DEPARTMENT OF CHEMISTRY
CORNELL UNIVERSITY
ITHACA, NEW YORK 14850

NEWSLETTER

Issue No. 19 August 1976

FACULTY

G. Marc Loudon, recently promoted to Associate Professor, was awarded the Clark Distinguished Teaching Award in the College of Arts and Sciences for 1975-76.

Jerrold Meinwald has received a Guggenheim Fellowship for 1976-77 and expects to travel extensively.

Robert Hughes is continuing his leave at N.S.F. until January 1977.

Simon H. Bauer will be on sabbatical leave at Los Alamos until January, 1977.

Frederick R. Scholer has left the department and is now a member of the Chemical Group of FMC, Princeton, New Jersey.

ALUMNI

I am sorry to report that "Ned" (Edward Alan) McNeill, who received a postdoctoral appointment at Stanford this past year, was killed in his apartment in early July. Ned had received his Ph.D. in 1975 after four years of graduate studies and research with Professor Fred Scholer. Several of Ned's associates have suggested that they wish to make a memorial contribution which would be awarded to an outstanding teaching assistant next Spring. Anyone desiring to do so should make the check payable to Cornell University, mark the check "Ned McNeill Memorial Fund" and send to me at Baker Lab. Ned was an outstanding Teaching Assistant and was well liked and respected by students and faculty alike. Our sympathy is extended to his parents, Mr. and Mrs. Russell McNeill of Bellevue, Wash.

OPEN HOUSE

A goodly number of Chemistry alumni revisited Baker Laboratory for the Annual Open House on June 11, 1976, and swapped experiences with Professors Emeritus Clyde Mason and A. W. Laubengayer and a number of the active faculty of Chemistry. B. Chem of the Class of '21, who were celebrating their 55th reunion and were the most ancient group present, included Ron Helps, Mert Jones, Dick Parsell, Bill Rometsch, Al Schade, and Felix Tyroler. Others attending were Chap Condit, '22; Bob Stillwell, '22; A. E. Van Wirt; Guido Henry, '26; Hank Boschen, '31; Henry Steuben, '31; Emerson Venable, '33; James Fisher, '33; Bill Bebbington, '36; Arnold Johnson, '36; Betty Herrold, '41; Maj-Britt Gabel, '46; Stanley Koch, '50; Eva (Kapper) Sheppard, '51; Fredda Fellner, '57; Michael Fellner, '58; and Gus Kappler, '61. Dorothy Papish and her daughter recalled many reminiscences of Jack Papish and his Hill-top farm near Cincinnatus.

The collection of stories and pictures continues to grow, with the fine cooperation of our alumni.

VISITING LECTURERS

The Baker Lectures will be presented during September 13 through October 19, 1976 by Professor Jack Dunitz, ETH, Zurich. The subject of his lectures is "Organic Chemical Crystallography".

Professor Robert Zanzig of the Institute for Physical Sciences and Technology at the University of Maryland will present the Debye Lecture Series on November 16, 17 and 18, 1976.

CORNELL SOCIAL HOUR

ACS Centennial Meeting, Tuesday, August 31, 1976, in the Fairmont Room at the Fairmont Hotel, San Francisco, 5:30 P.M.

Harold C. Mattraw

Chairman's Column

The summer months traditionally give faculty the time to catch up on their research projects, to see graduate students through the final stages of data taking and thesis writing, to round off work with departing postdocs and to prepare a welcome for new ones, to attend the important international conferences, to snatch a few weeks holiday with family or friends, and even, on occasion, to look back on the accomplishments of the previous academic year!

In looking back on this last year, the Department of Chemistry at Cornell can certainly take pleasure in one development: In May we heard that the National Science Foundation would make us a grant of $37,500 toward the purchase of a modern nuclear magnetic resonance spectrometer. On hearing the news, our hard-working departmental nmr committee (depleted in numbers by faculty leave) was quick to recommend a "package" of two Varian instruments. With supplemental departmental and university matching funds, we were able to arrange the purchase. One of the instruments, an EM-390 has already been delivered and will be operating fully within the month; delivery of the second, a CFT-20 is expected in mid-September. These instruments will go a long way to restoring the departmental nmr capability to the strength and flexibility essential to the scientific health of many of our research groups. However, the nmr committee is already considering plans for the next stage of development needed to maintain the best possible facility at Cornell. In the meanwhile, the Department must concern itself with other areas where routine research instruments are needed; replacement of our X-ray diffractometers is certainly one priority; another we are seriously contemplating is the creation of a departmental laser facility.

From my desk in the Chairman's office, I have learned about many aspects of Chemistry at Cornell of which, in my previous nine years, I had been only dimly aware. Some of these, indeed, concern summer activities other than those of research with graduate students and postdocs, which I mentioned above. In the first place, each

summer we take on a number of undergraduate chemistry majors to work in our research groups. The students learn the nature of serious chemical research and, on occasion, even make significant contributions themselves. This year our program has been supported by a grant from the National Science Foundation. In addition to some of our own juniors and seniors, we are training students from Ithaca College, Vassar, Emory University and Columbia University. A new trial program this summer, supported by the Arts College and the University, is aimed at encouraging outstanding minority and disadvantaged students to consider seriously a career in chemistry (in competition to fields, such as medicine and law, which traditionally attract such students). Half a dozen students selected for their good performance in our introductory chemistry courses were invited to accept positions as laboratory assistants in chosen research groups. We are hopeful that the experience of joining with others actively engaged in exciting research in chemistry will nurture their interest and develop a commitment to chemistry as a professional study.

Last, but by no means least, we run each year a number of summer school courses. This year we are teaching courses in general, organic and physical chemistry to a total of 100 students. Summer school means hard work for both students and teaching staff; but it enables students conveniently to complete a requirement or gain time, and it brings welcome additional income to the University.

Some faculty, sad to say, must still spend time during the summer on university matters quite far removed from teaching and research. Currently, a committee appointed by President Corson is reconsidering the question of the best system of governance for the University in non-academic matters. This area has been the province of the University Senate since the "troubles" of 1969-70. I have a special interest in the Senate since I served for two years as its Secretary. Being composed of faculty, students, administrators and employees, it is quite a unique body. Like so many representative bodies, it did a few things very well, some quite reasonably, and others rather poorly. Certainly, it is now due for serious overhaul; but I personally hope that its best features will be retained in the

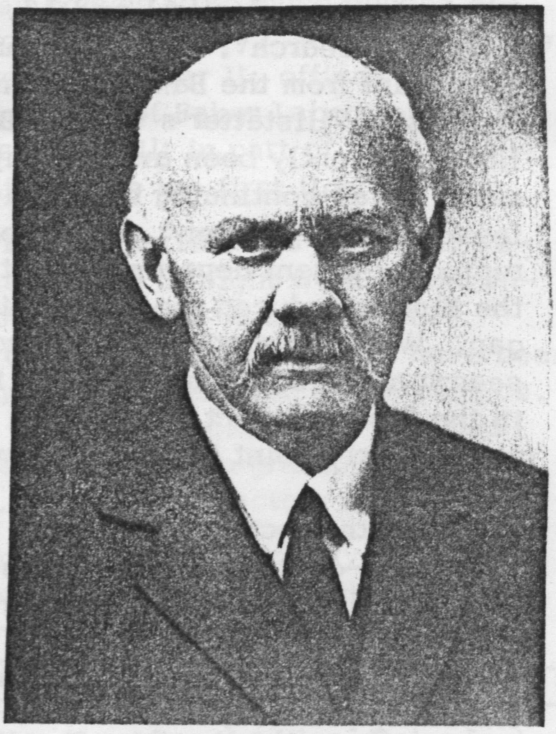
new structures. Amongst these, I certainly count its value as a forum in which students, faculty and employees can interact on matters removed from the classroom but still of common concern to the University Community, multifaceted though it may be. Indeed, I see the willingness of Cornell to set up the Senate as a mark of a truly active and alive modern university. Those features should surely continue to characterize the University and, I hope, also Chemistry at Cornell.

Michael E. Fisher

LAUBY'S RECOLLECTIONS

More About the Baker Non-Resident Lectureship
(continued from the March, 1976, Newsletter)

Otto Hahn



N. V. Sidgwick

In the last Newsletter I celebrated the Semi-Centennial year of the Baker Non-Resident Lectureship by telling of its conception by Professor Dennis, its endowment by George F. Baker, and the initiation of the series in 1926 by Professor Ernst Cohen of the University of Utrecht. The list given of the 64 outstanding scientists who have come to Cornell demonstrated the remarkable success which this innovative lectureship has achieved. This present column continues with more about the Lectureship in general and by recalling some of the memorable incidents of the Lecturers' stays at Cornell.

Besides using the income from the endowment to subsidize the 64 regular Baker Lecturers who have come to Cornell for extended terms, the income has frequently supported other projects calculated to benefit our Department. Many top scientists have been sponsored for visits of only one or a few lectures. An outstanding example was the visit of Professor Richard Willstätter of Munich who delivered two lectures on April 11 and 12, 1927, on "Problems and Methods in Enzyme Research". These lectures were published in pamphlet form by a grant from the Baker fund and were circulated widely. I recall Professor Willstätter's visit to Baker Laboratory particularly vividly. Having recently been awarded my Ph.D. and appointed to the Cornell staff, I was continuing research in my alley in the lab next to Professor Dennis's "Den" on the north side of the first floor. Interrupted by urgent department matters during his visit with Willstätter, the King introduced the distinguished scientist to me to fill in the gap. Willstätter was most friendly and asked in detail about my research and also about the other inorganic investigations in progress in the lab. Contact with such a renowned world figure in chemistry at that early point in my career was most inspiring.

Another activity for which Baker money was used in the days when post-doctorate grants were rare was to support post-doctorate fellows, such as Frank Spedding and Hans Neurath. However, great care has been taken to preserve the endowment primarily for bringing Baker Lecturers to Cornell for lengthy periods, as Professor Dennis originally planned.

In the design of Baker Laboratory, Dennis incorporated a Baker Lecturer suite consisting of a large office, secretary's anteroom, and a good-sized laboratory on the southwest corner of the third floor. Lecturers were encouraged to bring associates to continue active experimental research programs while at Cornell. A number of the earlier lecturers did so, but this practice dwindled as research equipment became more elaborate and prohibitively expensive to install for just one term. Instead, many of our lecturers have collaborated with members of our staff and made use of existing facilities, much to the benefit of all concerned, and there have been many spin-offs. Debye was the last lecturer to use the third floor suite. Following his decision in 1940 to stay at Cornell as Chairman of Chemistry he continued to use the third floor quarters, since no Baker Lecturers came during the War. He stayed there after the War until he found it physically too difficult to climb the stairs and was given office and laboratory space on the south side of the first floor. The third floor suite was then converted to much needed office and laboratory facilities for organic chemistry. When the series of Baker Lecturers was resumed after World War II, offices were provided elsewhere and, in the renovation of Baker Laboratory, a new office for our visiting lecturers was built in part of the space originally used for the Chemistry Library on the first floor.

The problem of arranging for living quarters has had many solutions. In the early days rooms at Willard Straight were a convenient answer but later these were not available. Apartments at Belleayer, the Cornell Residential Club, or Fairview Manor have been used, all of them being within easy walking distance of the campus. During one period when there were a number of chemistry students who were members of Telluride, that organization graciously invited a number of lecturers to live there, a most satisfactory arrangement.

Before he retired in 1933, Professor Dennis greatly enjoyed making provision for each Baker Lecturer and seeing to their entertainment. Professor Papish took over this responsibility for a few years and then Jack Johnson was Chairman of the Baker Lecture Committee up to the time when he went on leave to go to England on government assignment during World War II. After the War, Debye asked

me to become Chairman and I continued with this assignment until my retirement in 1966. My close contact with our visiting scientists during that period were most enjoyable and rewarding. Bill Miller has been active as Chairman of the Committee since 1966. (Mike Sienko is now Chairman of this Committee).

At the start the King arranged for a formal dinner party before the general public lecture of each visitor, using the occasion to introduce him in elegant style to a carefully selected group of Cornell administrators and faculty. After Dennis retired the general public lecture was discontinued because many of our visitors found it irksome. After the War we started having an informal reception for each Lecturer shortly after his arrival. These have been held on Sunday afternoons, first at the Cornell Residential Club, since then at the fine facilities of the Moakley House on the University golf course which the Cornell Athletic Department graciously has made available. A selection of administrators, faculty of related departments and our chemistry faculty thus have a fine opportunity to meet the new arrival and enjoy a bounteous buffet and appropriate beverages.

A sampling of a few of the many stories which have accumulated about specific Baker Lecturers will show the strong impact the Lectureships have had on the Cornell scene. In the preceding Newsletter I gave details about our first Lecturer, Ernst Cohen.

A. V. Hill, who came in 1927 from England, created great interest and amazement across the campus by equipping some Cornell Track athletes with inflatable knapsacks and mouthpieces to collect their exhaled breath while they were running about. The resulting gas samples were analysed to provide data pertinent to the biochemical aspects of physical activity. You can imagine what a field day the Cornell Daily Sun had covering this bizarre behavior.

Of all the Baker Lecturers, N. V. Sidgwick undoubtedly had the most intimate and enduring interaction with our faculty and students. Coming in 1931 from Lincoln College, Oxford, he discussed valence theories at a time when progress in this area was accelerating. He emphasized the value of applying the concept of covalent bonding to many inorganic systems as well as to organic compounds and promoted the notion of donor-acceptor electron-pair bonding in

order to complete stable shells of electrons. An organic chemist who had written a book on organic nitrogen compounds which long was a classic, he bridged the gap to inorganic chemistry and ended up later producing his monumental two-volume "Chemical Elements and Their Compounds" which suggested endless prospects for creative chemical research.

Sidgwick was a bachelor, living in college and a model of an Oxford don. He had not traveled outside of Europe and was expected by his colleagues to continue his placid life, entirely content in his Lincoln College apartment. But his visit to Cornell stimulated him as much as it did us. He thoroughly enjoyed living at the Telluride House and fraternizing there with students and several members of the Cornell faculty. His taste for travel was whetted by many trips around America and, later, around the world. Like many Oxford and Cambridge dons of his time, he was an enthusiastic amateur naturalist and was delighted with the brilliant fall foliage of the Finger Lakes Country. He revisited Ithaca a number of times, always arranging to be with us in October when the maples were a blaze of color. I had a standing engagement to take him for a drive around Cayuga and Seneca Lakes each time he came. We satisfied his hope to inspect American ragweed and, fortunately, one day a skunk wandered out of the cemetery on University Avenue ahead of our car to provide Sidgwick with a sight of that animal, unknown in England.

Those were the days of the Burma Shave roadside signs, with jingles which Sidgwick delighted to collect and recite. On his last drive with me he contended that the quality of the jingles had deteriorated because the president of Burma Shave had decided to write them himself, in order to save paying his advertising agency.

Mrs. Laubengayer and I spent two memorable spring months at Oxford in 1936 and I often attended afternoon tea in the laboratory. The "Sidger" kindly allowed me a preview of the manuscript he was preparing for the "Chemical Elements and Their Compounds". He also gave Grace and me dinner in his college apartment. When we had entertained him in Ithaca we had been puzzled when, upon being seated at the dinner table, he often would slip his hands under his dinner plate. The reason for this curious behavior became clear

when we visited him. Because his apartment was quite chilly, the dinner plates had been preheated and the Sidger habitually warmed his hands by holding his plate.

A short and rather chubby man with twinkling eyes, Sidgwick had a mustache which always was quite ragged because he smoked his cigarettes down so far. Like Walden, an earlier Baker Lecturer, he sometimes used a toothpick to hold the short butt and save his fingers but not his mustache. Sidgwick really adopted Cornell as his second university and his enthusiasm for the Baker Lectureships did much to encourage other fine scientists to take part in the series.

Alfred Stock, from Germany, renowned as the developer of vacuum-line methods for handling volatile substances sensitive to air, left vivid memories. In the preceding issue I have told of how the desk clerks at Willard Straight handled his mail to keep the Herr Geheimrat happy. A long-time exposure to mercury during his pioneering work on silicon and boron hydrides had caused great physical harm to Stock and he was most fearful of further exposure. Learning that A. V. Hill had used conventionnal gas analytical apparatus involving mercury in his research in the Baker Lectureship laboratory, Stock would not go near his office until the laboratory had been thoroughly sealed off. He brought with him an "epidiascope", a complicated apparatus for projecting lecture experiments performed on a stage by reflected as well as transmitted light. Zeiss had built this massive machine according to Stock's design and indeed it produced excellent pictures. Gene Rochow, who acted as Stock's assistant could do almost everything with it but play "Home Sweet Home". Stock exhibited it across the country but it was so large, massive and expensive that it never became popular. This early association with Professor Stock undoubtedly stood Gene in good stead when he later did his innovative research at G.E. on the silicones.

Otto Hahn came to Cornell in 1933, just during the period after he and his associates had gotten the experimental data which later were shown to establish the fission of atoms. I recall that, greatly puzzled by his results, Hahn discussed possible explanations in his Cornell Seminars. A handsome and a very friendly man, modest and

with a keen sense of humor, Hahn endeared himself to his many Cornell friends. He lived at Willard Straight and enjoyed the food prepared for him by his friend the short order chef. He told us about the good "tortoise shell" portion of baked winter squash and laughed about the sign "soft shoulders" he saw along highways under construction. He wondered in his lectures why the terms anion and cation were not pronounced as we do onion.

When Grace and I visited Berlin in 1936, Professor and Mrs. Hahn entertained us at dinner at the famous restaurant of the Berlin Zoo. Dr. Lise Meitner, his research associate, was present and we found her to be a kindly and friendly person. Hahn's greatest worry at that time was how to protect his staff from persecution by the Nazis. His attractive teenage son had refused to join the Hitler Jugend and therefore was barred from Hochschule education. Later that summer we joined the Hahns at Garmisch and enjoyed hikes in the mountains and coffee at lakeside inns. We have always been grateful for the many opportunities the Baker Lectures have afforded Cornell faculty for making rewarding friendships with distinguished scientists.

We had hoped that G. N. Lewis would have much to say about chemical bonding when he came in 1934. However, at that time he was competing with Urey of Columbia and Hugh Taylor of Princeton to win the Nobel Prize for work with heavy hydrogen. So each of Lewis's Baker Lecturers consisted of the latest hot-off-the-griddle reports from his research staff at Berkeley on experiments with heavy water and related items. When questions about chemical bonding were asked he impatiently brushed them aside. Between lectures he drove at high speeds about New England so we had little contact with him.

W. H. Mills from Cambridge, besides presenting fine lectures on stereochemistry, was an ardent botanical buff. Grace and I called at the Belleayre Apartments to take him and Mrs. Mills to dinner. We drove up in a typical Ithaca drizzle to discover Professor Mills flat on the small plot of grass by the entrance, peering through a magnifying glass at a tiny flower in the lawn. A few years later we visited the Mills at their "Red House" in Cambridge. There we were given

early morning tea in bed and then a hearty breakfast from a sideboard replete with bacon, grilled sausage and kidneys, kippers, eggs and porridge. On a drive that afternoon to Ely to see the cathedral we stopped for tea along the road. While Mrs. Mills was preparing tea Professor Mills wandered off across the fields to botanize. When I went to call him for tea I found him again prone on the ground with his magnifying glass, and he triumphantly waved a tiny flower which he said never had been reported in that county but was found in neighboring counties. Mrs. Mills had an interesting time shopping at Rothschilds for kitchen items for their rented apartment and called upon Grace to interpret into American the names used in England. And of course she had to discover that "lifts" were elevators.

The Paulings have had a long and most friendly association with Cornell, especially since Lynn Hoard had done his graduate work with Pauling at Cal Tech. I had first met Linus and Ava Helen in the early 1920's when they were undergraduates at Oregon State and I was there for two years as instructor. At that time the curriculum there in chemistry was very sparce and gifted students such as Pauling and his classmate P. H. Emmett pretty much had to find their own way in physical chemistry. I recall the excitement when the papers by Lewis and by Langmuir on atomic structure and bonding were discussed on a seminar at OSC, presumably stimulating Pauling to go on to graduate work in these fields. At Cornell the Paulings enjoyed the hospitality of Telluride and took part in campus activities with characteristic enthusiasm. Having had no opportunity previously for ice skating, they looked forward to trying it in Ithaca. So one Sunday morning we had them in for breakfast and then went to Beebe Lake for skating, which they both enjoyed.

Pauling's Baker Lecture book, "Nature of the Chemical Bond", had an enormous impact on chemistry and has gone through three editions. It was important in winning him the Nobel Prize. Pauling interacted vigorously with our Department and was enthusiastic about the extensive display in our museum of samples of unusual inorganic compounds synthesized at Cornell. He collaborated on structural studies of a number of these materials and gave a strong boost to attention to structural research at Cornell, which was continued vig-

orously down through the years. We were happy that Linus later was at Cornell giving the Messinger Lectures on the structure of proteins when his second Nobel award, the Peace Prize, was announced and we could help him celebrate.

George Kistiakowski pleased the ladies of the Department when he met them by gallantly bowing low and kissing their hands.

I have written in detail about Debye's stay at Cornell in Issues 16 and 17. His joining the faculty at Cornell following his Baker Lectures points up another advantage gained by Cornell from the Baker Lectureship, that of recruiting Baker Lecturers to become members of our permanent faculty.

Paul Flory first came to Cornell on a Baker Lectureship and, shortly thereafter, was invited to become a Cornell professor. He brought renown, during his stay, for his outstanding contributions to the field of polymerization, recognized eventually by a Nobel award. Sailing on Cayuga Lake was a strong enough interest to occasionally relieve Paul's intense concentration on research.

The lectures of Ingold aroused great interest and his Baker book "Structure and Mechanism in Organic Chemistry" rapidly became a classic and has gone through several editions.

I was particularly grateful for the chance to get to know Harry Emeleus of Cambridge, since his research and papers on halogen and boron chemistry were so close to my own interests. A friendly, modest and gifted scientist, he also is an ardent fisherman. He not only knows the streams of England, Scotland and Wales but has become familiar with fishing opportunities across the United States and Canada. He endeared himself to the young folk dancers at Cornell by meeting with them for three hours every Monday night and vying with the best of them in that strenuous fun.

Professor and Mrs. Saul Winstein turned out to be expert ballroom dancers and enjoyed meeting with our Cornell Grad-Fax Dance Club where graduate students and faculty hold monthly formal program dances to keep alive foxtrots, waltzes, tangos and other relics of the gracious predecessors of rock and roll gyrations.

Manfred Eigen impressed the campus with his outstanding lectures and personal charm. His intense preoccupation with chemical theory was matched by his virtuosity as a pianist. During his stay at Cornell he arranged with the Music Department to use a piano in nearby Lincoln Hall and regularly escaped from Baker Laboratory to relax with music. He found a kindred spirit in Lynn Hoard. Following his stint as Baker Lecturer he has continued to visit the campus as an Andrew D. White Professor-at-Large. He is one of a distinguished list of such professor who may be of any academic persuasion and who spend a limited time each year on the Cornell scene. We all rejoiced when Eigen received his Nobel award, which we had been confident would soon be made.

These reminiscences of Baker Lecturers must stop at this point, although they could well be continued with more of the same. They should firmly establish what a wonderful gift to Cornell Professor Dennis and George F. Baker made in conceiving, endowing and initiating and enduring and unique program for supplying a continuing stream of world-renowned scientists to the campus for periods long enough to have a lasting impact.

A. W. Laubengayer

Faculty Members

(Fall Term 1976)

A. C. Albrecht
S. H. Bauer
J. M. Burlitch
B. K. Carpenter
W. D. Cooke
E. L. Elson
R. C. Fay
M. E. Fisher
J. H. Freed
B. Ganem
M. J. Goldstein
G. G. Hammes
R. Hoffmann
P. L. Houston
R. E. Hughes
F. A. Long
E. R. Lory
G. M. Loudon
H. C. Mattraw
F. W. McLafferty
J. Meinwald
W. T. Miller
G. H. Morrison
E. L. Muetterties
R. F. Porter
H. A. Scheraga
A. G. Schultz
M. F. Semmelhack
M. J. Sienko
D. A. Usher
B. Widom
J. R. Wiesenfeld
C. F. Wilcox

Emeritus Faculty

A. T. Blomquist
V. du Vigneaud
J. L. Hoard
J. R. Johnson
A. W. Laubengayer
M. L. Nichols

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