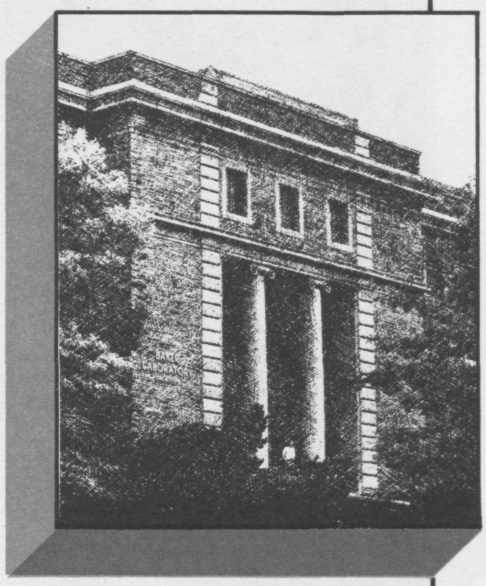
CORNELL CHEMISTRY



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

Cornell University
Baker Laboratory
Ithaca, New York 14853

Fall 1983
Issue 31

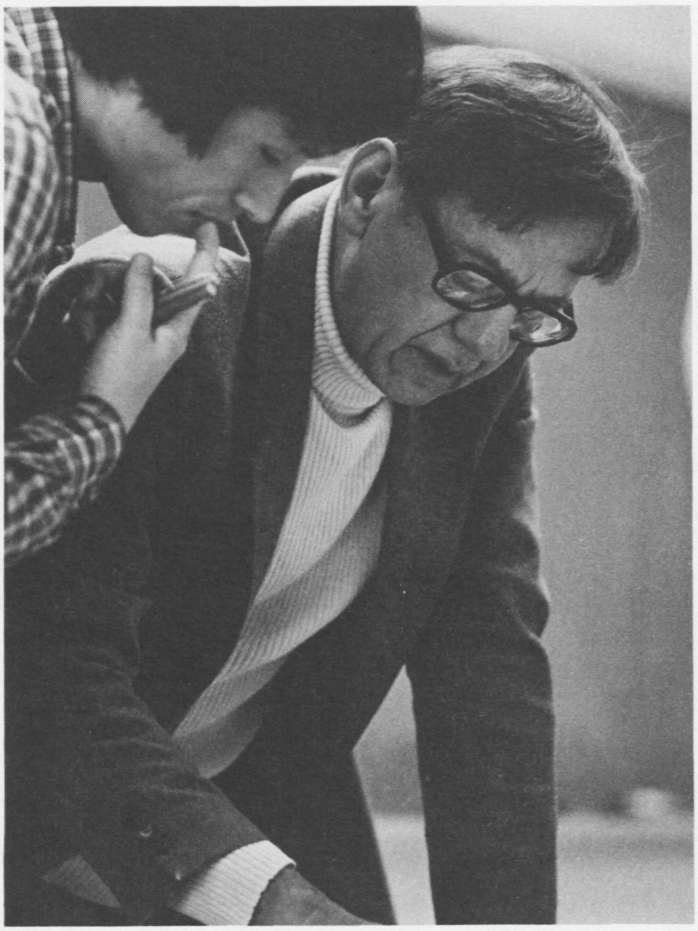
■ CHAIRMAN'S COLUMN

Cornell University and this Department are proud of the way that teaching and research, the two components of our scientific life, combine. We do research which is in fact learning and teaching about the chemical universe. And we take formal teaching of undergraduates and graduate students very seriously. So, for instance, Chem. 103-104 is taught this year by Harold Scheraga and John McMurry, Chem. 207-208 by Michael Fisher, Ben Widom and Bob Fay, and Chem. 215 by Barbara Baird and Pete Wolczanski. They are ably assisted in the laboratory and logistics by Stan and Virginia Marcus and John Terry, and the unsung heroes and heroines of the story, our dedicated teaching assistants.

Occasionally the outside community of our science recognizes teaching excellence and dedication to teaching, and it did so this year in a way that made all of us very happy. Mike Sienko received the ACS Award in Chemical Education. I would like to here cite some parts of the nomination which some of his colleagues wrote of Mike for this Award, for it gives us a perspective on both a valued colleague and great scientist as well as on the interaction of teaching and research at our University.

On three scores, Mike's contribution to chemical education must be judged as being truly outstanding. The first is the large number of undergraduate students whom he has inspired through his classes at Cornell University either to enter careers in chemistry or to use chemistry in their selected disciplines. The second is the inspiration he has provided for graduate students at Cornell to enter teaching as an occupation. The third is his well-known textbook which has played a large role in the evolution of chemical education in this country and throughout the world.

After a distinguished undergraduate career at Cornell University where he was a Cornell Scholar, New York State Scholar, and Boldt Fellow, and graduated "with distinction in chemistry and in general studies", he immediately went on to the University of California, Berkeley for a Ph.D. in chemistry. Though brought in with a fellowship and committed to full-time research for the Manhattan Project, he soon found himself also working as a full-time teaching assistant, and handling extra sections, at that. In spite of the heavy work load, he earned his Ph.D. in the near-record time of a little more than two and one-half years. It was at Berkeley that Mike developed his first major interest in teaching. He gives prime inspirational credit to three people who were at Berkeley at that time; Henry S. Frank, for clarity of thought and economy of presentation; J. Arthur Campbell, for freshness of view and challenging of conventional wisdom; and Joel Hildebrand, for a pragmatic balance between rigorous scientific method and scientifically-reasoned hunch.



After finishing his Ph.D. in Berkeley in 1946, he accepted a postdoctoral appointment with Richard Ogg at Stanford. There was no chance to teach, but he took the opportunity to take quantum mechanics and learn from the excellent teaching of Felix Bloch.

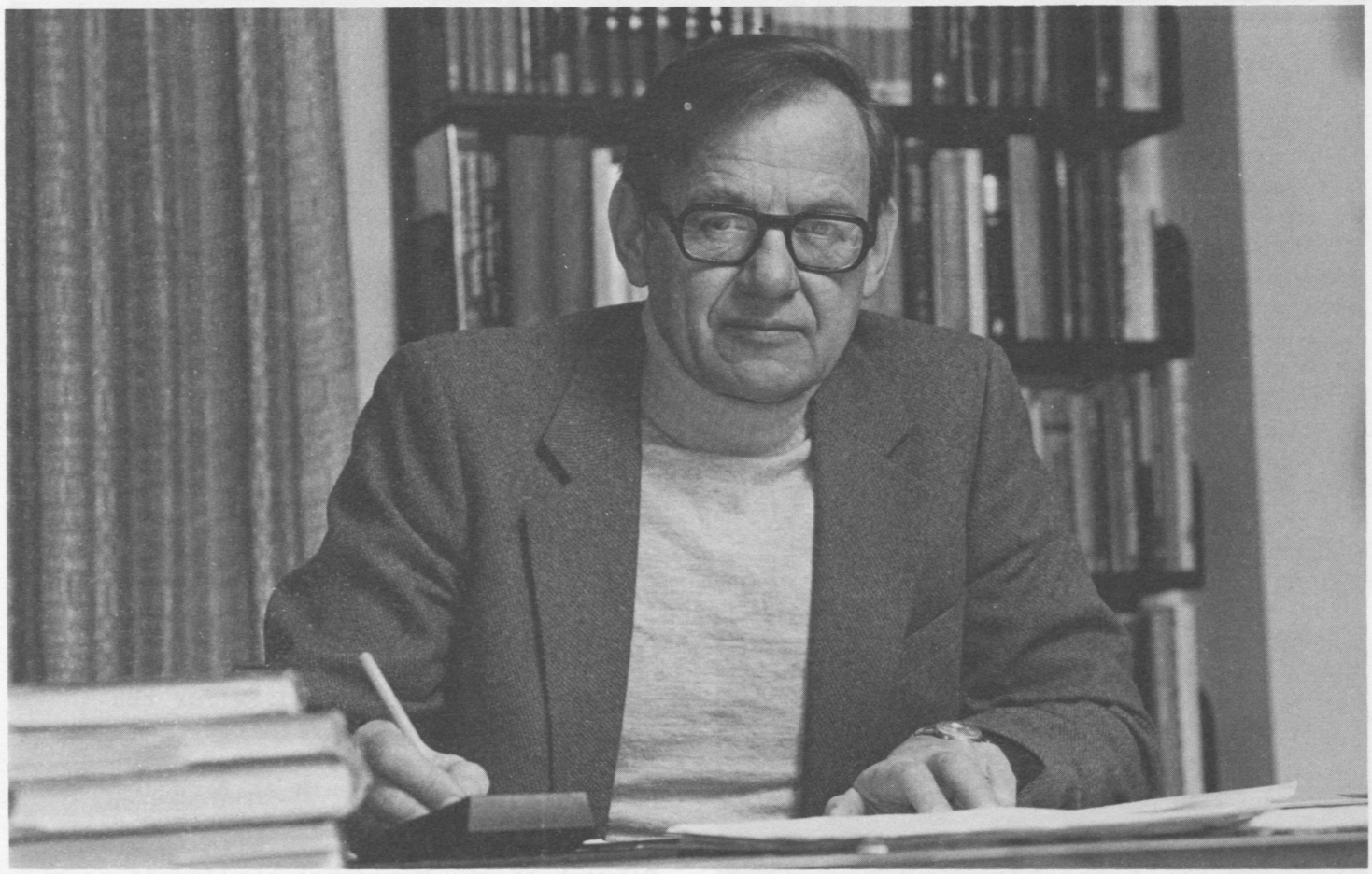
Toward the end of his postdoctoral year, when he was trying to decide the future course of his career, he received a telegraphed invitation from Peter J. W. Debye, then Chairman of the Chemistry Department at Cornell, who offered him the chance to teach freshman chemistry, a challenge which he could not resist. Since then, Mike has developed into the best general chemistry lecturer any of us has ever heard. Perhaps there are lecturers who are more flashy and entertaining than he (we doubt it), but we are convinced that he can inspire a group of freshmen to learn and to love chemistry to a greater extent than anyone else we know. His principal secrets are his devotion to the subject and his personality, which come across in a genuine way to every class, large or small.

The most visible impact that Mike has made on chemical education is through his published books. These include "Chemistry", "Experimental Chemistry", "Principles and Properties", and "Inorganic Chemistry", all co-authored with R. A. Plane; and "Stoichiometry and Structure", "Equilibrium", and "Chemistry Problems".

"Sienko and Plane" is probably the most famous -- and, integrated over its lifetime, is surely the most influential -- introductory chemistry text ever written. It has been through numerous editions in English, and many foreign-language translations. It represented a marked break for other introductory chemistry texts when it was written, and set the pattern for a whole generation of textbooks that followed it. The simpler version is used in high schools as well as in colleges. Five years ago, the various editions of "Sienko and Plane" had already sold well over a million copies -- by now probably one-and-a-half million. It has had more influence on the teaching of chemistry throughout the world than any other written work. One of the reasons for the success of the book is that it is based on lectures actually given in classroom situations. Revisions of the book were made only after the lectures had been revised and given. Bob Plane has said that Sienko insisted from the start that nothing they write be to impress other chemists, but instead should be written solely to "help the kids". The book was unique in its clear separation of observation from subsequent interpretation. It was also the first to present so well-balanced a coverage of both descriptive chemistry and chemical principles.

In his 35 years at Cornell, Mike has taught well over 25,000 undergraduate students and supervised the teaching-assistant work of some 350 graduate students. In addition, he has always maintained a major research program and has supervised the graduate training of over 25 graduate students and 15 postdocotral students.

Mike is a leader in the field of solid state chemistry, an important growth point of modern chemistry. Solid-state chemistry is a relatively small fraction of inorganic chemistry in the U.S. In Europe, particularly in France, Germany, the Netherlands, and England, the solid-state-chemistry community is relatively more important. Sienko is a recognized leader in this community, not only for his pioneering research on important materials, but also because he served the community as editor of the Journal of Solid State Chemistry



from 1969 to 1982. In the thirteen years he was editor of this internationally prestigious journal, he has made a distinctive imprint on this area of inorganic chemistry.

Sienko's main contributions have been in three areas: the nonstoichiometric oxide bronzes, metal-ammonia systems, and the layer-type dichalcogenides. He was the first to suggest that the tungsten bronzes were not mixtures of conventional oxidation states but were rather like solid solutions of alkali metals in a dielectric host with electron donation to d-orbital conduction bands of the host matrix. The idea was subsequently extended by John Goodenough to give the present $d\pi$-$p\pi$ model that underlies most solid-state transition-metal-oxide work. Mike showed very early that Mott's ideas of the metal-nonmetal transition could be applied to these systems to account for the electronic properties. In doing so, he uncovered the remarkable equivalence between adding Na to WO_3 and extracting oxygen from WO_3 to make oxygen-deficient, metallic materials. Mike's work on tungsten bronzes has since become the basis of the current intensive study of photochromism in hydrogen-doped WO_3.

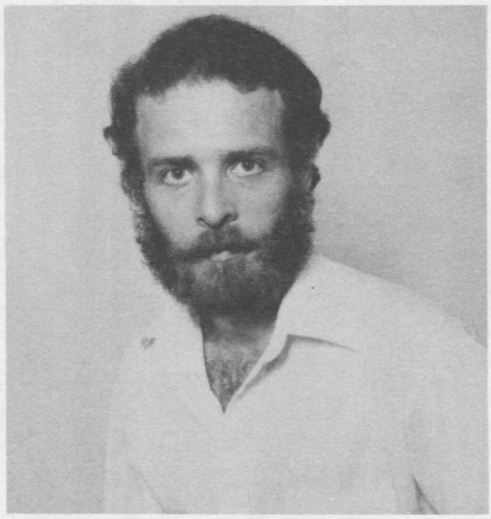
Mike has been an inspired teacher of introductory chemistry. The popular response to his freshman-chemistry classes is illustrated by his having been selected by our College of Engineering to receive the first Sporn Award for Excellence in Teaching. He has also received our own college's Clark Distinguished Teaching Award. In addition, he has many times appeared as a featured speaker at "high school nights" where he has been effective as a bridge between high school teachers and professional chemistry, and as an inspiration to young students looking at chemistry as a career. He also served for several years as an active member of the Examination Committee of the American Chemical Society Division of Chemical Education, and was Chairman of the Inorganic Subcommittee and one of the guiding lights in modernizing the inorganic exam.

So I think we all share in the recognition of this great teacher and researcher by the ACS. Mike is symbolic of the best that Cornell offers to the world of chemistry.

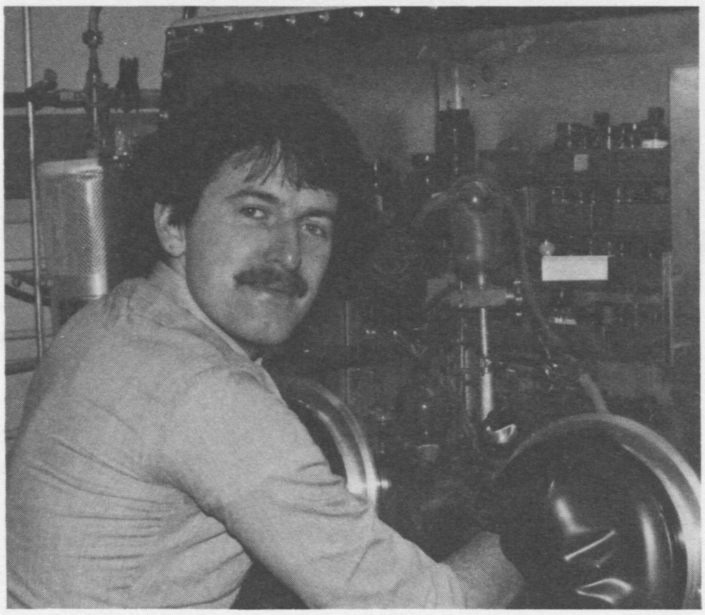
Just before this Newsletter went to the printer, Mike Sienko died peacefully, after a brief illness, on the 4th of December, 1983. We miss him. *-Roald Hoffmann*

■ FACULTY NEWS

Hector D. Abruña



Hector D. Abruña came to Cornell in 1983 from the University of Puerto Rico. He completed his graduate studies with Royce W. Murray and Thomas J. Meyer at the University of North Carolina at Chapel Hill and did posdoctoral research with Allen J. Bard at the University of Texas at Austin. Professor Abruña's research interests focus on electrochemical techniques; specifically, electrogenerated chemiluminescence; orientational effects on electron transfer; chemically modified electrodes, and semiconductor electrodes for solar energy conversion.

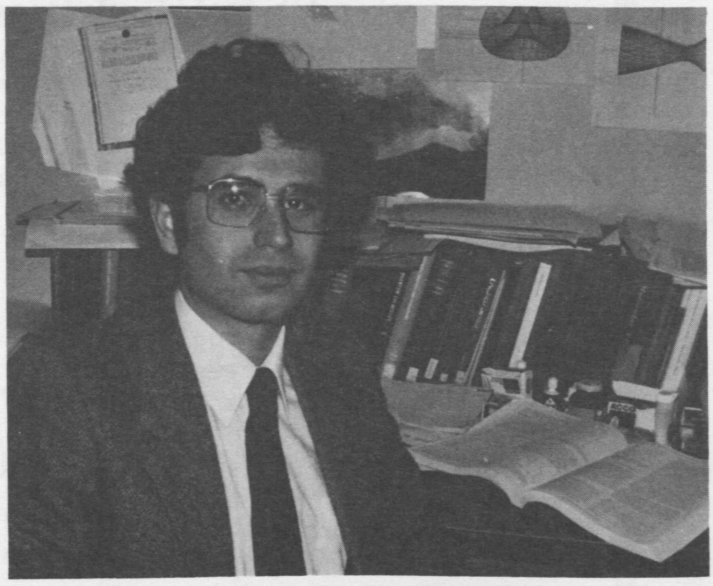


Klaus Theopold

After completing his studies for the Vordiplom from the Universität Hamburg, Klaus Theopold earned his Ph.D. at the University of California at Berkeley. He joined the Cornell faculty in 1983 after a year of postdoctoral work with R. R. Schrock at the Massachusetts Institute of Technology. Professor Theopold's research centers on understanding metal-mediated catalysis via synthesis and characterization of highly reactive organometallic molecules as models for catalytic intermediates. Another interest is the intercalation of organometallics in solids with layered structures to generate new materials with catalytic properties.

Gregory S. Ezra

Gregory S. Ezra joined the Cornell faculty in 1982 after a NATO Postdoctoral Fellowship with R. S. Berry at the University of Chicago. He completed his graduate studies with P. W. Atkins at Oxford University. Professor Ezra's research interests center on developing new theoretical descriptions of large amplitude motions of nuclei in molecules, understanding the implications of classical chaos for quantum mechanics, detailed studies of electron correlation in few-particle systems, and development of novel applications of group theory in atomic and molecular problems.



■ LAUBY'S RECOLLECTIONS

In the March 1981 Issue, No. 28, of this Newsletter I began a series of columns on the Development of Chemical Education and Research down through the years. Because some of you may not have read the first installment, it is well to summarize it.

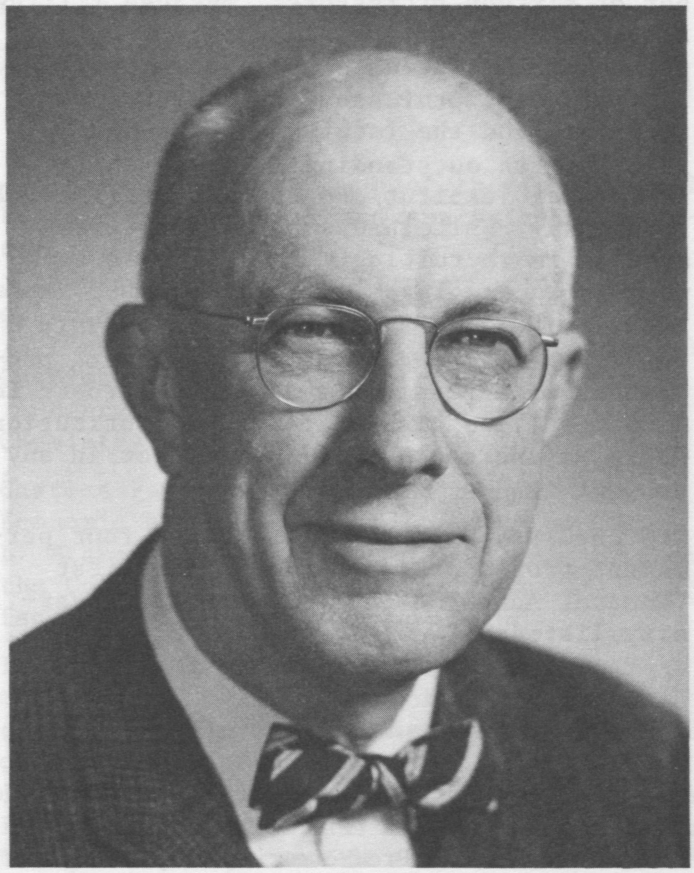
To understand clearly the events which took place we must have a good appreciation of the state of our country and of education when Cornell was founded in 1866. The public, moving westward, was in a mood to welcome change. Agriculture, industry, mining metallurgy, food quality, and sanitation methods had to be improved if our country was to advance. In education, the great need was a shift from the narrow theological and classical courses of study to recognition that science and technology must be available on a par with classics, humanities and mathematics if our urgent problems were to be met.

The fortunate collaboration of the scholarly Andrew D. White with the self-educated, mechanical-minded, practical Ezra Cornell gave the new university a leading role in the reform of higher education. White furnished the liberal educational know-how to establish a truly liberal coeducational university featuring both undergraduate and graduate studies. Passage of the Morrill Land Grant Act and the private fortune of Ezra Cornell provided for the growth of the physical campus. Cornell was hailed as "the most remarkable phenomenon in higher education of the post-war era."

Circumstances made it impossible for me to prepare further installments in 1981. I now resume the series. I shall tackle the events in chronological order and attempt to show how the faculty was recruited and grew,the student body expanded, the physical plant provided, and the chemical curriculum developed in line with Ezra Cornell's and Andrew D. White's dreams.

In October, 1866, shortly after the incorporation of the prospective institution, a Committee on Organization presented to the trustees a report outlining plans and procedures. These they truly believed would lead to the development of a great university, best conforming to the broad humanitarian and somewhat revolutionary educational ideas of Ezra Cornell and Andrew D. White.

The plans for the new university were given wide publicity and the liberal innovations



A.W. Laubengayer

excited much enthusiasm. However, theproject was attacked violently by those opposing educational change, especially by the small denominational colleges which hoped to share in the Morrill Land Grant funds. Only the determined efforts of the founders were able to surmount these attacks. There was great demand for admission, which made the selection of properly prepared students difficult. Registration at the opening in 1868 included 332 undergraduate and 80 graduate students, a formidable number to accommodate.

The master plan laid down as a guiding principle for selection of faculty the following: "To maintain the efficiency and reputation of the University, its faculty must constantly keep in view two great objectives: first the discovery of truth; secondly the diffusion of truth."

"Your Committee believes that in the selection of a faculty neither of these two great functions of every professor should be exalted at the expense of the other... But it should not be forgotten that in an institution of learning, facility and power in imparting truth are even more necessary than in discovering it."

The master plan called for an initial number of sixteen professors. Because filling all of these positions immediately with permanent appointments was impossible, only six permanent professors were recruited at the start and the faculty rounded out by inviting ten outstanding scholars on leave from other institutions to temporarily fill the ranks. White had surprisingly great success in recruiting for the latter such well-known scholars as Louis Agassiz, James Russell Lowell, and Goldwin Smith. This clever use of so-called "non-resident" professors made possible a limited approach to Ezra Cornell's wish to found an institution where anyone could find instruction in any subject.

Two chemists were among the first four permanent professors appointed. The first "General Announcement" of Cornell University listed:

President Andrew D. White, Professor of History

Evan W. Evans, Professor of Mathematics

William C. Russell, Professor of South European Languages and Associate Professor of History

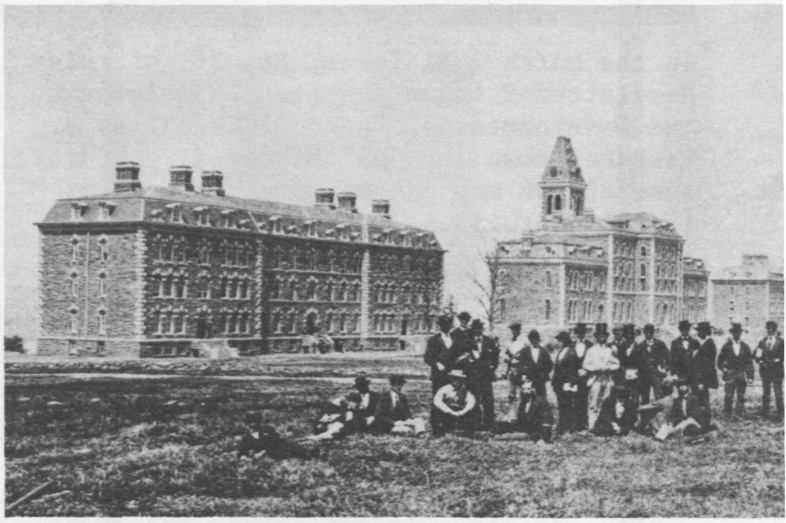
Eli W. Blake, Professor of Physics and Industrial Mechanics

George C. Caldwell, Professor of Agricultural Chemistry

James M. Crafts, Professor of General and Analytical Chemistry

George Chapman Caldwell*, B. A. Harvard, 1855, had gone to England to study agricultural methods at the noted Royal Agricultural College of Cirencester. Proceeding to Wohler at Gottingen, he presented a Ph.D. dissertation on "The Fatty Acids and the Oleic Acid Series." In 1857 he attended the physics lectures of Kirchoff at Heidelberg. This training in precise laboratory techniques and research was of particular value later at Cornell. Ezra Cornell had visited the Royal Agricultural College of Cirencester in 1862 and was intensely impressed by the character of instruction and research there. This undoubtedly was an important factor in the choice of Caldwell to pioneer instruction in Agricultural Chemistry in this country. Professor Caldwell came to Ithaca in 1868 and directed the growth of chemical instruction and research at Cornell until retirement in 1902, concluding 34 years of outstanding leadership.

(*See Issue #21, August 1977, for a more detailed biographical story of Caldwell.)

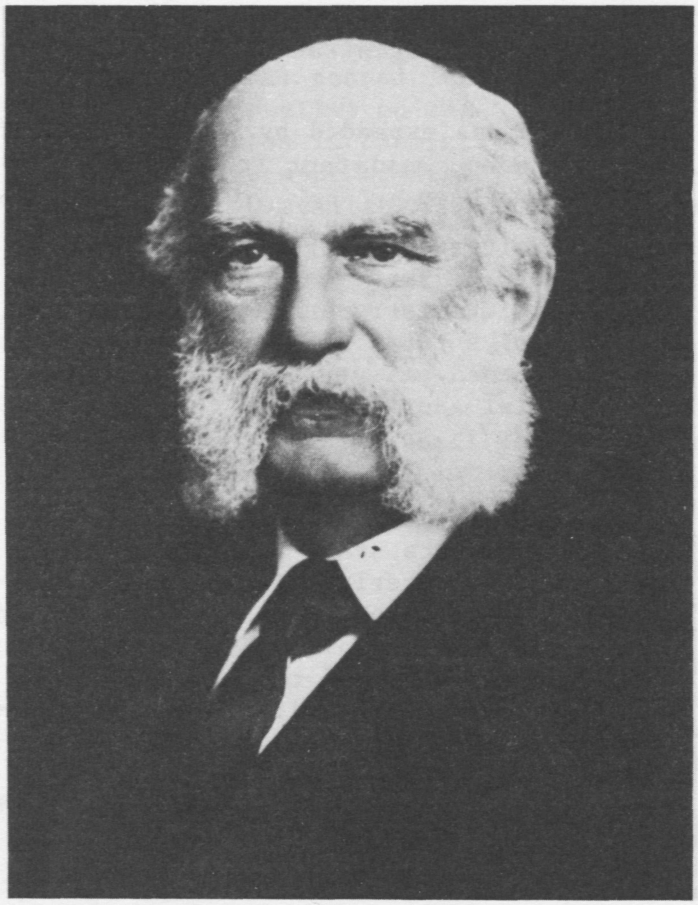


First Home of Chemistry
One room in the basement of Morrill Hall (building at far left)

George C. Caldwell

James M. Crafts came to Cornell from study with Wurtz in Paris. He believed that laboratory instruction in chemistry was very important and initiated illuminating lecture demonstrations. After two years he left for further study in France and became co-discoverer of the famous Friedel-Crafts reaction. He returned to a professorship

Second Home of Chemistry
Wooden Building in middle of Arts Quad
(building at far right)



James M. Crafts

at the Massachusetts Institute of Technology and later became its president.

1868-69

Initially, a "College of Chemistry and Physics" and a "School of Chemistry" were announced. These designations were kept until 1873-74, when "Colleges" were abandoned and the University was divided into "Courses". "Departments" came in later.

The College of Chemistry and Physics, School of Chemistry, listed as its original 1868-69 staff:

The President

James M. Crafts, Dean of the College and Professor of General and Analytical Chemistry

George C. Caldwell, Professor of Agricultural Chemistry

Frank W. Clarke, Assistant Instructor in Chemistry

Henry Hughes, Assistant Instructor in Chemistry

Charles F. Hantt, Professor of General, Economic and Agricultural Geology and E. L. Blake, Professor of Physics were also on the College of Chemistry and Physics faculty.

In 1868-69 no definite courses of lectures or assignments to laboratory sections appeared in the announcement of the "School of Chemistry." The schedule for each student was arranged after conference with the Professors, the special aim of each student being carefully considered. This was no great task since there were few courses and few students. Of the 412 students in the University 10 were undergraduates in the special course in Chemistry.

However, certain general requirements had to be met for the bachelor's degree. The studies special required: lectures; experiments in the laboratory; qualitative and quantitative analysis; blowpipe analysis; analysis of soils, ores, minerals and technical products, assaying; and organic analysis.

The facilities allotted to Chemistry consisted of one large room in the basement of Morrill Hall, a desk for Caldwell at one end, another for Crafts at the other, with work space between. Some experimental work went on the first year but because the chemical fumes generated there, with no ventilation, penetrated to the library and lecture rooms above, bitter complaints arose.

1869-70

Better laboratory facilities were essential if the emphasis on experimental study in the chemistry curriculum was to be realized. This led to the construction of a wooden "Chemistry Building" located where the northern section of Goldwin Smith Hall

now stands. Although this was palatial compared to the basement room in Morrill Hall, forthwith several other science Departments were also quartered there so that Chemistry was still much cramped for room and growth was thereby checked for years.

1870-72

Professor Crafts had resigned to go abroad for further study, otherwise the faculty and curriculum apparently remained unchanged. Although Craft's tenure at Cornell was so short, he undoubtedly played a strong part in helping to start a chemical curriculum which would set an elastic pattern for future developments. Enrollment in the University rose to 595 and there was one graduate student in Chemistry.

1873-74

The designation "College of Chemistry and Physics", "School of Chemistry" was abandoned. The designation became "Course in Chemistry and Physics" and the staff now consisted of:

G. C. Caldwell, Professor of Agricultural Chemistry

C. A. Schaeffer, Professor of Analytical Chemistry and Mineralogy

C. W. Wing, Non-resident Professor of Organic Chemistry and of Chemistry Applied to Manufactures

Three Assistant Instructors.

1875-76

The course leading to the Degree of B.S. in Chemistry had become sufficiently stabilized to warrant the publication of a definite curriculum as follows, specifying hours a week for each course. Note that originally Cornell was on a three term calendar.

First Year	Fall	Spring	Winter
French	5	5	5
Mathematics	5	5	5
Physiology	3		
Zoology		3	
Botany			
Second Year			
Chemistry	2	3	
Introductory Lab'y	2		
Experimental Physics	3		
French	5	3	
German	5	4	5
Qualitative Analysis		4	
Physics		2	2
Blow Pipe Analysis & Qualitative Analysis			5
Economic Geology			4
Third Year			
Chemical Philosophy	3	3	3
Qualitative Analysis	8	8	8
German	3	3	3
Physics	2	3	3
Fourth Year			
Chemistry Laboratory	10	7	7
Chemical Processes	1		2
Physics Laboratory	4	4	4
Metallurgy & Assaying		3	
Mineralogy		3	
Organic Chemistry		1	

This first organized curriculum is given in detail because it set a broad pattern for future developments. In both Qualitative and Quantitative Analysis more chemistry was taught than the mere chemical analytical methods. Also, the use of the spectroscope and polariscope and crude gas analysis were covered. Electives were allowed to complete the registration of up to 18 hours a term.

The Faculty was expanded by the addition of A. A. Brenemen, Assistant Professor of Applied Chemistry.

The University was reorganized into "Departments." There were 16 students for the B.S. in Chemistry and 4 graduate students out of a total 542 for the University. Brenemen was promoted to Professor of Industrial and Analytical Chemistry in 1879.

1880-81

This was a critical year for Cornell University. From its start in 1866 pulpits and press had bitterly attacked its revolutionary ideals. Such persistent opposition eventually took its toll; the total number of students had dropped to 312, and there was general doubt about its survival. However, the attacks did not succeed in wrecking the University nor changing in any way its democratic character. Cornell survived and flourished.

In my next installment I plan to cover the rapid recovery and the real expansion of the Department of Chemistry in the 1880s and'90s.

A. W. Laubengayer

■ GRADUATE FIELD OF CHEMISTRY

GRADUATE STUDIES

As many of our readers may be aware, graduate studies in chemistry are organized around the Graduate Field of Chemistry, of which Professor John Wiesenfeld is Faculty Representative. Over the years, Cornell has had an exceptionally talented corps of dedicated Ph.D. students whose accomplishments following graduation attest to the quality of our program. In the past few years, the number of graduate students has been in the range 155-165. Ours is a demanding program, the time required to complete the Ph.D. has averaged 5 years with no more than 70% of the matriculated students going on to obtain this degree. While it is difficult to establish a quantitative picture of "excellence", the average incoming student has an undergraduate GPA of 3.6 and has scored 760 (at the 90th percentile nationally) on the Graduate Record Examination in Chemistry. Every year, we receive approximately 350 applications for the 40 available positions in the first-year class.

The research interests of the incoming graduate students vary greatly from year to year (thereby raising Professor Wiesenfeld's blood pressure), but on the average we have roughly equal numbers wishing to do research in two major areas; one is comprised of analytical, biophysical, physical, and theoretical chemistry, while the other includes bioorganic, inorganic, and organic chemistry. Roughly 15% of our graduate student body are from abroad, most of these individuals coming to Cornell with financial support from their home countries. This year we welcomed fellowship winners from the People's Republic of China, Singapore, Japan, and South Korea. Among students from the United States, many still come from the Northeast and Middle Atlantic States. Increasingly, our incoming class is recruited from the areas of the country growing most rapidly in population, especially California. This last year, five of our new graduate students were residents of the State of Washington. These former denizens of the Fog Belt no doubt chose Cornell in order to enjoy Ithaca's sunny climate!

1982-83 Ph.D. Graduates

Phillip G. Barkley	Pall Trinity Micro Corporation	Cortland, New York
Robert Bower	Postdoc with John Polanyi	University of Toronto
Paul Kim Ho Chu	Charles Evans & Associates	San Mateo, California
James B. Denton	Miles Laboratories	Elkhart, Indiana
Jack P. Goodman	Argonne National Laboratory	Argonne, Illinois
Wm. C. Harris, Jr.	Dow Chemical Company	Midland, Michigan
David M. Hoffman	Postdoc with Malcolm Chisholm	University of Indiana
Timothy Hughbanks	Postdoc with Jeremy Burdett	University of Chicago
Phillip Hughes	Ayerst Laboratories	Princeton, New Jersey
Michael Johnson	E.I. du Pont de Nemours	Wilmington, Delaware
Craig McEwen	E.I. du Pont de Nemours	Wilmington, Delaware
Richard J. Morrison	Postdoc with Dick Zare	Stanford University
Adam Patkin	Walter McCrone & Associates	Chicago, Illinois
Jim Resch	ICI Americas	Wilmington, Delaware
Ashoka Samuelson	Indian Inst. of Technology	Bangalore, India
Alan Schilowitz	Exxon Research and Eng. Co.	Linden, New Jersey
William J. Scott	Postdoc with John Stille	Colorado State
Brian Stallard	Postdoc with Dale Newbury	Nat. Bur. of Standards
David Whitman	Postdoc with Russell Hughes	Dartmouth College
George Whitwell	Stauffer Chemical Res. Labs	Dobbs Ferry, New York
Charles N. Wilker	Postdoc with Bradford Wayland	University of Pennsylvania
Stephen Yates	Postdoc with Gary Schuster	University of Illinois

■ SOCIETY OF CORNELL CHEMISTS

Last year we sent out about 2500 questionnaires to alumni, former faculty members, former postdoctoral students, former undergraduates and other friends of the department. Many of our addresses were several decades old, so we felt quite good about the 500 or so responses we received. In the next issue of our Newsletter, a special issue to be mailed in January, we will tell you where the respondents are located and what they are doing. If there is sufficient interest, we may produce a directory with addresses late in 1984.

Our list is certainly incomplete. If you know of persons that are eligible for membership in the Society of Cornell chemists, please let them and us know.

Many of you, 295 in number, contributed dues for 1982-83 for a total of $3269.87. Thank you. This money, added to a $2000 donation from Mobay Chemical Corporation, enabled us to refurbish the Graduate Student Lounge with a sofa, three lounge chairs, two end tables with lamps, a buffet with sink, an instant hot water dispenser and a microwave oven, a ping-pong table, and new draperies.

In response to our mailing, we were sad to learn of the deaths of Alton L. Markley, PhD '23, George W. Naylor, B.Chem. '22, and Martin Smith.

Mailings to the following persons were returned to us as being unforwardable. Can you help us locate these persons?

Joseph Andrews, Frederick Ayer, John Benham, Alfred Bennett, Frederick Berner, Kenneth Bundy, Lewis Browning, Lyle Bunville, Ralph Carr, Peter Carodemos, Fred Clagett, Guiseppe Comunale, Dennis Cornelius, Malcolm Craig, Dean Douglass, A. Dresser, Arthur Dworkin, Albert Esselstyn, John Findlay, John Gosling, Raleigh Gilchrist, Marcus Gordon, David Hand, Ann Horowitz, Harald Aaning, Liang-Hsien Hahn, James Howell, Robert Hulse, Jos. Jaffin, Herbert Kothe, Martin Kessler, Walter Koerner, Walter Lenk, Lewis Leidwinger, Harold MacPhillamy, Martha Miller, Arthur Newman, Marcellus Parham, Irene Pigman, Frank Pollard, William Powers, Paul Prickett, Robert Prosser, Esperance Slykhous, John Shea, Bert Singleton, Alexander Sullivan, Donald Tressler, Melvin Turetzky, Steve Ulrich, Wesley Vannoy, Hermann Vieweg, Clinton Vernon, Walter Weibrecht, Francis Whaley, Everett Wheeler, Nathaniel Winters, Ilya Sarasohn, Lester Weinberger, Robert Wolke, Robert Henderson, William Watt, Walter Wozniak, David Myers.

We have had requests for addresses for the following persons. Can you help us locate them? Dr. Harold Allen, PhD '32, last known address, Ramsey, NY; Thomas V. Long, a graduate student in 1960 with Perrin.

We will make another solicitation for dues for 1984 in the March issue of the Newsletter. That issue will have an article by David W. Corson, who is in charge of Cornell's History of Science Collection, on the recently acquired collection of books by Robert Boyle. Lauby will continue his history of the department.

Thank you for all your comments on what you'd like to see in the Newsletter. We'll inquire formally on what you think of our new format next year.

■ New Member of Graduate Field of Chemistry

Keith E. Gubbins

Keith E. Gubbins, who came to the School of Chemical Engineering at Cornell in 1976 as the Thomas R. Briggs Professor of Engineering, joined the Graduate Field of Chemistry in 1983. Professor Gubbins centers his research on using computer simulations and theoretical methods to understand the behavior of liquids. He has written two monographs on the statistical mechanics of liquids and serves on the editorial board of Molecular Physics.

John Raven Johnson
9 August 1900 - 25 May 1983

John Raven Johnson came to Cornell's Chemistry Department as an assistant professor in 1927. Although only 27 years old, he had already developed a deserved reputation as one of the nation's brilliant young chemists. He had taken his Ph.D. at the University of Illinois in 1922, spent two years abroad doing research at the College de France under a prestigious American Field Service Fellowship, and spent three further years at Illinois as an instructor, where, among other things, he co-authored with his teacher and friend, Roger Adams, a widely-used laboratory textbook on organic chemistry.

Jack Johnson (as he was known to all his friends) brought to Cornell the new organic chemistry that Illinois had become famous for. He quickly put into place a lively program of research, and attracted large numbers of graduate students. He also restructured Cornell's courses in organic chemistry and taught them superbly. Since in addition Johnson was a lively-minded and personable man with many friends, it is not surprising that in 1930 when he was barely 30 years old, he became a full professor at Cornell.

During the decade of the 1930's Cornell brought from the outside another half dozen young chemists, most of whom, like Johnson, stayed at Cornell. In combination, and with the addition in 1940 of the great Peter Debye, they helped change the face of Cornell's Chemistry Department. Johnson was a central figure in this new generation of Cornell chemists. He became the implicit leader of the organic chemistry group, and greatly influenced subsequent hirings in the field. He quickly received outside recognition, becoming a member of the National Academy of Sciences in 1948. In 1952 he became the Todd Professor of Chemistry at Cornell, thus occupying the only Chair available to chemistry at the time.

Johnson's research bridged the old and the new in organic chemistry. He and his students gave much effort to devising syntheses and determining structures of important molecules in the best tradition of organic chemistry. His work on the synthesis of gliotoxin is especially well known. However, Johnson was also interested in new and unusual types of organic molecules, and did pioneering work on organo-boron compounds and on the chemistry of furan derivatives. Finally, he was an early student of the mechanisms by which complex organic molecules undergo change from one form to others.

Jack Johnson was an early and valued senior consultant to the research groups of the Du Pont de Nemours Company, which was the major chemical concern of the U.S. This close association continued even after his retirement from Cornell.

In the period 1941-1945 Johnson became deeply involved with the scientific aspects of the U.S. wartime development efforts. He was an early participant in studies on the synthesis of new chemical explosives, and also contributed to the vigorous U.S. search for new anti-malarial agents. From 1942 to 1945 he served in London, England as the scientific liaison officer for chemistry of the U.S. Office of Scientific Research and Development. For his wartime services he received the U.S. Medal of Merit.

Jack Johnson returned to Cornell when the war ended and resumed his career of

supervising the research of graduate students, teaching large classes of students of organic chemistry, and consulting with the Du Pont company. In 1951 he served for a year in West Germany as special consultant on scientific matters for the U.S. State Department. In 1965 Johnson retired from Cornell, and he and Hope, his wife of 36 years, moved to their beloved home in Vermont. His life became increasingly restricted, but he remained engaging and intellectually lively up to his death in May 1983. He is survived by his wife and two sons, Keith and Leonard.

Jack Johnson's Cornell colleagues and his many friends will remember him with admiration and affection as one of the important figures in the development of Cornell into the great research university that it now is.

A.W. Laubengayer
F.A. Long
W.T. Miller
R.F. Porter

■ Debye Symposium

On Thursday, March 22, 1984, the Cornell Chemistry Department and the Cornell Section of the ACS will hold a symposium to commemorate the hundredth anniversary of Peter Debye's birth. Mansel Davies, Manfred Eigen, Paul J. Flory, Mark Kac, Linus Pauling, and E. Bright Wilson will present lectures at the symposium. Hans A. Bethe will speak at a banquet in the evening.

If you plan to attend the symposium and/or the banquet, please write to Earl Peters at the Department of Chemistry, who will reply with further information.

■ Degrees Awarded 1980-1983

	B.A.	M.A.	Ph.D.
1980-81	39	27	24
1981-82	43	31	30
1982-83	53	45	23

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MICHELL JOSEPH SIENKO (1923-1983)

Sunday, December 18, 1983 4:00 PM

SAGE CHAPEL

Jane Houston	flute
Cathy Page	violin
Dooley Kiefer	piano
John Hsu	violincello
William Austin	piano

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Largo *Allegro* *Grave* *Vivace* *Largo* *Allego*	A. Corelli
Invocation	Jack Lewis
Readings: Excerpts from *Ecclesiastes* Excerpt from *Holy the Firm*	 A. Dillard
Tribute	Benjamin Widom David Johnson
Prelude in D minor for cello alone	J. S. Bach
Tribute	Robert Plane
Pastoral Reflections	
Readings: *Lake Isle of Inisfree* *The Waters of Separation*	 W. B. Yeats A. Dillard
Prayer of Thanksgiving	
Benediction	
Largo for cello and piano	F. Chopin