

DEPARTMENT OF CHEMISTRY
CORNELL UNIVERSITY
ITHACA, NEW YORK 14850

NEWSLETTER

Issue No. 10

March 1972

As you may have noticed in the Newsletter issued last August, Bill Gurowitz assumed the position of Vice President for Campus Affairs and I replaced him as Executive Director of the Department of Chemistry.

Twenty five years ago I was a graduate student in this department, and I thought you might be interested in some random observations concerning the changes in People, Places and Things.

People: After twenty five years about one fourth of the faculty is still here and several who have retired are still active. The interesting point is that the spirit here is as great as ever — and the picnics, Ph.D. beer parties and technical bull sessions continue. Looking over the records for the past five years the number of Post Docs continues to increase (85 now) while the number of graduate students has dropped from roughly 200 to less than 160.

Places: The museum has given way to 3 lounges, one for faculty, one for chemistry majors and the William Cashin Lounge for graduate students. Then the addition of a seven story Chemistry Research Building along with extensive renovation of Baker Laboratory are tremendous improvements. Only the General Labs remain as a discouraging reminder of the days of alchemy.

Things: As expected the number of instruments and computers has increased to the extent that the curricula have been modified to keep pace or lead in taking advantage of the changes possible. Professor Charles F. Wilcox, Jr. has described some of these curricula changes in this issue of the Newsletter

Twenty five years ago many of us had just returned from World War II and felt proud of our service record. Today, the Vietnam situation has resulted in questioning many basic concepts. Twenty five years ago any graduate chemist could find a position fairly close to his own desires. Today, jobs are difficult to find and many chemists are learning that after five or more years of graduate study that their newly acquired knowledge cannot be properly utilized. Despite this lack of opportunity, many of our social problems require the expertise of a chemist.

All considered, it is an exciting time and I am happy to be associated with the Department of Chemistry again.

Harold Mattraw

Faculty News — Six members of the faculty taking sabbatical leave during the Spring term are: Jim Burlitch, Roald Hoffmann, Fred McLafferty, Harold Scheraga, David Usher and Ben Widom.

Dr. David L. Coffen is a visiting professor from Hoffmann La-Roche, Inc., for the Spring term and is teaching an advanced course in Organic Chemistry.

This Fall, two new members will be joining the faculty. They are Professor John R. Wiesenfeld from The University of Cambridge and Professor Arthur G. Schultz from Columbia University.

There will be an ACS Cornell Social Hour at the Sheraton-Plaza Hotel on Tuesday, April 11, 1972 at 5:30 p.m. in the Copley Room. Hope to see many of you there.

Chairman's Column

During this past year I have been a member of the second Cornell University Senate. As you probably recall this is a representative body of students, employees and faculty that has the responsibility of legislating policy with regard to the non-academic aspects of Cornell University. For example, this includes housing and dining, parking and traffic, athletics and the calendar. I thought it might be of interest to many of you to describe what the view from the Senate floor is like. This should serve as a change-of-pace from past columns where I have concentrated on matters directly germane to the Chemistry Department.

I must confess that I was not a strong advocate of the Senate at its inception. Along with many other people, I feared that such a body might act irresponsibly and would create policies that many of the faculty could not live with. Thus far this has really not occurred, and after a term in the Senate, such a happening seems unlikely to me. In fact, the thing that impressed me most about the Senate during this past year is that on the whole it is an extremely responsible body with a sufficient number of checks and balances so that irresponsible acts are improbable. If a controversial issue is under consideration it is generally well researched by appropriate committees and open hearings are held which give all concerned parties an opportunity to express their viewpoint. The vast majority of Senators attempt to ascertain all the facts and to make responsible decisions that best satisfy the needs of the entire campus. That is not to say that I agree with all Senate decisions that have been made; a large variety of viewpoints are represented in the Senate. Also, as with any group of people, exceptions to an idealistic mode of operation do occur, and sometimes personal biases and prejudices are maintained regardless of the facts.

The amount of time consumed by Senate activities is enormous, and in fact this is a serious deterrent to getting people to serve in the Senate. I suspect that I was an "average" Senator with regard to time spent on the job: this means roughly 3 to 3-1/2 hours every other week at Senate meetings and 2 hours per week at sub-committee meetings while the University is in session plus

accompanying homework. For the speaker and chairmen of important Senate committees I would guess that 10 hours or more per week on Senate activities would be commonplace. It is very impressive that many people are willing to do this (without compensation), and to do it well, in addition to their other duties.

Thus far I have stressed mainly the positive aspects of the Senate. In all fairness I should state what I found to be some annoying practices. The tendency of the Senate to extensively debate issues of the moment over which it has no jurisdiction particularly bothered me. Many people feel the Senate should be a political sounding board which permits all elements of the campus to express their opinions about everything. While political awareness and concern are important, I question whether the Senate should spend its time in listening to voluminous rhetoric and considering resolutions about matters over which it has no direct control. As with any large body of people, the rhetoric and parliamentary maneuvering sometime become quite frustrating. However, university wide faculty meetings are often even worse in this regard.

A final aspect of the Senate worth mentioning is that the opinions about various issues rarely seem to split along student-employee-faculty lines. This indicates to me that the goals and desires of all of these groups form a similar distribution of opinion and encourages the belief that the Senate is truly a representative body.

As you can surmise, my present feeling about the Senate is quite positive. It is an organization worthy of support and as a representative body is capable of making decisions which will accurately reflect the desires and will of all of the elements of the campus. Whether or not it ultimately will be successful depends on whether enough qualified individuals are willing to put in the large amount of time and effort necessary to make such an organization work.

Gordon G. Hammes

Experimental Chemistry

In a previous issue of this Newsletter our new five-semester "unified" laboratory program was described briefly. This Fall we began our first class and I would like to describe what we did and the student reaction.

First let me recall for you the origin of the program. We, like our colleagues in several other prominent departments, believe that the role of student laboratory work should go beyond the illustration of chemistry principles presented in lecture. We felt that the laboratory should teach students how to both design and execute experiments. We wished to create a new learning experience in which the students through the wide ranging choice of laboratory experiments and the additional lectures discussing them could begin to understand the creative aspects of experimentation as well as develop technical skills.

We selected a format of three sequential one-semester core courses in "Experimental Chemistry" followed by a choice of either "Advanced Measurements" or "Techniques of Modern Synthetic Chemistry". Broadly speaking the core courses were to present the flow of experimental concepts from "Separations" through "Analysis" to "Measurements". The laboratory was to begin largely with qualitative work and finish with the more quantitative topics. We began (the "we" I should emphasize represents the entire department) by shredding the existing sophomore, junior and senior laboratories. We discarded some pieces, reordered the remainder and filled in the gaps.

The first semester of the core, Chemistry 301, was largely concerned with an introduction to the separation and handling of materials. The course included the following topics incorporated into both the laboratory experiments and the two hours of lectures that accompanied the lab.

10 periods — Simple and fractional distillation, determination of HETP's of various packing materials. Crystallization and melting points, solubility unknowns. Extractions of caffeine, isolation of

chlorophyl by column chromatography, quantitative determination of mixtures of known components by gas chromatography.

3 periods — Chromium acetylacetonate preparation, nitration and molecular weight determination of the product by freezing point depression.

4 periods — Preparation and isolation of n-butyl bromide and of the alcohol derived from n-butyl Grignard reagent addition to acetone. Elimination of water with various dehydrating agents (class project) and determination of olefin composition by gas chromatography.

3 periods — Identification of unknown alcohol (provides practice in selecting isolation conditions of derivatives).

4 periods — Preparation of 2,4-dinitrophenylhydrazone and identification of unknown carbonyl compound (more experience in isolation).

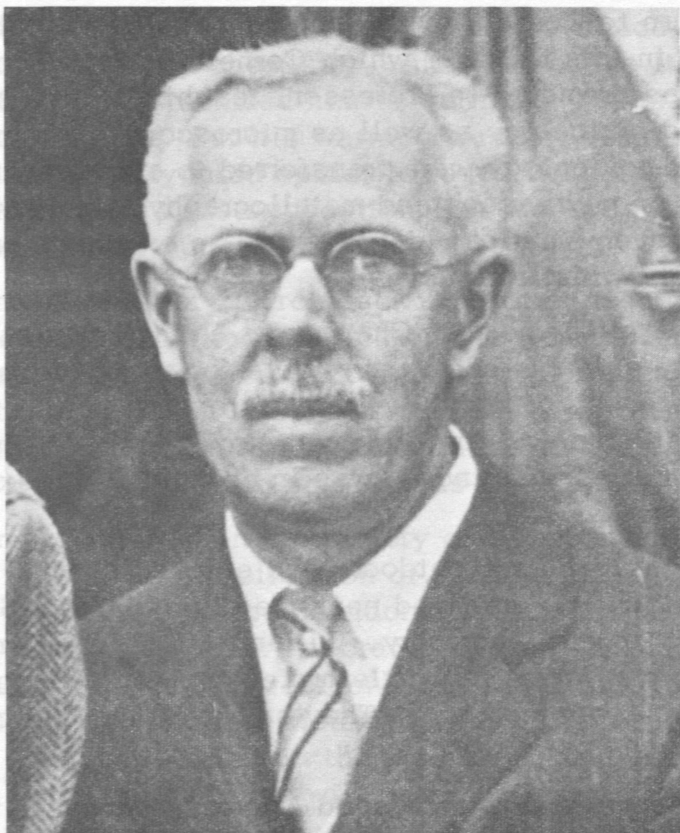
In the lecture part of this course we also discuss computer organization for information retrieval and in the laboratory we are using on-line computer retrieval in the two identification experiments.

We were surprised by the size of the audience that took the course — about 350 students — and we were occasionally overwhelmed by the logistic problems that resulted. The response was encouraging. We had designed the course primarily with chemistry and biochemistry majors in mind. We apparently reached them as judged by the enthusiasm of those students now taking Chemistry 302 (about 125 students). The others, who took Chemistry 301 primarily to satisfy a pre-medical requirement, had a mixed response varying from "the best course I have had at Cornell" to "you guys must be crazy". I think the program is sound for the serious students. I hope this Spring and Summer we can hit upon ways of reaching the less committed students.

C. F. Wilcox

Lauby's Recollections

EMILE MONNIN CHAMOT, "CHAMMY"



A native of Buffalo, Emile Monnin Chamot entered Cornell in 1887 and gained the B.S. degree in 1891. He was assistant to and did his senior thesis with Professor George Caldwell, the first head of the Chemistry Department. Caldwell possessed two microscopes and introduced Chamot to the application of microscopy to chemistry, the field in which he was to become recognized as a pre-eminent authority. Chamot also inherited from Caldwell interest in toxicology and sanitary chemistry.

Chamot was appointed Instructor in 1891 and continued graduate studies with Dr. Caldwell, qualifying for the Ph.D. in 1897. As was the case with his colleagues Dennis and Bancroft, Chamot then went abroad to polish off his education and spent a year at Nancy and Delft. Behrens, the world's leading chemical microscopist at Delft, reinforced Chamot's interest in chemical microscopy and, upon his return to Cornell as an Assistant Professor, Chamot initiated courses in this field for which Cornell was to become a center. In 1910 he was promoted to Professor, teaching courses in sanitary chemistry and toxicology as well as microscopy. When sanitary chemistry and toxicology were transferred to other departments he concentrated on microscopy and metallography. In 1924-25 he represented seven American universities as exchange professor to a number of French institutions.

Alumni will remember Chammy as a small, quiet, friendly person who was always easily available for advice from his enormous store of knowledge, of which he had impressive powers of recall. His well considered and firm judgments were frequently sought by students and colleagues and he was in demand as an expert consultant off campus.

Chammy loved the outdoors and enjoyed hunting upland birds and fishing for trout. He lived near the crest of State Street hill and always walked to the laboratory. Julian S. Collier, Cornell '18 writes, "Who can forget the little professor with the big dog walking across campus every morning? They say even the day of the big snow (39 inches)."

Professor Chamot introduced American chemists to the potential of microscopic methods by his pioneer book "Elementary Chemical Microscopy" (1915), which was succeeded in 1930 by "Handbook of Chemical Microscopy" (with C. W. Mason). Many were the student stories concerning Chammy's magic with the microscope. My favorite involved the instance when a student submitted a crystalline product he had prepared to Professor Chamot for examination. Next day Chammy reported that the material had been laid out on a filter paper to dry in the air overnight in a room with an

open window. The amazed student admitted this to be the truth. How did Chammy do it? His microscope revealed the presence in the preparation of a tiny hair which, when compared with the extensive collection of hairs in his file, turned out to be that of a bat. Small wonder that Professor Chamot often was called upon to act as expert witness in legal cases.

Chamot rendered valuable service to the Ithaca community, as consultant in sanitary chemistry. Analysis of the Ithaca water supply from Six Mile Creek led him to warn city authorities of a critical contamination. But his warning was not heeded, and in 1903-04 a disastrous typhoid epidemic raged in Ithaca. The city then was glad to follow his suggestions for protection of its watershed and proper water purification treatment.

During World War I, Professor Chamot carried out for the Ordinance Department an extensive study of primers for small-arms ammunition and the causes of their failure. Microscopic examination of sections provided the answers. For many years thereafter, Chammy's extensive collection of ammunition in the laboratory occasioned needless alarm to some of his colleagues.

Chamot's interest in the history of chemistry at Cornell led him to make an extensive collection of pictures of outstanding chemists. These were hung on the corridor wall outside of the main lecture room of the new Baker Laboratory. They included a gallery of pictures of our Baker Non-resident Lecturers. During a repaint job in the 1930's the pictures were taken down and, unfortunately, not rehung. They were found in the attic of Baker when it was renovated and it is hoped that they will be exhibited again. Chammy's office, as I remember, had many pictures and featured a large colored poster, a caricature of a Ph.D. examination in France, with a group of gowned and hatted faculty harassing a trembling candidate; not a reassuring sight for a graduate student.

Professor Chamot had much to do with the planning of instruction for the department and was largely responsible for the development of the B. Chem. curriculum. This made Cornell a leader in

providing the kind of realistic training in chemistry so greatly needed for the technological developments in this country during the first third of this century, when the first World War cut off the supply of chemicals and equipment previously obtained from Germany.

Professor Chamot retired in 1938 but continued actively to develop microscopic analytical technics and collect material on the history of chemistry at Cornell. He died in 1950, after having been associated with Cornell for some 53 years as student, faculty member and Emeritus Professor.

I will be grateful for contributions of recollections or pictures of Chammy to add to our files.

A. W. Laubengayer

CORNELL SOCIAL HOUR

TUESDAY, 11 April 1972

SHERATON-PLAZA HOTEL

at 5:30 p.m.

Copley Room

Faculty Members

(Spring Term 1972)

A. C. Albrecht	G. G. Hammes	R. A. Plane
S. H. Bauer	R. Hoffmann	R. F. Porter
C. A. Brown	R. E. Hughes	A. R. Rossi
J. M. Burlitch	G. B. Kolski	R. R. Rye
D. L. Coffen	E. S. Kostiner	H. A. Scheraga
W. D. Cooke	F. A. Long	F. R. Scholer
V. du Vigneaud	G. M. Loudon	M. F. Semmelhack
E. L. Elson	H. C. Mattraw	M. J. Sienko
R. C. Fay	F. W. McLafferty	J. Uetrecht
M. E. Fisher	J. Meinwald	D. A. Usher
G. A. Fisk	W. T. Miller	T. Wachs
J. H. Freed	F. A. Momany	B. Widom
M. J. Goldstein	G. H. Morrison	C. F. Wilcox

Emeritus Faculty

A. T. Blomquist	A. W. Laubengayer
J. L. Hoard	M. L. Nichols
J. R. Johnson	J. Papish

New Faculty Members

(Fall Term 1972)

A. G. Schultz
J. R. Wiesenfeld

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FIRST CLASS MAIL