed in one year by promotion to full Professor in 1961, to fend off an offer he had received from Harvard.

By the time 1962 arrived Al Cotton was sufficiently well recognized in the chemical world that he would receive the first ACS Award in Inorganic Chemistry. Two years later, 1964, Al announced to the world in a paper submitted in September that a quadruple bond existed between the metal atoms in the $[Re_2Cl_8]^{2-}$ anion. I was privileged to have him tell me the story about this molecule in a very

animated fashion while we were on the train between his home in Sherborn, MA and Back Bay sometime in early August of 1964. I'm sure that the passengers around us thought we were crazy as Al tried to convince me with fingers and arms that four d-orbitals had the appropriate symmetry to come together to form four bonds between the two metal atoms with an eclipsed structure, essentially a cube, for the eight halides.

Right from the beginning at M.I.T. chemistry was exciting in Al's laboratory. In those early days Al was a very frequent visitor to London. Jack Lewis, Brian Figgis and others were with (the late) Ron Nyholm at the time at University College and Geoff Wilkinson, with whom Al had worked as student, was at Imperial College. I recall meeting Al at the 4th floor elevator on his arrival home from one of those trips to London when he told us about the exciting news he had learned in Nyholm's laboratory that tetrahalide complexes of Ni^{2+} were tetrahedral, not square planar as had been anticipated by many at that time. However, by the time Al got home Dick Holm had already led the group to repeat the Nyholm–Djordjevic syntheses that appeared in Nature. We knew the chemistry was correct before Al could challenge us with his probing questions about these interesting tetrahalo species. He was surprised when we even could spell Cirila Djordjevic's name. It is not often that one wins a challenge from Al, especially when it comes to chemistry and spelling. Doing the New York Times crosswords religiously has kept this latter skill of his pencil point sharp over the 42 years since Al published his first paper with Geoff on the heat of formation of ferrocene. Although many would say that Al has mellowed somewhat as his reputation has grown, he retains his uncanny ability to catch spelling, punctuation and typographical errors in reports and draft papers from his students, and even some of his colleagues.

The beauty of symmetry has captivated Al Cotton's imagination since he was a kid in Philadelphia and could frequent the Franklin Institute and the Museum of Natural History. He tells me that the geologic crystals, especially those luminescing under UV light, fascinated him on these trips. Recently he added a crystal display to the fourth floor hall here at A&M outside his office to encourage students to begin to ask questions about structures and shapes. The underlying cause of molecular structure and shape clearly has dominated Cotton's chemical thinking right from the very beginning of his research effort. I sat in on his teaching of the chemical applications of group theory the first two years he offered it because so many new applications were being found by him and others in those early years. Harry Gray's JACS review of Al's book may have helped convince the world of the importance of group theory and Al's writing talents. Gray wrote: that the use of models to understand symmetry was a good idea, and that the book was suitable to 'read in bed', but his problem was that his wife forbade him to take models to bed!

Clearly no one in our time has been as prolific or successful as Al in conveying an understanding of complex chemical ideas with a more readable prose. In fact, the reader is sometimes deceived into believing that the idea is simpler than it really is by Al's elegant use of the English language. I'm sure that one of the reasons he is recognized to be such an outstanding expert witness in complicated chemical patent disputes is due to his talent to simplify difficult concepts. His logical and precise approach to understanding concepts probably would have earned him a pretty good living as a lawyer.

Mysteries have long intrigued Al. Scientific discovery, of course, often can develop like a good mystery. Indeed some of the best lectures to student audiences that Al has given over the years have approached the topic like one would solve a murder mystery. Good English mystery novels occupied much of his airplane time on those many long early trips to Britain. Recent reading habits have moved in the direction of French mystery novels. England, especially London and Cambridge, and now France have taken on a special prominence in his foreign travel. Authors of many of the papers in this special volume will recall Al discussing the experimental observations made in the laboratory almost as if an interesting mystery was being unravelled. This curiosity to understand nature and what observations tell us about chemical processes has penetrated the thinking of each of us who have worked with him. Our discipline, as a result, has benefitted from the presence of this person whose impact on basic inorganic chemistry is manifested almost as much by the contributions of the nearly three hundred students and postdoctorals who have been associated with him over the years as by the results contained in the more than 1200 publications that his own laboratory has produced.

Many of us were surprised and even perhaps troubled when Al and his wife Dee decided to leave Massachusetts for Texas. I was in Cleveland at the time. By the time I got here eleven years later, Texas A&M was no longer a mystery school to the inorganic chemistry community. The Robert A. Welch Foundation had given Art Martell the chance to create, with the hiring of F.A.C., a program

that is recognized throughout the world for its inorganic chemistry research. For Al and Dee, leaving Sherborn meant buying a ranch, building a Texas hunt club and ultimately learning about oil. Al reminisces more about riding today through the limited edition prints displayed in his home than by showing guests his horses. His exercise these days consists primarily of long walks around the perimeter of the more than 400 acres of the ranch run by his daughter Jennifer. In Texas these walks are filled with surprises like armadillos, mother raccoons, deer, and even a snake or two, as Carlos Murillo, who often accompanies him, can testify.

I am not going to record the numerous honors accorded his scientific contributions. They are a well known litany of accomplishment. I do want to mention a few special accolades, however, since they tell us something special about the man. He was one of the youngest persons, at 37, to be elected to the National Academy of Sciences and has long played an important role within this organization. His election 27 years later, in 1994, as a Foreign Member of the Royal Society finally meant recognition from his peers in the country which impacted so heavily upon his early career development. He has received every American Chemical Society gold medal for which he is eligible. The National Medal of Science in 1982 was followed closely by the first of two six year Presidential appointments to the National Science Board, the highest advisory group to governmental science policy in the USA. In 1994 he became the first inorganic chemist residing in Texas to receive (with Jack Halpern) the Robert A. Welch Foundation prize. His many honorary degrees include one from Moscow State University, an accolade that even he could not have dreamed receiving, let alone accept, just a few years ago.

Finally, Al, on behalf of those many former students and postdoctoral coworkers who have been stimulated by your probing mind, excited by your curiosity, challenged by inquiring questions and encouraged by your supporting words, we congratulate you on this occasion of your 65th year which is also the year that marks the graduation of your 100th Ph.D. student. This volume of scientific study is dedicated as a memento of the impact you have had upon all of our lives. Your accomplishment will be cherished by all the inorganic scientific community during the celebration of *Contemporary Inorganic Chemistry: A Symposium in Honor of F.A. Cotton*. Your name will remain inscribed in gold after the first annual F.A. Cotton Medal Award for Excellence in Chemical Research is given for the first time in the Spring of 1995 by the Local Section of the American Chemical Society and the Department of Chemistry at Texas A&M University.

J.P. Fackler, Jr.
Texas A&M University
Department of Chemistry
College Station, TX 77843-3255
USA