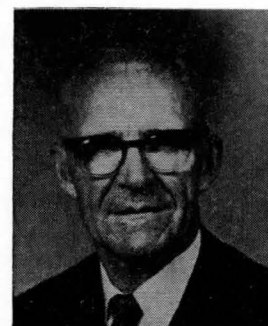




Dr. Barrett and Anne Marie Villanova, undergraduate assistant, setting up an organic preparation for research on aromatic ring current

CHEMISTRY TODAY AT HUNTER



Above left—Professor Dearing, Department Chairman. Right—Chemistry Department Faculty Members in semi-circle, left to right: Professor Marr, Professor Johnston, Dr. Baumgarten, Dr. Spielholtz, Dr. Barrett, Dr. Brumlik, Mr. Russell Kurtz, College Science Assistant, Professor Lorch, Dr. Fitzpatrick, Professor Walker, Professor Kingkade

The science of chemistry at any given moment of time is a summation of chemical knowledge and theory at that time. But as the science develops, the sum increases and the theory expands. The training of a few short years ago has been made inadequate by new discoveries and concepts. One need only compare a standard college chemistry textbook today with one used ten years ago to be convinced that a revolution has occurred in the science and the method of teaching it.

The College Chemistry Department has as its goal the imparting of some of the stimulation and excitement of this explosion of knowledge to the undergraduate. Even the beginning study of chemistry is no longer a matter of learning vast numbers of facts, but of developing an intellectual discipline—well-trained technical skill together with an inquiring attitude of mind. In other words, it might be said that we no longer stress facts, we try to teach a point of view—teaching students to ask questions and to use the scientific method in their search for the answer.

Seven years ago, a typical chemistry curriculum consisted of a year of inorganic chemistry, a predominantly descriptive course, two or three semesters of analytical chemistry, which might be described as teaching scientific techniques for obtaining data, then a year of organic chemistry, and a year of physical chemistry. Today such a curriculum would be utterly inadequate. The Department has found it necessary to revamp the curriculum as a whole, while individual courses are

always in a state of revision to keep their content up to date in a field that changes moment by moment.

One such fundamental curriculum revision was effected two years ago when qualitative analysis was incorporated with general chemistry, and organic chemistry was moved from Junior to Sophomore year. Physical chemistry, in keeping with this step-up, was moved from the Senior to Junior year. In this way, it forms a basis for all advanced and Senior-level courses. This is especially important as the laws and techniques of physics become more and more a part of college chemistry. Senior year thus can include studies equivalent to courses given in the first year of graduate work.

We plan to make available to the student in his Senior year a wide variety of optional courses, biochemistry, radiochemistry, advanced organic and inorganic chemistry, from which he may elect lecture or laboratory instruction in his field of special interest. We hope that an ever-increasing number of students will avail themselves of the opportunity for experience in research through the optional course "Introduction to Research."

Chemistry majors are, of course, not the only educational concern of the Department. The Department is acutely aware of the need to provide courses which offer to the non-science major an introduction to the principles, methodology and — most important — the thought patterns of science. This has led to the development of a course with emphasis on descriptive analyses of basic phenomena, new chemicals and new products.

The Department continues to offer courses leading to an M.A. degree in the Teachers' Education Program. In addition the Department has developed within the past few years an active graduate program leading to the M.A. degree in chemistry. Courses in the graduate program are presently offered in the evening only. There are now 30 students matriculated for their M.A. Most of them work outside of the College during the day, although the Department had three graduate assistants during the 1962-63 year.

With the activation of the City University's Ph.D. program in chemistry, further expansion of the graduate curriculum is under way. We hope that this will lead to an increased number of assistantships for students. Two students have already matriculated in the Ph.D. program and will begin work in September, 1964.

In the past ten years the faculty of the Department has expanded twenty per cent. In the same period the number of chemistry majors has gone up some thirty per cent, and the M.A. program has been initiated.

The Department is still operating with the same space that it was using ten years ago. Consequently, the facilities on both campuses are being used to capacity. The greatest increase in enrollment in the undergradu-

ate school has come on the Bronx campus, and the percentage of male students has increased markedly.

The Department expects a 100% increase in majors within the next two to three years. Adjustments for this expansion are reflected in the remodeling of Davis Hall on the Bronx campus. Work is scheduled to start in the Spring of 1964. Chemistry will be given the entire third floor and almost all of the fourth floor of the building, resulting in almost 50% more floor space.

Plans call for the construction of two-tiered lecture rooms which will accommodate 70-100 students at a time. Four new laboratories will be put in on the third floor. On the fourth floor there will be three small lecture rooms and two laboratories, one designed for modern instruments and for radioactive materials, the other for faculty research.

Today chemistry is a field of vigorous exploration in which a dynamic interaction of new facts and new ideas is constantly producing new tools and techniques with which man may attack those vast areas of mystery lying beyond the present frontiers of knowledge—a field in which a practitioner of the science may hope that the use of his powers of observation and intellect will lead to discoveries of lasting import.

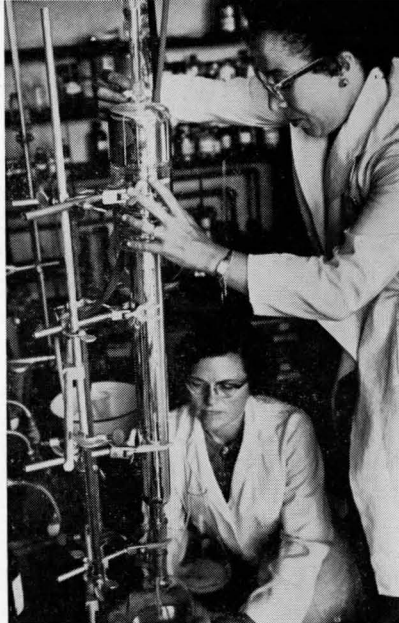
Mary Kingkade

*Reading down:
Prof. Kingkade
and Prof. Walker
distilling a mixture
of low-boiling
hydrocarbons*

*Prof. Lorch and
Prof. Johnston
analyzing results
obtained on a
Gas Chromatograph*

*Prof. Fitzpatrick
working with a prep-
aration of yeast
cells in his study
on polysaccharides*

*Dr. Brumlik and
undergraduate
Ruth Carlson using
an infra-Cord
spectrophotometer*



CHEMISTRY DEPARTMENT FACULTY

Professor A. Willis Dearing (Ph.D., Johns Hopkins University), as Chairman of the Department, has been increasingly burdened with the problems and projects involved in administration and guidance through these years of revision and expansion of the Department. Constantly increasing undergraduate enrollments both in the Day Session and the School of General Studies and the development of the graduate program have caused increased demands for space and staff on both campuses. Professor Dearing also finds time to teach courses in both the undergraduate and graduate programs and to co-operate with international evaluations of micro analytical methods.

Dr. Edward Barrett (Ph.D., Columbia University) and a group of students in the Bronx are engaged in the development of new techniques in thin-layer chromatography. This work is supported by a George N. Shuster Faculty Fellowship.

Dr. Reuben Baumgarten (Ph.D., University of Michigan) is studying the kinetics and mechanisms of reactions of hydroxylamines and amine oxides. These compounds are involved in the metabolism of nitrogen compounds in the human body.

Dr. George Brumlik (Ph.D., New York University) recently obtained a U. S. patent for production of a new kind of molecular models, representing carefully calculated orbitals of bonded and non-bonded electrons as well as atomic nuclei. These models are used to build structures which illustrate accurately the three-dimensional geometry of molecules.

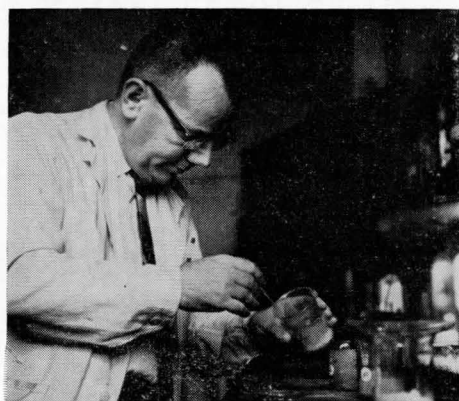
Doctors Barrett, Baumgarten, and Brumlik are also involved in a joint study of the effect of the aromatic ring current on NMR splitting due to molecular asymmetry. They hope to obtain information on the nature of the ring current, molecular asymmetry and the possibility of magnetic isomers.

Professor G. Richard Burns (Ph.D., Princeton), whom many alumni remember as Chairman of the Department, is still actively engaged in teaching. He maintains his interest in research in photosynthesis and is active in the Western Connecticut Section of the American Chemical Society.

Professor John Paul Clay (Ph.D., Columbia University) is serving as a member of the Committee on Proficiency Tests of the University of the State of New York. The Committee is engaged in preparing questions for examinations in the various areas of Chemistry.

Professor Francis Fitzpatrick (Ph.D., New York University) is continuing his investigations of biological properties of polysaccharides derived from yeast cell walls. These substances are known to function as part of the general defense mechanism of a living system and to offer protection against radiation and high gravitational stress as well as to cause regression of transplanted tumors. Professor Fitzpatrick's previous studies of these substances will be published as an Annal of the New York Academy of Science during 1963.

Dr. Bernard Greenberg (Ph.D., Pennsylvania State College) is engaged in determination of the structure of compounds by X-ray analysis. Dr. Greenberg is currently analyzing the X-ray spectrum of organic derivatives of nickel carbonyl compounds and studying hydrogen bonding phenomena in phenolic containing diazo compounds. The former work is reported in *Naturwissenschaften* in June of 1963, and the latter in a paper presented at the American Crystallographic Association meeting in Cambridge, Massachusetts, in March of 1963.



Professor Horst Hoyer (Ph.D., University of Southern California) who is a member of the committee which is guiding the development of the Ph.D. Program in Chemistry of the City University, is directing the research of a number of graduate students in areas of colloid chemistry and biophysics. Professor Hoyer returned from a sabbatical year (1960-1961) devoted to biophysics at the University of California at Berkeley with an interest in pre-biological evolution which has led to his current studies of the interaction of amino acids with nucleic acids.

Professor Helen Johnston (Ph.D., Columbia University) is developing a series of experiments to be student-tested in Hunter laboratories, then incorporated into a laboratory manual for beginning chemistry courses. Professor Johnston also heads the committee responsible for the planning of the Chemistry Department construction in Davis Hall.

Professor Frederick Kenny (Ph.D., Columbia University), with the assistance of Mr. Russell B. Kurtz and advanced undergraduate students, is continuing his development of new analytical methods employing chemiluminescent indicators. Completed studies have been published as a series of papers in *Analytical Chemistry*.

Professor Mary Jane Kingkade (Ph.D., Iowa State University) and a few graduate students are engaged in studies relating to mechanisms of organic and bio-organic oxidation reactions. Her studies of radiation induced hydroxylation of benzoic acid solutions was presented at the Conference of Radiation Chemists in Milwaukee in May of 1963, and will be published in *Radiation Research* this year. Professor Kingkade is also Department Representative on the Bronx Campus, replacing Professor Norma Johann who retired in 1961.

Professor Arthur Lorch (Ph.D., Columbia University) is a consultant for the Evans Research and Development Corporation. His most recent research with the Evans Corporation, under contract with Army Ordinance, is a highly classified study of physical and chemical properties of high explosives.

Professor Eleanor Marr (Ph.D., Columbia University) is currently writing two books: a textbook, "Introduction to Chemical Literature, Documentation, and Searching," and a reference work, "Sources of Information for Chemistry, Chemical Engineering, Chemical Industry, and Chemical Documentation." Both books will be published by John Wiley and Company. Professor Marr, who is active in the Chemicals Literature Section of the American Chemical Society and is a member of the American Documentation Institute, was elected a Fellow of the Chemical Society of London in 1962.

Professor Daniel Murphy (Ph.D., Pennsylvania State College) and a group of graduate students are investigating isocyanide dihalides as organic intermediates. This work is part of Professor Murphy's series of investigations in heterocyclic chemistry. He prepared a paper on the most recently completed part of these investigations—"Isocyanide Dihalides As Organic Intermediates I. The Preparation of 2-Arylamino benzimidazoles"—for the American Chemical Society Meeting in New York City in September, 1963.

Professor Arthur Sweeny, Jr. (M.A., Columbia University) continues to direct his active Cancer Research Project, supported by a grant for the fourth consecutive year from the New York City Cancer Committee of the American Cancer Society and a grant from the Carl & Lily Pforzheimer Foundation. The project is a vital part of the Department's program

of undergraduate research, offering research experience to students during the summer as well as during the academic year. The student group, which seems to increase constantly in number and enthusiasm, is engaged in synthesis and testing of fluorinated and chloroacetylated organic compounds of potential use as anti-tumor agents. Professor Sweeny is also Pre-Medical Officer for the College.

Professor Ruth Walker (Ph.D., Yale), who serves the Department as Coordinator for General Chemistry, has developed a set of sixty visuals for the overhead projector, designed for use in both high school and college courses, entitled "Basic Information for General Chemistry." These visuals with a teacher's guide are available from Tecnifax Corporation. Professor Walker prepared a paper, "Active General Chemistry Visuals for the Overhead Projector," for the American Chemical Society Meeting in New York City in September, 1963. She now plans to return to research on anthroquinones, supported by a grant from Sigma Delta Epsilon. Her previous research in dyestuffs was recognized by the American Dyestuff Reporter Award in 1960.

Professor M. H. J. Wijnen (Doctor of Science, University of Louvain, Belgium) joined the City University Faculty in February, 1963. Professor Wijnen is an internationally-known authority in photochemistry and author of numerous scientific publications. Formerly a Senior Fellow at Mellon Institute, he is continuing investigations begun there as well as teaching in the Graduate Program. His immediate problem is the study of reaction pathways of cyclohexyl radicals.

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