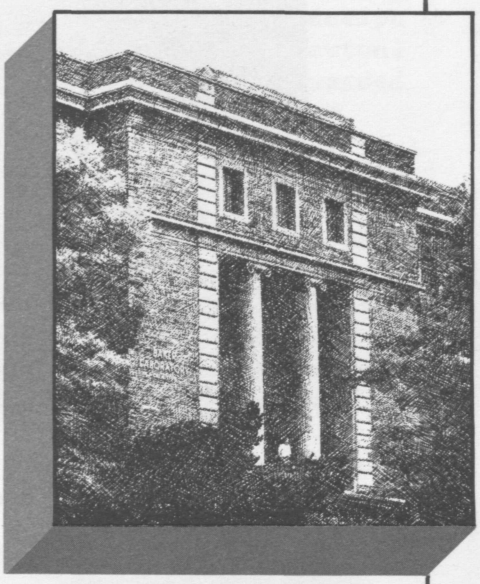
CORNELL CHEMISTRY



THE NEWSLETTER
OF THE
DEPARTMENT OF
CHEMISTRY
AND THE SOCIETY OF
CORNELL CHEMISTS

Cornell University
Baker Laboratory
Ithaca, New York 14853

Spring 1984
Issue 33

■ EDITOR'S COLUMN

On March 22, 1984, the Cornell Section of the American Chemical Society and the Chemistry Department sponsored a symposium to observe the 100th anniversary of the birth of Peter J. W. Debye. An international audience of over 500 attended the lectures in Baker 200 to hear six distinguished scientists.

The symposium was opened by S. Kay Obendorf, Professor of Design and Environmental Analysis at Cornell, who is chairperson of the Cornell Section of the American Chemical Society. Professor Obendorf read a message from the German Physical Society and acknowledged the salutations of the Royal Netherlands Academy. Professor Georg Busch delivered greetings from the Swiss Federal Institute of Technology, where Debye had been Director from 1920-1927.

The first speaker was Mansel Davies, from North Wales, who described Debye's early life in Europe. Paul Flory of Stanford, and E. Bright Wilson of Harvard presented lectures on "Recent Investigations on the Configuration of Chain Molecules" and "Extraction of Barriers to Internal Motion and Other Information About Reaction Paths from Spectroscopic Data with Malonaldehyde as an Example".

After a luncheon break Harold A. Scheraga, Todd Professor of Chemistry at Cornell, introduced the lecturers. Mark Kac, of the University of Southern California, examined the question, "Is there a Quantum Langevin Equation?" Next came Linus Pauling, from the Linus Pauling Institute in California, who discussed the bonds formed between metal atoms. Finally, Manfred Eigen reported on the recent work being done on his theory of Biogenesis.

At the evening's banquet, held in the Main Ballroom of the Statler Inn, Roald Hoffmann, Chairman of the Department of Chemistry, proposed a toast to the memory of Peter J. W. Debye, and introduced E. G. Jefferson, Chairman and Chief Executive Officer of E. I. du Pont de Nemours, Inc., who spoke of Debye's work from an industrial perspective. Jefferson was followed by Hans Bethe, John Wendell Anderson Professor of Physics Emeritus at Cornell and former colleague of Debye, who recalled "Physics in Germany in the 1920's and 30's".

Donna Middleton

S.K. Obendorf

M. Eigen, L. Pauling, M. Davies

Dr. and Mrs. Peter P. Debye and Paul Flory

E.B. Wilson

Linus Pauling addresses a large audience in Baker 200.

More pictures on Page 15.

The admonition was succinct: "I question not but that the great wisdom of the noble author will sway him to high silence till he shall be resolved of what consequence the thing may be, either by his own experience, or the judgment of some other that thoroughly understands what he speaks about." That pointed counsel was conveyed to the secretary of the Royal Society in response to a paper on the "Incalescence of Quicksilver with Gold" that had appeared in the February 1676 issue of the Philosophical Transactions. The "noble author" of that paper was Robert Boyle (1627-1719), then at the peak of an illustrious career and reputation. The admonition came from a comparative upstart named Isaac Newton.

Surprisingly, Boyle seems not to have been offended by the presumption of his younger colleague. Quite to the contrary, Newton's response initiated a series of illuminating exchanges between the two men. Shortly after the above admonition was conveyed, for example, Boyle sent to Newton a copy of his recently published Experiments, Notes &c. about the Mechanical Origine or Production of Divers Particular Qualities, the receipt of which was warmly acknowledged by Newton. The following spring Newton again forwarded for Boyle's consideration comments on a second paper that the latter had recently published in the Philosophical Transactions and in February 1679, in response to Boyle's specific solicitations, Newton sent to Boyle a long letter suggesting invisible mechanical causes for various physical phenomena, a letter that is today recognized as among the most famous and revealing of all of Newton's correspondence. For the present purpose, however, the most significant product of these years was a small pamphlet published by Boyle in 1678 and entitled Of a Degradation of Gold made by an Anti-elixir: a Strange Chymical Narrative.

There is no evidence to suggest that the publication of this pamphlet was directly prompted by Boyle's interaction with Newton, but its contents do reflect a subject of mutal interest: alchemy. The 1676 paper of Boyle's which had originally prompted the interaction with Newton also dealt with alchemical questions and both Boyle and Newton maintained lifelong interests in the possible transmutation of substances. It must be remembered, however, that in pursuing their alchemical interests Boyle and Newton both rejected the mystical, esoteric milieu of their predecessors and based their own researches on the belief that the physical and chemical properties of substances were determined by the mechanical nature and configuration of their constituent particles, particles that could be dissociated and recombined to yield different tangible properties. Nonetheless, the Degradation of Gold remains one of the most puzzling and controversial of all of Boyle's published writings. It purports to describe an example of what might be called "reverse alchemy," not the normal alchemical attempt to perfect metals but, rather, the reverse, the apparent debasing of an originally noble metal. In publishing this "strange chymical narrative," Boyle clearly chose to ignore Newton's admonition to maintain a "high silence" on matters alchemical. If Boyle was not persuaded, however, to cease altogether the public discussion of transmutation, neither was he totally unmindful of Newton's concern. Rather than submitting

the Degradation of Gold to the Royal Society for publication in the Philosphical Transactions, which could easily have accommodated its seventeen pages and guaranteed it wide dissemination, Boyle chose instead to publish it as a pamphlet, anonymously, and in a very limited printing. The result is that the Degradation of Gold is today the rarest of all of Boyle's published works, far rarer, for example, than even the Sceptical Chymist. It is also the most recent addition to Cornell's magnificent Doris and Ellis H. Robison Collection of the Works of Robert Boyle.

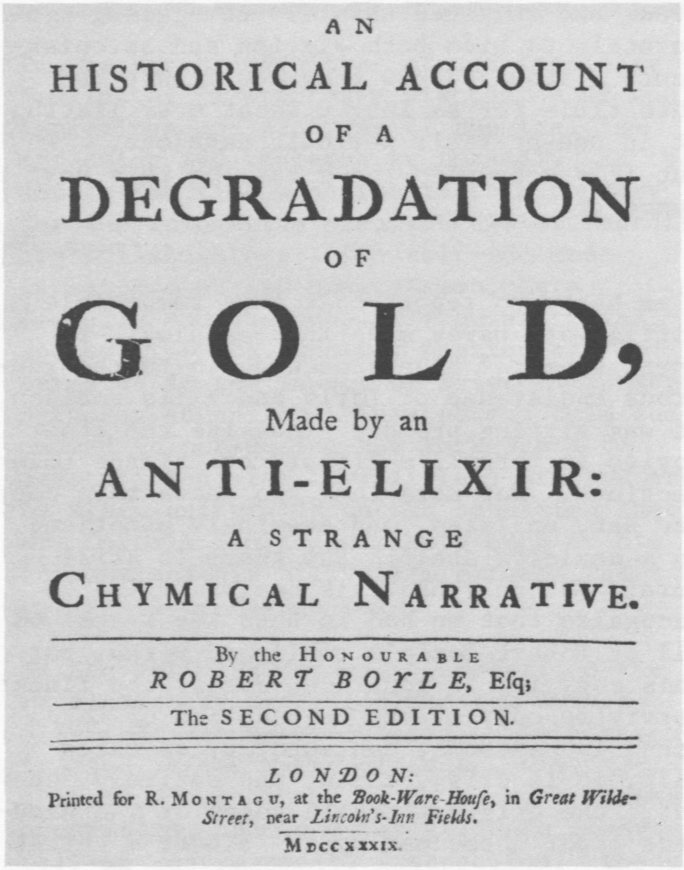
The Robison Boyle Collection

In the history of early modern chemistry two names stand out above all others: Antoine Lavoisier and Robert Boyle. Cornell's History of Science Collections has contained since 1962 the finest collection of material on the life and work of Lavoisier anywhere in the world outside of Paris. Through the generosity of Doris and Ellis H. Robison (Cornell '18) of Troy, New York, the History of Science Collections has recently added to this one of the world's most comprehensive collections of the works of Robert Boyle.

The acquisition of this Boyle Collection has transformed what was already a major collection into what is now one of the world's great centers for the study of early modern chemistry. As the Lavoisier Collection anchors Cornell's holdings at the more recent end of the critical eighteen-century transition in the development of modern chemistry, so the Boyle Collection now anchors the beginning of this critical period. The combination is a research collection unsurpassed among American universities.

Acquisition of the Robison Boyle Collection has done much more, however, than merely strengthen Cornell's holdings in the history of early modern chemistry. It is a comprehensive collection of Boyle's writings and, although certainly the most eminent chemist of the period, Robert Boyle was much more than just a chemist. He wrote on all subjects of interest to natural philosophers of the latter seventeenth century. As the best known English scientist of his day and one of the great experimentalists of the entire seventeenth century, his influence was immense. His works were all quickly translated into Latin for Continental distribution and he was widely read and respected throughout Europe. In addition to chemistry, Boyle was interested in nearly all aspects of physics, natural history, and medicine and published extensively in these areas as well. He also wrote extensively on religious and ethical topics. Throughout his life he maintained a particular concern with demonstrating that science and religion were not only reconcilable but integrally related and, in his effort to promote this belief, he produced numerous essays and tracts on religion and natural theology. All of these varied works are included in this extraordinary collection.

The collection today consists of 165 distinct items bound in 153 volumes. Of the forty-two separate books and tracts which Boyle published during the course of his life, all forty-two are now, with the addition of the Degradation of Gold, included in the Collection. Thirty-nine of these forty-two are represented by first editions. Included among these are Boyle's very rare first publication (An Invitation to Free and Generous Communication, 1655), the authorship of which was entirely unknown until 1950, and a copy of the first edition of his second publication (Some Motives and Incentive to the Love of God, 1659), only nine copies of which are known to exist today. Also included are both the second and rare first editions of the best-known of all books in the history of chemistry: Boyle's The Sceptical Chymist (1661, 1680). Fewer than three dozen copies of the first edition of this work exist today. In addition to these first editions nearly all of the important subsequent editions and translations are included as well. There is, for example, the important second edition of the New Experiments Physico-mechanical Touching the Spring of the Air and its Effects (1662) which included a supplement containing the first publication of Boyle's Law, not in the equational version familiar today but in its original tabular form. With Boyle's other publications the story is the same. The numerous essays and articles that he contributed to the Philosophical Transactions and other scientific publications are all here, as are the major seventeenth and eighteenth-century collected editions of his writings. The acquisition of this collection has given Cornell, in a single magnifi-



AN
HISTORICAL ACCOUNT
OF A
DEGRADATION
OF
GOLD,
Made by an
ANTI-ELIXIR:
A STRANGE
CHYMICAL NARRATIVE.

By the HONOURABLE
ROBERT BOYLE, Esq;

The SECOND EDITION.

LONDON:
Printed for R. MONTAGU, at the *Book-Ware-House*, in *Great Wilde-Street*, near *Lincoln's-Inn Fields*.
MDCCXXXIX.

cent gathering, virtually every published writing of one of the key figures in the development of modern chemistry.

The Elusive Degradation of Gold

The core of this collection was originally assembled over a period of twenty-five years by the late Franz Sondheimer whose own research in chemistry will be well known to many reading this account. That the largest and finest collection of Boyle's works ever offered for public sale was assembled by a scientist who was not only a chemist himself but also a Fellow of the Royal Society gives this collection a special significance beyond its inherent comprehensiveness. The Royal Society is today the oldest scientific society in the world; Robert Boyle was one of its principal founders in 1662 and throughout his life remained its most notable and influential member. Although interested in all of early modern chemistry, Sondheimer made Robert Boyle his special interest.

For years Sondheimer pursued Boyle in the rare book markets of the world. And yet, "perfection" (to use the alchemist's term) eluded him. He could claim to have possessed, at one point, two copies of the rare first edition of the Sceptical Chymist, including Boyle's personal copy, but by the fall of 1980 when Cornell acquired his collection he still lacked one of the forty-two separate books that Boyle published during his lifetime. The one elusive title? The Degradation of Gold!

The Degradation of Gold, as noted earlier, is the rarest of all of Boyle's publications. In 1961, when he completed the second edition of his definitive bibliography of Boyle's works, John Fulton had been able to locate only four copies of the first edition of 1678 and another four copies of the second edition of 1739. There are public records of only three copies of either edition having been sold in this century. That he failed to obtain a copy is, needless to say, no reflection on Sondheimer's diligence. That Cornell now has a copy results from the combination of extraordinary good fortune and the continuing generosity of the Robisons.

Approximately two years ago I learned, through a third party, of the existence in a private collection of a previously unrecorded copy of the second edition of The Degradation of Gold. Subsequent inquiries, all through my intermediary, eventually revealed that this new copy, like most known copies of either edition, had at some time in the past been trimmed unfortunately close by a binder's knife. To my great surprise, however, I also learned that this collector might possibly be willing to sell his copy privately. At that point, I made direct contact with the owner, only to learn that while he was indeed willing to sell, his copy had been cropped much more severely than previously reported. This presented us with an acute dilemma. One of the significant features of Cornell's collection is its extraordinarily fine condition. This had been important to both Sondheimer and the Robisons and in adding to the collection we have constantly sought to maintain their high standards. What should we now do? Here was the only title that had eluded Sondheimer; there were records of only three other copies having been sold in this century; and yet, this copy was not up to our physical standards, but then neither were most of the other known copies of the work.

Should we snatch the opportunity that had always eluded Sondheimer, or should we hold out for a better copy, knowing full well that it could be decades, if ever, before a better copy became available? Given this dilemma, we opted for time and I embarked upon a survey of all surviving copies of the Degradation of Gold. Clearly, we first needed more detailed information about the physical state of these other copies. How typical was the copy we had been offered?

In compiling a list of locations of the other known copies, I quickly recalled an interesting peculiarity: while there were records of only three other copies of the Degradation of Gold having been sold in this century, the most recent of these sales had taken place just a few years earlier at an estate auction in England. This copy had been purchased by a major British antiquarian firm, obviously acting on commission for some unknown collector or collection. Why this copy had eluded Sondheimer was (and remains) something of a mystery but, being the most recently sold copy, it seemed an appropriate place to begin our survey. I picked up the phone and placed a trans-Atlantic call.

Could the dealer tell me the present location of or, perhaps, give me some information about the physical condition of the copy of Boyle's Degradation of Gold that he had purchased in 1979? At first the dealer claimed not even to know the title I was calling about. Then, persuaded there was indeed a work of that title by Boyle, he professed no knowledge of their ever having purchased it. Finally, convinced that I in fact had an appropriate citation from published auction records, he agreed to check further if I would just hold the line for a bit. After what on trans-Atlantic hold seemed an inordinate length of time, he returned to report that, yes, I had been correct. They had indeed purchased a work by that title in 1979. That I already knew; what about the condition? Could he perhaps recall any details of the physical state of that copy? "No, but let me check. I have it right here." It took me a moment, but only a moment, to realize the incredible significance of those words! This copy had not been bought on commission at that sale in 1979; it had apparently been bought for stock and remained unsold! Struggling desperately to hide both elation and astonishment, I inquired how they could have had this title for so long without ever listing it in one of their periodic catalogs. "Oh, but it's scheduled for a catalog this next summer."

I am happy to report that this remarkable little work never made that catalog. By "next summer," thanks once again to the generous assistance of Doris and Ellis Robison, it was sitting proudly alongside the other Boyles in Cornell's History of Science Collections. For more than two years this copy had sat, unlisted, and seemingly unnoticed, on a dealer's shelf. But there is still more! Not only had this dealer failed to recognize that he had in hand the rarest of all of Robert Boyle's published works, but this copy is, in addition, surely the finest surviving copy of the Degradation of Gold. Bound in handsome, contemporary speckled calf, it is crisp, clean, and entirely "uncut," the original deckle edges of the handmade paper untouched by any binder's knife!

As with the "perfection" sought three hundred years ago by Boyle's alchemical colleagues, that pursued more recently here in Ithaca requires the same careful blend of critical elements: knowledge of the ingredients, skill, perseverance, generous benefactors, and an ample measure of just plain good luck.

David W. Corson
History of Science Collections
Cornell University Libraries

David W. Corson, PhD'74, has recently been appointed head of the John M. Olin Research Library, and is History of Science Librarian for the University Libraries.

■ LAUBY'S RECOLLECTIONS

In the March 1981 issue of our Chemistry Newsletter, I started a discussion of the beginnings and progress of chemical instruction and research at Cornell. In the 1860's the time was ripe in this country for the innovative plans of two extraordinary collaborators: the self-educated farmer and shrewd businessman, Ezra Cornell, and the scholarly humanitarian, Andrew D. White, who was particulary interested in the impact of science on narrow orthodox education. This potent team succeeded in persuading New York State to devote all of its Morrill Land Grant Award to a new university on the condition that Mr. Cornell would contribute much of his fortune and his hilly farm between the two gorges above Cayuga Lake.

In the Fall 1983 issue, I summarized the revolutionary plans for the new university. It was to be devoted to both teaching and research, to place science, agriculture and engineering on a par with the humanities, and to offer graduate study as well as undergraduate instruction. Coeducation was to be fostered and the university was to be non-sectarian with freedom for those of all convictions towards religion. The expenses for students were to be as modest as possible so that the opportunity for university education would be available for any able student. The combination of both private endowment and state support was unique and still makes Cornell unique among American universities.

These broad innovative plans aroused great public enthusiasm and excitement but also powerful and bitter opposition. When Cornell opened in 1868, an overwhelming number of students applied for admission; 412 undergraduates and graduates appeared. The formidable task of meeting their needs and the realization of the broad plans for the university had to be reconciled. Ezra Cornell undertook the management of the funds and lands, and the building of classrooms, laboratories, library and housing. White planned the educational organization, recruited faculty, and collected books for the library.

White was astonishingly successful in attracting two outstanding chemists, George C. Caldwell and James M. Crafts, both well suited to meet the urgent need for chemical

A.W. Laubengayer

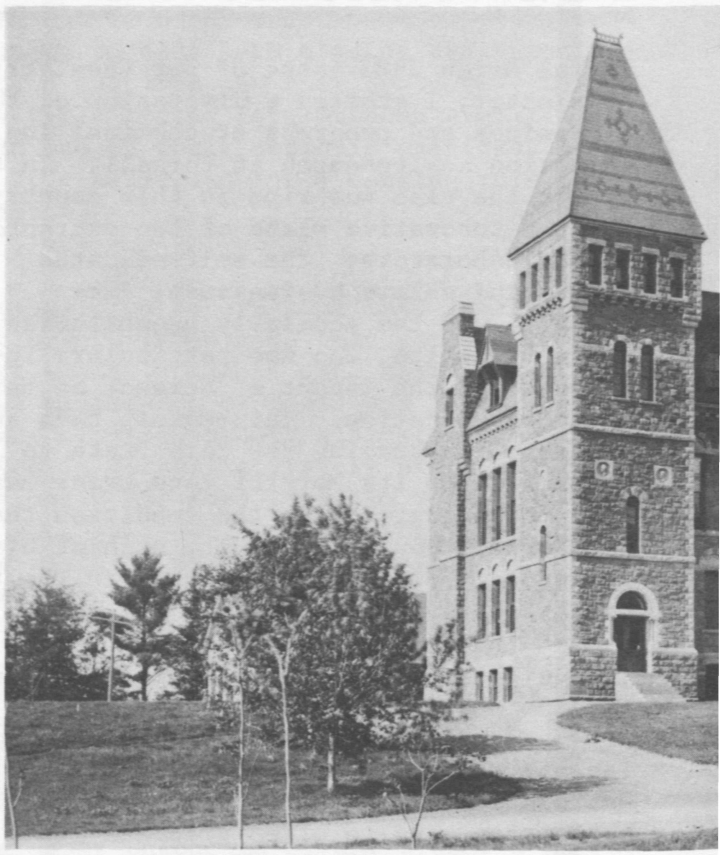
training and its application. Although Crafts left Cornell after two years for study abroad, he helped organize lectures and recitations in General and Analytical Chemistry, insisting on laboratory practices for all students, a rarity in those days. Caldwell taught Analytical and Agricultural Chemistry. The initial miserable housing for chemistry in one basement room in Morrill Hall forced the construction of a wooden laboratory in the quadrangle, presumably for chemistry and physics. However, other sciences crowded in so that shortage of space still was a great handicap. Charles A. Schaeffer was appointed Professor of Analytical Chemistry and Mineralogy in 1869-70 and Chester H. Wing became Professor of Organic Chemistry and of Chemistry Applied to Industry in 1890-91.

By 1875, enrollment had risen to 542, of whom 16 undergraduates and 4 graduates elected to major in chemistry. Most of the students in other fields needed at least some introductory chemistry. By 1875, the faculty had grown, through the appointment of Professor A. A. Breneman, to three

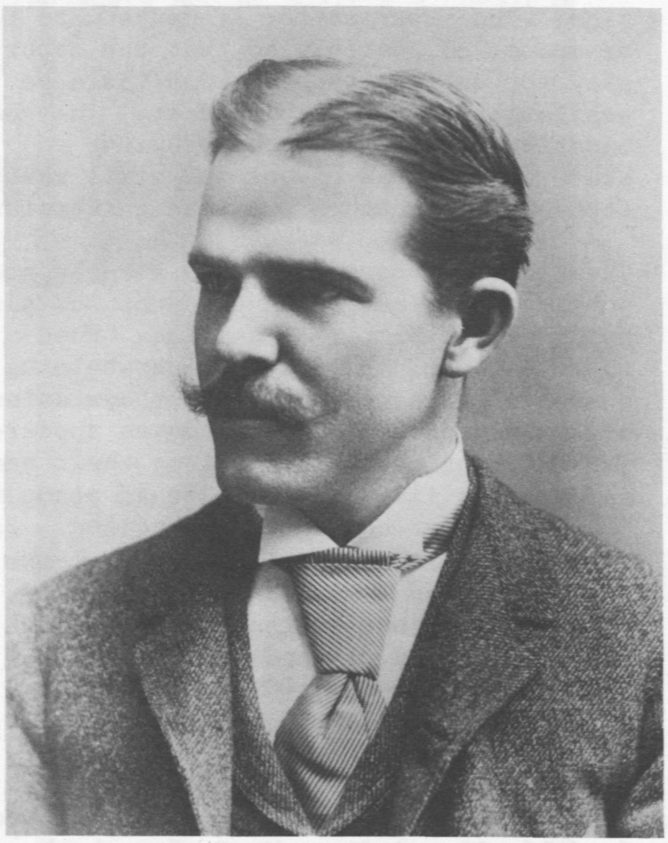
professors, one assistant professor and two instructors. The University became organized into departments, one being the Department of Chemistry and Physics, with no designation yet as colleges. The courses of undergraduates specializing in chemistry had evolved to include Introductory Chemistry, Qualitative and Quantitative Analysis, Chemical Philosophy, Organic Chemistry Mathematics, Physics, Chemical Processes, Metallurgy and Mineralogy. French and German were required so students could use the chemical literature, then largely in those languages.

In addition to carrying heavy teaching loads, Caldwell and his colleagues made other important contributions. To meet the needs of agriculture, industry, medicine, nutrition, sanitation, etc., the development and use of precise and standardized analytical methods were of prime importance. The response from Cornell University was outstanding. Crafts wrote a textbook on qualitative analysis. Caldwell devised analytical methods for water, foods, soils and fertilizers. He introduced the use of microscope, spectroscope, reactometer and polarimeter and applied techniques for simple gas analysis. Caldwell's book on agricultural chemical analysis published in 1869, greatly stimulated interest and research. He acted on national committees to encourage the development and standardization of analytical methods for agriculture and industry. In 1879, he organized an Agricultural Experiment Station, housed and administered by the Chemistry Department until it was taken over by the Cornell College of Agriculture and moved to Geneva, New York.

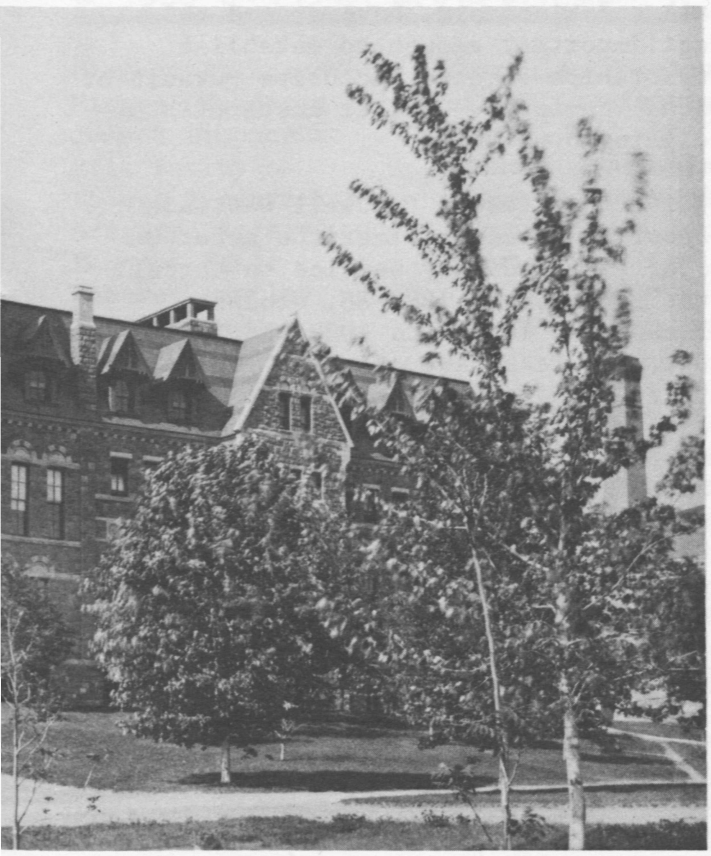
1880-81 was the most critical time for Cornell University. From its beginning it had suffered vicious attacks from many sides: other colleges which coveted the Morrill Land Grant money, opponents to the inclusion of science and technology as fitting fields for a university, and especially, clergy and theologians who detested Cornell's liberal attitude towards religion and terrified many prospective students by labeling Cornell as "atheistic". By 1880 this opposition had resulted in a decline of students to 312, with only six undergraduates and one graduate majoring in chemistry. The financial state of the University was precarious. Could the institution survive?



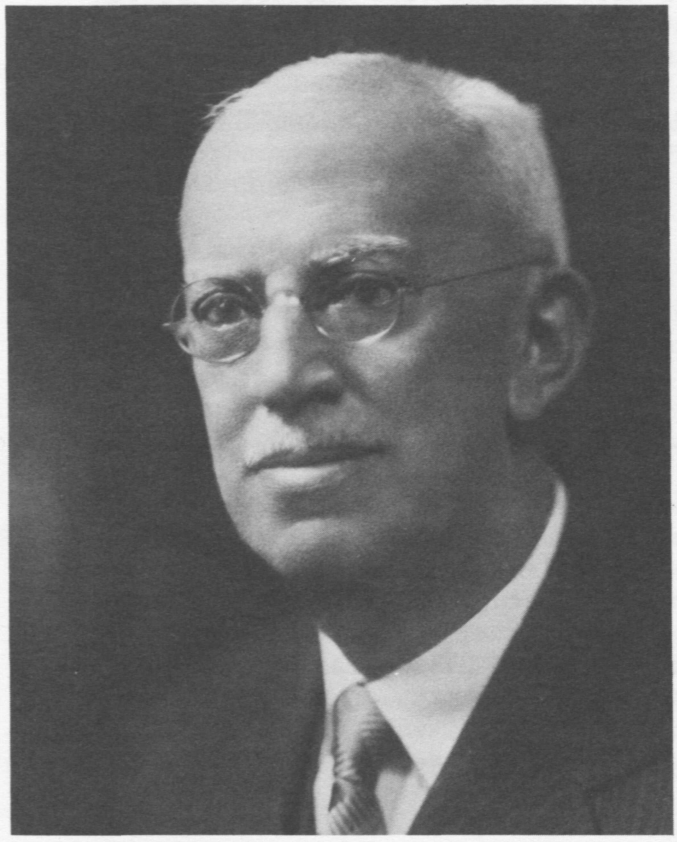
Franklin Hall, about 1885. Chemistry was hou



W.R. Orndorff



ed on the second and third floors.



L.M. Dennis

It did, and improvement began in 1881-82, the enrollment increasing to 384 with 8 specializing in chemistry. In 1883 the completion of Franklin Hall (recently renamed Tjaden Hall) gave a great boost to Chemistry and Physics by providing exclusive quarters for the two Departments. Physics was assigned the basement and first floor, Chemistry the second and third floors. For the first time, Chemistry had housing commensurate with its needs for instruction and research. Professors Wing and Breneman resigned and were replaced by S. B. Newbury. University enrollment zoomed to 1022 by 1887-88 and the number of students in chemistry rose. A wooden annex to Franklin Hall helped to accomodate expanded laboratory instruction in chemistry. An ill-advised "School of Pharmacy," offering a two year curriculum and administered by the Chemistry Department, was voted by the Board of Trustees. It met great opposition and attracted few students so it was abolished in 1889-90.

Hewett, in his "History of Cornell University," remarks for the late 1880's, "There is probably no other department, except perhaps Physics, the growth of which is so intimately associated with the expansion of the technical courses and the courses in natural history and medicine. As these Departments grow, new demands have always been made upon that of Chemistry." One of these demands arose from the sad state of sanitation in our country. Epidemics of typhoid and other contagious disease were common, and the need for analysis and control of public water supplies became clear. Urged by Caldwell, the American Chemical Society formed a committee on sanitation which was chaired by Caldwell; much of its work was done at Cornell.

In the late 1880's and 1890's the addition of a second generation of chemistry faculty occurred. This new blood stimulated changes in the scope and character of instruction and research which were to place Cornell in the foremost rank in chemistry among American universities. In 1887-88, William R. Orndorff, a pupil of Ira Remsen at Johns Hopkins, became Instructor in General and Organic Chemistry. He was advanced to Assistant Professor in 1890 and later to Professor of

Organic and Physiological Chemistry. Louis M. Dennis was made Instructor in Chemistry, taking a leave 1888-91 for graduate study in Germany. Returning in 1891 as Professor of Inorganic and Analytical Chemistry, he added pioneer courses in Gas Analysis and Spectroscopic Chemical Analysis and began a noteworthy program of research in Inorganic Chemistry. Emile M. Chamot became an assistant in Chemical Analysis in 1890-91, was promoted to Assistant Professor in 1901 and later to Professor. Thus started his outstanding career in Chemical Microscopy and Metallography. Both Professors Newbury and Orndorff taught General and Organic Chemistry, the former lecturing on the "Paraffin Series" of compounds, the latter on the "Aromatic Series". Joseph E. Trevor was appointed Assistant Professor in 1892-93. This marked the evolution from the early courses in Chemical Philosophy and Theoretical Chemistry to Physical and Mathematical Chemistry at Cornell.

In 1893-94, the course offerings in chemistry were first listed under divisional headings: Inorganic (4), Analytical (10), Agricultural (3), Organic (4), Theoretical (5), Miscellaneous (6). Summer Sessions were started and the summer courses in General, Analytical and Organic Chemistry have often served to augment the incomes of younger staff members.

Wilder D. Bancroft came to Cornell in 1895-96 as Assistant Professor of Physical Chemistry, one of the first uses of this title in America. Organization of the Division of Physical Chemistry accelerated, catalyzed by the vigor of Bancroft, resulting in far reaching effects on all the other Divisions of the Department. The Journal of Physical Chemistry was founded in 1896 under the editorship of Bancroft and Trevor. This drew worldwide attention to Cornell as an innovative American University and attracted many able students. The paper of Willard Gibbs on the phase rule had been neglected because of obscure presentation. In 1897, Bancroft published "The Phase Rule", a clear and convincing exposition which encouraged research and applications in this area. He also drew attention to electrochemistry. The success of Bancroft's pioneering efforts to establish Physical Chemistry was noted by W. A. Noyes who in 1902 said, "Until 1902 only two American Universities, Cornell and Wisconsin, have deemed the subject important enough to establish professorships for the exclusive pursuit of Physical Chemistry." Other institutions rapidly followed suit.

In 1902-03, Professor Caldwell was made Professor of Chemistry Emeritus after 34 years of extraordinary service to Cornell and the public. By 1887-88, student enrollment had leaped to 1022 and by 1900 to 2048. To take care of these students in chemistry, Caldwell supervised the expansion of facilities from one pitiful basement room to the fine Morse Hall laboratories. The instructional staff grew to six professors, five instructors and eight assistants. While pioneer analytical chemistry dominated the early years, Caldwell encouraged the development of outstanding instruction and research in inorganic, organic and physical chemistry. He played a leading role in promoting the application of chemical technology to agriculture, industry, sanitation and medicine. The wisdom of the appointment of Professor Caldwell, the first professor recruited by President White in 1867, was amply demonstrated.

For a more detailed and anecdotal sketch about Professor Caldwell see Issue #21, August 1977, of our Chemistry Newsletter.

L. M. Dennis succeeded Caldwell as head of the Cornell Chemistry Department; his era will be covered in my next contribution.

A. W. Laubengayer

The Department of Chemistry will be holding Open House during Reunion Weekend on Friday, 8 June from 1:30 to 4:00pm in the lobby of Baker Laboratory. A.W. Laubengayer will host the occasion, and will bring along memorabilia from his collection. We look forward to seeing many of you at the reunion.

■ 1983-84 PH.D. GRADUATES

Clement Brungardt	Hercules Chemical Co.	Wilmington, Delaware
Michael Cannarsa	Atlantic Richfield Corp.	Philadelphia, Pennsylvania
Joseph Dinnocenzo	Asst. Prof. of Chemistry	University of Rochester
Erik Farley	Teaching Associate	Cornell University
Robert Frederickson	Miles Laboratories	Elkhart, Indiana
Gregory Gellene	Postdoc with Richard Porter	Cornell University
Kenneth Haber	Postdoc with Ed Grant	Cornell University
Deborah Huntley	Oak Ridge Natl Laboratories	Oak Ridge, Tennessee
Phillip Hughes	Ayerst Laboratories	Princeton, New Jersey
David C. Johnson	Postdoc with M. Sienko's Group	Cornell University
Hyung-Rae Kim	Postdoc with John Ross	Stanford University
Randy Lauffer	Massachusetts General Hospital	Boston, Massachusetts
Duckwhan Lee	Postdoc with Herschel Rabitz	Princeton University
Ruth J. Mayer	Postdoc with Stephen Benkovic	Penn. State University
Paul McGuirk	Pfizer Pharmaceuticals	Groton, Connecticut
James Misewich	Postdoc at IBM	Yorktown Heights, New York
Fariborz Mohamadi	Postdoc with W. Clark Still	Columbia University
Judith A. Pino	Postdoc with John McMurry	Cornell University
Albert T. Profy	Postdoc with David Usher	Cornell University
George O. Ramseyer	Naval Research Labs	Washington, D.C.
Brady Roach	Upjohn Chemical Co.	Kalamazoo, Michigan
A. Lawrence Roe	Postdoc with Lawrence Que	University of Minnesota
Steven A. Walstrum	Postdoc with Olke Uhlenbeck	University of Illinois
David Waskiewicz	Cambridge BioScience Corp.	Cambridge, Massachusetts
Tim Wenzel	Postdoc with Robert Bergman	Univ. of California, Berkeley
Sunil D. Wijeyesekera	Postdoc with John Corbett	Iowa State University
Richard D. Wood	CIBA-Geigy	Ardsley, New York

■ ALUMNI NEWS

William Bebbington, PhD'40, can be found these days in Aiken, South Carolina (905 Whitney Drive, SC 29801).

We were sorry to learn of the death of **Robert Hummel,** PhD'69. He had recently headed a section in the residue chemical branch in EPA's pesticides program office.

Mary Schuster Jaffe, BA'37, a consulting chemist with General Electric in Cleveland, wrote us last year to say, "Clyde Mason's microscopy courses got me my first position, which led to the present one. Shame on Cornell for dropping Chemical Microscopy! Instead, it should have been expanded to encompass modern instrumentation..." Dr. Jaffe will be happy to know we offered in January, and will offer again in June, a one-week, intensive course in Polarized Light Microscopy, taught by Walter C. McCrone, PhD'42. The courses are subsidized by the McCrone Research Institute, and are open to graduate students and postdoctoral associates in the University, as well as to faculty members or technical staff.

Oliver H. (Hydroxy) Johnson, PhD'39, of Hampstead, North Carolina, asked if we could provide street addresses on request. The answer is yes, and we hope the Directory will be available to all of you by next Spring.

Sien Moo Tsang, PhD'44, writes that he is retired from American Cyanamid Co. and lives in North Plainfield, NJ.

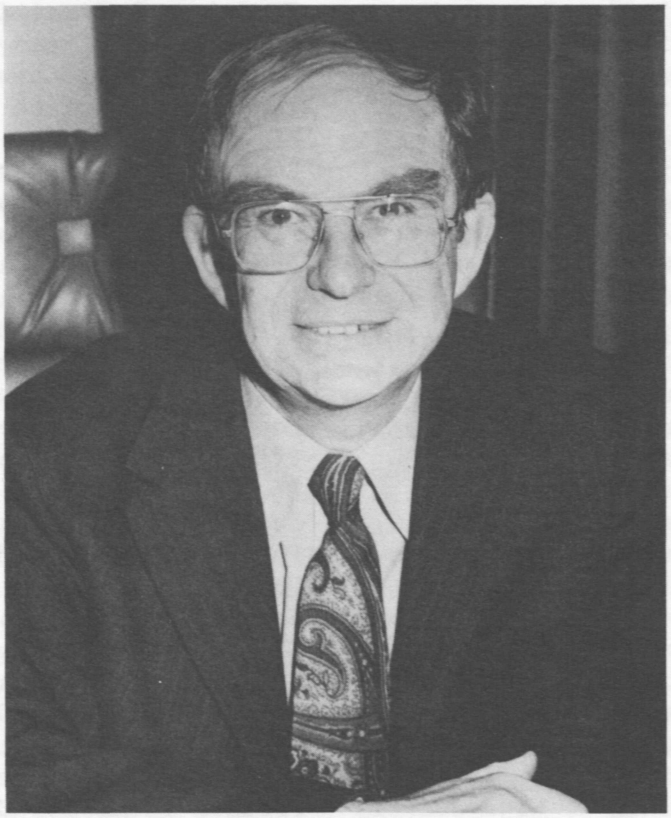
C.O. "Will" Willets, MS'26, writes that his wife was left out of our list of alumni. Her maiden name was **Mildred F. Button,** and she also received an MS in 1926, and can be reached at 265 Medford Leas, Medford, New Jersey (08055).

■ 1983 BAKER LECTURERS

John M. Thomas, FRS, Head of Physical Chemistry at Cambridge University, and an extraordinarily exciting lecturer, addressed topics of interest to chemists, solid state physicists, geologists and engineers in the Spring 1983 Baker Lectures. He titled his lectures, "Technique and Adventure in Solid State Chemistry".

Minerals have played a prominent part in Professor Thomas' research into the chemistry of solids and their surfaces. His research group at The University College of Wales was the first to show that XPS could identify submonolayer amounts of chemisorbed species on solid surfaces and that angular UPS studies could yield details of band structure. His other interests include organic solid-state chemistry and the characterization of catalysts.

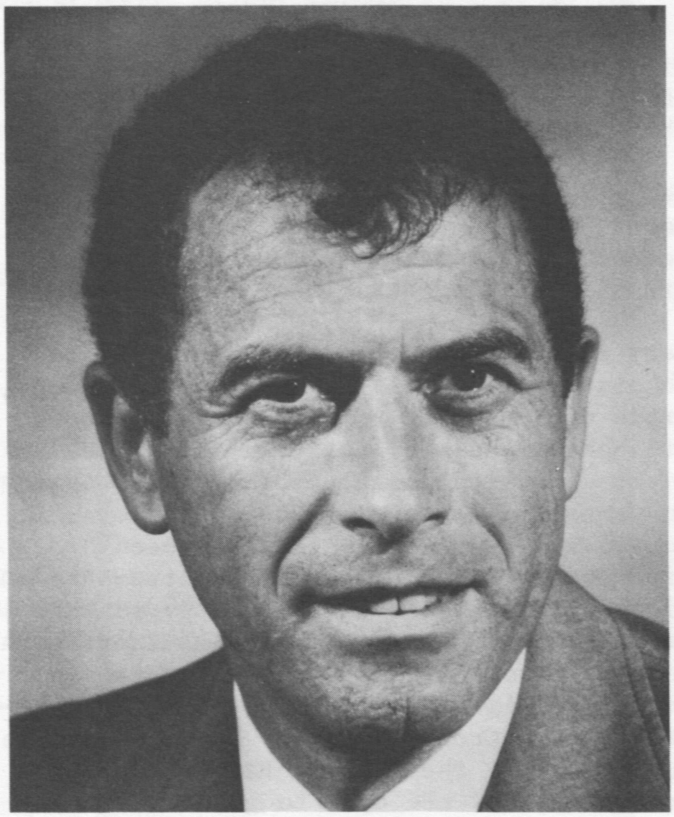
Professor Thomas was the recipient of the Corday Morgan Medal (1967), the Tilden Medal (1973), the RSC Award in solid-state chemistry (1978) and the American Carbon Society Pettinos Prize (1969). He was elected a Fellow of The Royal Society in 1977 and was appointed to the United Kingdom Cabinet Advisory Council of Applied Research and Development in 1982.



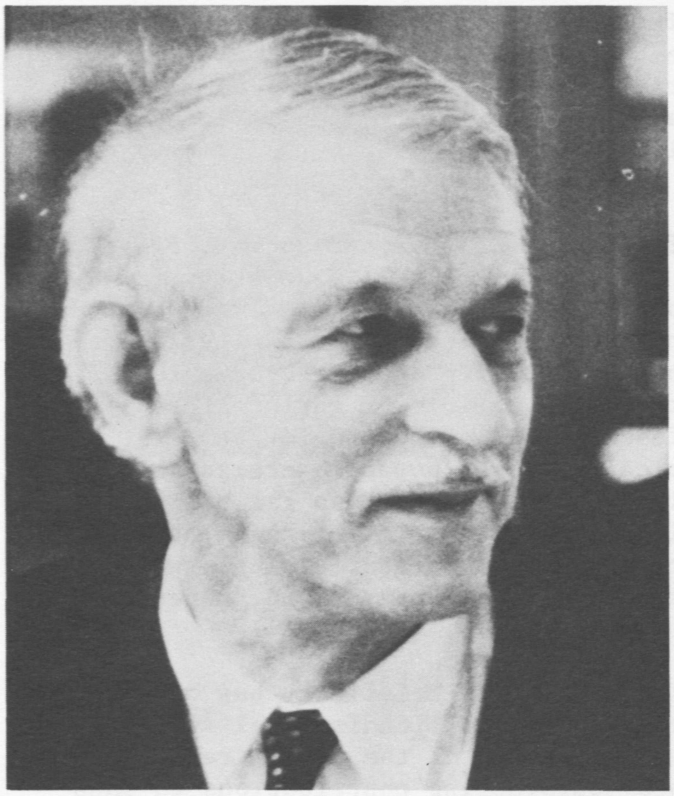
J.M. Thomas

The Fall 1983 Baker Lectures were no less stimulating, as Professor Kurt Wüthrich of the Institute for Molecular Biology and Biophysics, ETH (Eidgenossische Technische Hochschule), Zürich, Switzerland, presented a series of lectures entitled, "Nuclear Magnetic Resonance and Structure-Function Correlations in Proteins and Nucleic Acids".

An expert in the development and application of nuclear magnetic resonance techniques for studying biological macromolecules in solution, in lipid matrices, and in other noncrystalline states, Professor Wüthrich received his PhD in Inorganic Chemistry in 1964 at the University of Basel. He did postdoctoral work at the University of California, Berkeley, with Professor R. E. Connick and at Bell Telephone Labs, Murray Hill, with Dr. R. G. Shulman, and joined the ETH in 1969. He is also Secretary General of the International Union of Pure and Applied Biophysics.



K. Wüthrich



Clyde W. Mason

17 June 1898 - 8 December 1984

Clyde W. Mason, Professor of Chemical Engineering Emeritus and an internationally recognized authority on light microscopy, died Thursday, Dec. 8, at his home in Ithaca. He was 85. Professor Mason was the author of the textbook, "Introduction to Physical Metallurgy," and co-author with the late Professor Chamot of the two-volume "Handbook of Chemical Microscopy." He had recently completed a revision of Volume One of the Handbook, the fourth edition, which was published by Wiley-Interscience in 1983. Born in South Dakota in 1898, he earned his doctoral degree from Cornell in 1924. Mason specialized in the study of microscopical properties and behavior of chemicals, construction materials and manufactured products. He was the founder and first chairman of the Division of Analytical and Microchemistry of the American Chemical Society, and was a former chairman of the Education Committee of the American Society of Metals.

Professor Robert L. Von Berg, Charles C. Winding and Julian C. Smith, of the School of Chemical Engineering, in their memorial statement said, "Clyde was a gifted, exacting, complex individual. He was a 'distinguished gentleman,' reserved yet friendly; outwardly brusque yet sensitive and unfailingly generous; demanding of the students yet deeply concerned with their welfare; a recognized authority of enormous learning, yet who often apologized for his lack of knowledge. There was no pretense in him. Above all, he was a devoted teacher who well understood the learning process and the limitations of our educational system, who sought to awaken in his students a sense of independent thought and critical judgment. Cornell has lost a dedicated servant. It is comforting that he lived to see the establishment of of the Mason Engineering Scholarships which will perpetuate his memory."

For Mike Sienko

Mike Sienko's worth may not be netted
nor the light of his vision shadowed
by any coverlet of words
Though we seek to find for ourselves
some comfort in the commonality
of our loss.
Consider this:
the teacher with the punctuating hands
who talked to us alone in every vast hall
is still teaching.
There is solace in the fabric of our memory.
Charisma is no charmed object to be weighted.
in grams, yet Mike's power touched
us in measurable ways.
He was the freshman's code-master,
cracking the abstruse
into palpable swallows
and he was their mentor for freedom.
Wisdom needs chance-
that territory he offered all,
with a visa of logic to process
the terrain's rewards.
To make us all care
that was the trick. His legerdemain
was no slight of hand, but work and genius
muscled in pair.
He was America's missionary to the Old World
and brought some of Europe's finesse
back with pleasure-
his and ours together.
We liked him
and he was our friend.
The vacuum he leaves is filled with us
the ones who were there with him,
the ones who think of him, now.

Bill Glaunsinger, PhD '72
A former student and friend

■ FACULTY NEWS

A recent study of authors, whose published journal articles from 1965 to 1978 were indexed in Science Citation Index, lists **Professors Michael E. Fisher, Fred W. McLafferty** and **Roald Hoffmann** as among the 1,000 most-cited contemporary scientists. **The Institute for Scientific Information** stated that only 373 of the 1,000 authors on the list are members of one or more national academies. Professor Fisher is a Fellow of the Royal Society of London, belongs to the American Academy of Arts and Sciences, and is a Foreign Associate of the National Academy of Sciences. Professor Hoffmann belongs to the National Academy of Sciences and the American Academy of Arts and Sciences and is a Fellow of the Royal Society of Arts and a Foreign Fellow of the Indian National academy of Sciences. Professor McLafferty belongs to the National Academy of Sciences. Professor Fisher was cited 4,604 times, Professor McLafferty 3,018 times and Professor Hoffmann 7,340 times.

Professor Michael E. Fisher was awarded the 1983 James Murray Luck Award for excellence in scientific reviewing by the National Academy of Sciences. Dr. Fisher was elected a Foreign Associate of the National Academy of Sciences in April 1983. The IUPAP Commission on Thermodynamics and Statistical Mechanics awarded the 1983 Boltzman Medal to Dr. Fisher for his contributions to statistical mechanics, and he has joined a Congressional Advisory Panel on "Technologies to Reduce US Materials Import Vulnerability.

Professor Harold Scheraga was given the 1983 Linderstrom-Lang Award of the Carlsberg Foundation for outstanding contributions to biochemistry.

Professors W. T. Miller and **J. L. Hoard** were presented with their 50 Year Membership Anniversary pins last Spring by the American Chemical Society.

Professor Hector D. Abruña was one of only 200 researchers nationwide who received the first Presidential Young Investigator Award from the National Science Foundation. Professor Abruña, whose principal research involves electrochemical techniques, was recommended by a panel of distinguished engineers and scientists.

Professor George H. Morrison has been chosen a member of the Advisory Board of the Journal of Physical and Chemical Reference Data, a publication of the American Chemical Society.

Professors Jon Clardy and Jack H. Freed have won Guggenheim Memorial Foundation Fellowships this year. Professor Clardy intends to pursue isolation of chemically active compounds, looking at marine organisms, particularly anti-tumor antibiotics. Professor Freed, studying low temperature chemical physics, hopes to create the world's first quantum Bose gas by obtaining a high concentration of hydrogen atoms at extremely low temperatures. This would create a gas with super fluid properties.

Professor Fred W. McLafferty has been awarded the W. H. Nichols Medal Award by the New York Section of the ACS in recognition of his "outstanding contributions to mass spectroscopy and computer assisted techniques in analytical chemistry."

■ SOCIETY OF CORNELL CHEMISTS

We continue to receive updated mailing addresses from many alumni and friends of the Department. We hope to have enough good information next year to begin a Directory which would be available for all of you to purchase.

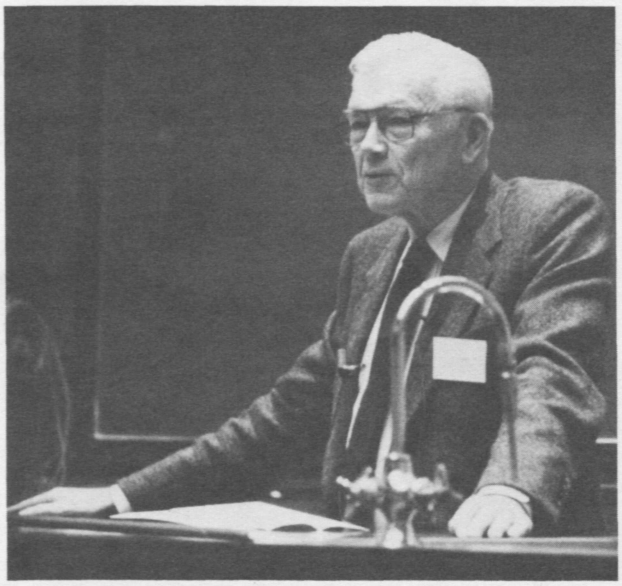
It is time, once again, to ask you to support the cost of printing and mailing the Newsletter with your annual dues of $10 for the calendar year 1984. This is, as before, a voluntary act, and your name will not be removed from our mailing list if you don't pay your dues; however, the costs of producing the Newsletter are rising steadily, and we could use your help to keep it going.

Please make your checks payable to "Cornell University" and send them to Society of Cornell Chemists, Baker Laboratory, Cornell University, Ithaca, NY 14853.

M. Kac

E.G. Jefferson

M. Eigen



P. Flory

H. Bethe and M. Davies

■ Faculty Members Spring 1984

H. D. Abruña
A. C. Albrecht
B. A. Baird
J. M. Burlitch
J. Bernstein*
B. K. Carpenter
J. C. Clardy
D. B. Collum
W. D. Cooke
G. S. Ezra
R. C. Fay
M. E. Fisher
J. H. Freed
B. Ganem
M. J. Goldstein
E. R. Grant
G. G. Hammes
R. Hoffmann***
P. L. Houston
F. W. McLafferty
J. E. McMurry
J. Meinwald***
G. H. Morrison
R. F. Porter
J. R. Rasmussen
H. A. Scheraga***
K. H. Theopold
D. A. Usher
B. Widom
J. R. Wiesenfeld
C. F. Wilcox
P. T. Wolczanski

*Visiting
***On leave

Emeritus Faculty

S. H. Bauer
J. L. Hoard
F. A. Long
A. W. Laubengayer
W. T. Miller

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