

DEPARTMENT OF CHEMISTRY
CORNELL UNIVERSITY
ITHACA, NEW YORK 14850

NEWSLETTER

Issue No. 7

March 1971

One often hears and reads about the decreased interest in science among the young people of today. If that is true, we certainly are not seeing it in the Chemistry Department at Cornell. While the number of chemistry majors graduating each year has remained at a constant 40-50 over the past 20 years, the undergraduate enrollment in chemistry courses has increased dramatically this year. It is true that Cornell took in an additional 250 (approximately) students; however, even taking this into account the percentage of all students taking chemistry has increased. This past fall there were 270 more people taking freshman chemistry alone. This is more than a 10% increase. All other courses showed somewhat smaller increases. All this has meant a heavier load for everyone and an increased strain on the facilities; with good cooperation and care we have handled these increases in good fashion. The forecast for next year is that enrollments will go up only slightly; we should have no particular problems in handling this slight increase.

You may recall that the University adopted a new calendar for this academic year in which there was a ten day citizenship recess at the end of October. This allowed those students who wished to participate in the political campaigns to do so. Others used the time as a regular vacation. The conclusions drawn from this type of calendar are that a small percentage of the students and faculty actually participated in the political campaign.

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Chairman's Column

In my previous columns, I have stressed some of the problems and difficulties facing the chemistry department. This issue I would like to concentrate on some more positive aspects of the department, namely the new undergraduate laboratory curriculum and the stature of our department as revealed by a recent nationwide poll.

You are all aware of the hierarchy of introductory chemistry courses offered by our department: Chemistry 103-104 is intended as a terminal course in chemistry for students with little or no previous exposure to chemistry, Chemistry 107-108 is designed for students with a good background and some interest in science, and Chemistry 115-116 is intended for students with especially strong backgrounds and interests in chemistry. Although this general course structure has existed for many years, the content of these courses has changed dramatically. This is especially true of the laboratory portions of these courses, and I will confine my discussion to this. The students taking the two most advanced courses have become increasingly sophisticated in their chemistry backgrounds, so that some of the more advanced laboratory courses have been condensed into the introductory courses. Qualitative analysis is extensively studied in both courses and quantitative analysis is covered in depth in Chemistry 116 with less complete coverage in Chemistry 108 due to the large number of students involved. However, the net result has been the disappearance of separate courses in qualitative analysis (already eliminated) and quantitative analysis (very small).

Thus students leaving introductory chemistry courses are ready to undertake laboratory courses involving fairly advanced synthesis and instrumentation techniques. Up to now the procedure has been to take a laboratory in organic synthesis and instrumentation, a laboratory in physical chemical methods and a laboratory in instrumental analysis. These courses contained considerable overlap and very little attempt was made to integrate the subject matter from the different courses. Moreover, each of the laboratory courses was regarded as a subsidiary of a lecture course. This is clearly not a desirable situation since it is inconsistent with the actual practice of chemistry. Firstly, experimental chemistry is an important dis-

cipline in itself and should not be regarded as a tag-on to theoretical aspects of chemistry. Secondly, in order to do meaningful experimental work it is necessary to integrate the various synthetic and instrumental techniques. Although these two statements are rather obvious, translating them into practice is an extremely difficult task since it involves an integration of all of the traditional areas of chemistry.

Professor Charles Wilcox and the Undergraduate Curriculum Committee under the chairmanship of Professor Ben Widom have been working on this job for over two years, and next year we will have an entirely new integrated laboratory curriculum for undergraduate chemistry majors. Five terms of experimental chemistry will be available, with three terms being required of all chemistry majors. These courses will include laboratory work and lectures devoted entirely to various aspects of experimental chemistry. The course begins with synthesis and purification techniques. Analytical and physical methods are applied to the materials synthesized, and these methods become increasingly sophisticated as the course proceeds so that in the third term quite complex experiments are undertaken, for example X-ray analysis of structure. The fourth and fifth terms cover advanced synthetic and advanced instrumental methods. This new laboratory curriculum represents quite a departure from conventional courses of study, and we think it will produce better prepared chemists.

I think you will be interested in the results of a recent report issued by the American Council on Education, which attempts to rank graduate school departments according to the stature and quality of faculty and according to the effectiveness of the doctoral program given by the department. Our department ranked 8 in the country in the quality of our faculty (compared to 11 five years ago) and 6 in the effectiveness of the doctoral program (compared to 7 five years ago). We are all greatly pleased by our rankings and by the upward trend over the last five years. However, I feel this poll still has not done us justice and that we should be ranked even higher. That seems to be an appropriate closing note for this Newsletter.

Gordon G. Hammes

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However, most seemed to enjoy the break coming about half-way through the term, similar to spring semester. The big disadvantage was that we went back to the old system of having about a week of classes after the Christmas - New Year vacation, which has always been considered a disadvantage. This next academic year will see another new calendar. Classes will start on Labor Day with the term ending on the 23rd of December. Christmas Recess and Intersession will follow and the second term will begin on January 20th, ending on May 22nd; Commencement Day will be May 26th.

For those of you attending the ACS Meeting, the Cornell Social Hour will be at the Biltmore Hotel on Tuesday, March 30, 1971 at 5:30 p.m. in the Mediterranean Room No. 10.

A very large concern in this Department is the job market. Everyone knows and has read about the general economic turn-down in the chemical industry, which has resulted in lay-offs, firings, reduced or no hiring, etc. The same picture prevails in the academic world. Most universities are holding the line, some are cutting back slightly, and the general expansion in enrollments and faculties stopped awhile ago. All of this adds up to very few positions available for our graduate students and postdocs. There is some hope that things will ease up a bit this Spring; however, no one is optimistic. It is difficult for me to understand how a tragedy such as this can occur in a country with the economic prowess and long-range planning we have. I would like to believe that we will learn something from this recession and plan accordingly so that it will not happen again; However, I am not optimistic.

What complicates everything are the various surveys that show that there is an over supply; there will be too many scientists and engineers in 1980, or there will be too few scientists and

engineers in 1980. Responsible people in industry and government cannot come up with answers as to what the employment picture will be next year or five years from now. Many people have said that the solution is to cut back on the number of science majors, engineers and graduate students in engineering and the sciences. This certainly will make for an improvement in the job market five years from now; however, it may also make for a real shortage in these areas. We probably would then have some kind of crash program with much support for the discipline involved, all of which is inefficient and disheartening. Also how does one answer a student who says that regardless of what the job market is, he wishes to major in a science or do graduate work in the sciences? Of course the greatest effect is on the students currently looking for a suitable position. To have spent eight to ten years in getting an advanced degree and then not be able to use the knowledge and expertise to finally practice their profession is depressing.

News of the Faculty — This has been a great year for the Department as far as awards go. Professors Fisher, McLafferty and Morrison all received awards from the American Chemical Society. Professor Michael E. Fisher received the 1970 Irving Langmuir Prize in Chemical Physics. This is a prize which is jointly sponsored by the American Physical Society and the American Chemical Society. The award will be presented to him at the March meeting of the American Physical Society in Cleveland on March 30, 1971. Professor Fred W. McLafferty received the award in Chemical Instrumentation sponsored by Sargent-Welch Scientific Company and Professor George H. Morrison received the Award in Analytical Chemistry sponsored by Fisher Scientific Company. Both of these awards are administered by the American Chemical Society and will be presented at the meeting in Los Angeles. Professor Robert E. Hughes has been appointed to the Study Group for Research and Development of the U.S. Commission on Government Procurement. The Cornell University Senate concluded its first session at the end of February. This marked the retirement of Professor Harold A. Scheraga

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Lauby's Recollections

UNCLE BILLY ORNDORFF

The earliest days of chemistry at Cornell were dominated by George Caldwell, the first professor to be appointed to the Cornell faculty and Chairman of the Department of Chemistry for thirty-four years. With the help of a series of colleagues who remained for too limited periods to have a serious influence, Professor Caldwell incorporated instruction in general chemistry, analytical chemistry and agricultural chemistry in the initial offerings. With the rapid development of other areas of chemistry in the late 1800's and with the expansion of good facilities on the campus, Caldwell recruited a group of very able young men, Dennis, Orndorff, Bancroft, Chamot and Cavanaugh, who were to promote chemistry at Cornell to nationwide and world-wide eminence.



William Ridgely Orndorff was responsible for getting the then newly developing field of organic chemistry established. Born in Baltimore in 1862, he was educated at Johns Hopkins, B.A. '84, Ph.D. '87, where he was one of Ira Remsen's prize students. At later intervals he took leaves from Cornell to study in Germany at the Universities of Greifswald, Berlin, Heidelberg and Munich with Emil Fischer, van't Hoff, Salkowski, Curtius, Gatterman, Baeyer and Carl Hoffman.

Following in Remsen's footsteps, Orndorff became a great teacher and investigator at Cornell. Remsen picked Orndorff to collaborate in the revision of the widely used early text on Organic Chemistry. Orndorff came to Cornell in 1887 as Instructor in General and Organic Chemistry, and became Assistant Professor of Organic Chemistry in 1890. In 1900 his title was changed to Assistant Professor of Organic and Physiological Chemistry, reflecting the growing needs for medical instruction. He was promoted to Professor of Organic and Physiological Chemistry in 1903, and later the Physiological term was dropped from his title.

A rather reserved person who did not make close friends easily, Orndorff was a tremendous worker, wholly devoted to his teaching and research, and with apparently few other interests. Accordingly, it is more difficult to unearth revealing incidents and anecdotes to reach a true appreciation of him. Those who studied or worked closely with him had a deep respect for his ability and found in this quiet man an innate friendliness and a deep loyalty to the Chemistry Department and to Cornell. Somewhere along the line students started to refer to him as "Uncle Billy", but never to his face.

As a sophomore in 1918 I attended Uncle Billy's introductory organic chemistry lectures. I remember him as a stooped, medium sized man, balding, and with a handle-bar mustache. Organic chemistry in those days was still in the descriptive stage, with emphasis on synthesis and classification. While the lectures were largely a dry recital of facts and classification, Uncle Billy occasionally would enliven them with stories of Fischer, Baeyer and other greats of organic chemistry. His story of metabolism in the cow,

with carbon appearing as CO_2 at one end and at the other end as CH_4 was remembered by even the most somnolent students.

In 1918 all we male students had enlisted in the Army's Student Army Training Corps and were housed in fraternity barracks under the arrogant discipline of "shave-tail lieutenants" fresh from quickie training as "sixty-day wonders". Theoretically, half of our time was reserved for academic work. Practically, the Army constantly found many ways of commandeering some of our academic time, and Uncle Billy would fulminate in lectures about this stupidity.

In the dusty file of the "Cornell Chemist", published from 1911-26, I find that, in spite of his quiet ways, Uncle Billy in his younger days was in demand to contribute to the hilarity which characterized the frequent Chemistry get-togethers and dinners attended by students and faculty. His most celebrated stunt was a presentation of three humorous pseudo-scientific papers, illustrated by suitable slides.

- 1) "On the Relationship Between Chemical Composition and Crystal Form", by A. Thorough Tinker and Miss Mol E. Cule.

This explained the difference between paraldehyde and metaldehyde by use of the "sausage" formula, capable of bending in the middle.

- 2) "Molecular Weights of Liquids Using a New Chemical Constant".

This detailed a new method for determining molecular weights of such popular liquids as Schlitz, Wurtzburger, and Mumm's Extra Dry by observing the relative speeds of absorption by filter paper (sounds like he had paper chromatography well developed).

- 3) "The Structure of the Benzene Monkeycule", by Chim Panzie.

Here it was shown how six monkeys may form a ring like

the benzene ring, the hands, feet and tails of the beasts acting as valences.

(Whirlwinds of applause.)

During his later years Professor Orndorff's health declined and his teaching and research suffered. Because of his knowledge of physiological chemistry and his contact with medical matters, he became increasingly suspicious of medical and dental practices and refused to submit to medical care. His hearing became impaired, dental infections took their toll, and he retired more and more into himself. His lectures in Advanced Organic Chemistry involved reading verbatim from Bernsthen's voluminous "Organic Chemistry" chapters already assigned for student study, with the terrifying and constant possibility of an unannounced prelim any Thursday.

At his best, Uncle Billy was reputed an able teacher and a fine investigator. His research on phthaleins was highly regarded and the application of this work in the Todd Protectograph for bank checks is memorialized by the endowment by Walter Todd of the Todd Professorship of Chemistry. Although Orndorff was not as colorful or as extroverted as some of his contemporaries in the Department, he played an important role in getting organic chemistry established at Cornell.

Thanks to all who have written in response to this column. In particular, Manson Benedict and Edwin Wilde have supplied the missing names for the picture of the King's lab in the last Newsletter. Ed also points out an error: Professor Dennis retired in 1933, not 1923. Sorry!

A. W. Laubengayer

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and William I. White as senators. In addition, William I. White served as chairman of the Executive Committee. However, the Chemistry Department will not go unrepresented in the new senate. Gordon G. Hammes will serve as senator representing the tenured faculty of the Natural Sciences.

Professors A. T. Blomquist and J. L. Hoard will be retiring at the end of this academic year. Each of them has served in the Chemistry Department well over 30 years. There will be a luncheon, reception and dinner honoring both of them on May 22.

Visiting Lecturers — Professor S. I. Weissman of Washington University, St. Louis presented the Fall term Baker Lecture Series. His topic was "Spectroscopy and Chemical Kinetics". Professor Carl Djerassi of Stanford University presented the Debye Lecture Series on December 7 through December 9. His lectures were entitled; "Future Prospects in Birth Control", "Mass Spectrometry in the Steroid Field" and "Organic Chemical Applications of Magnetic Circular Dichroism".

The beginning of the Spring term has been very heavy with lectures and seminars. Dr. Earl L. Muetterties of the E. I. duPont de Nemours & Company is here as the Spring term Baker Lecturer speaking on "Dynamic Stereochemistry". Dr. Manfred Eigen who is the Andrew D. White Professor-at-Large presented a series of five lectures from February 8 through February 15 on "Self Organization of Matter and the Evolution of Biological Macromolecules". Later this Spring, Professor L. L. M. van Deenan of Der Rijksuniversiteit, The Netherlands will present the NIH Lecture Series.

Bill Gurowitz

CORNELL SOCIAL HOUR

TUESDAY, 30 March 1971

BILTMORE HOTEL

at 5:30 p.m.

Mediterranean Room No. 10

Faculty Members

(Academic Year 1970-71)

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

Emeritus Faculty

J. R. Johnson	M. L. Nichols
A. W. Laubengayer	J. Papish

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FIRST CLASS MAIL