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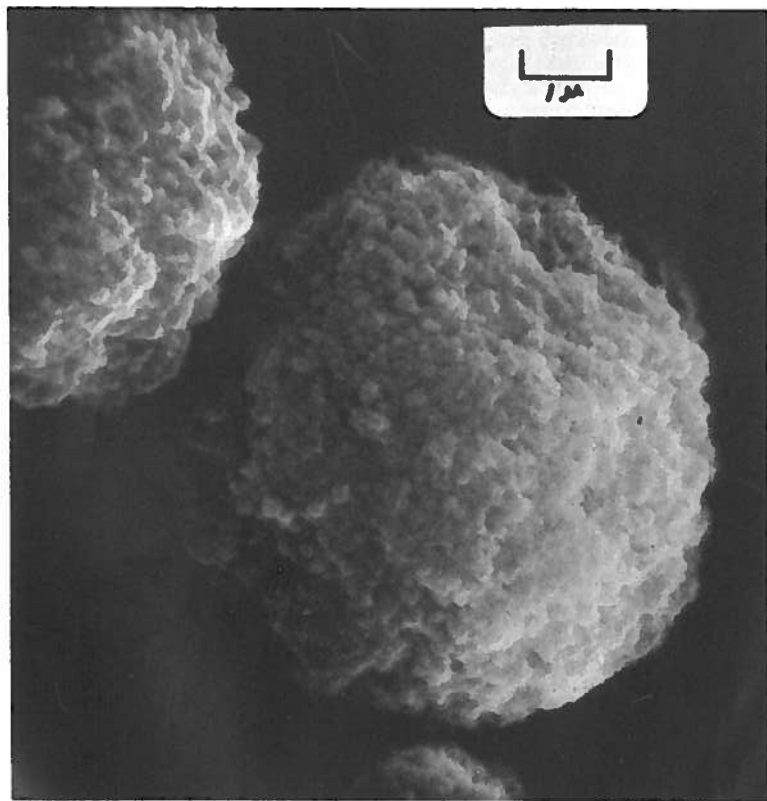
CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY

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FEBRUARY, 1975

NUMBER 2



A NEW APPROACH TO INSECT CONTROL?

Molting Hormone Studies
May Point the Way

While he was still an undergraduate at Tohoku Univ. in Japan ten years ago, Masato Koreeda was involved with research in which a steroid was isolated from plants in large quantities. The steroid was found to be quite similar in structure to the hormone that causes insects to molt.

It is now known that insect molting hormones, known as ecdysones, are not only produced internally by insects in minute amounts but are abundantly contained in the plants upon which many insects feed. Dr. Koreeda reasons that if he can learn enough about the way these exogeneous hormones in the insect diet are metabolized, it might be possible to produce an entirely new type of insecticide.

Dr. Koreeda obtained his Ph.D. from Tohoku University in 1970, and shortly thereafter accompanied his supervisor, Koji Nakanishi, to Columbia University, where the latter had been offered a post in the Chemistry Department. Dr. Koreeda took three years of post-doctoral work with Dr. Nakanishi at Columbia, and then last year came to Johns Hopkins as assistant professor of chemistry.

He has continued to work on the insect molting hormone problem from several different aspects, all aimed at a fuller understanding of the metabolism of the hormone on a molecular basis.

"The problem is interesting," he says, "because in eating plants, insects take in large quantities of the molting hormone constantly. Obviously they molt only at certain times, so there must be some mechanism in the insect that deactivates the excess hormone."

If the mechanism can be well enough understood, he believes it may be possible in the laboratory to synthesize a hormone mimic with a slightly altered structure so that it serves as an inhibitor, blocking the insect's natural method of deactivating the molting hormone at a physiologically immature stage. This would cause the insect to molt at the wrong time and bring on its death.

Many problems remain to be worked out, even if such a hormone could be

synthesized. Steroids are expensive compounds, and a way would have to be found to produce the hormone in sufficient yield so as to be economically practical. The synthesis itself is proving to be difficult. One way it can be done, Dr. Koreeda believes, is to find a microorganism, such as a bacterium or a fungus, which would digest certain common steroids and convert them to the desired molecular structure. Some 35 microorganisms have been tested so far in collaboration with a microbiologist at the University of Minnesota, but without real success. Hundreds more remain to be tested.

From *Johns Hopkins Journal*, Fall, 1974

THE MOST IMPORTANT ISSUE OF ALL

This is what the October issue of *Astronautics and Aeronautics* calls job security in an article by two officials of the AIAA, Alan Pope and Tony Culotta. People in the aerospace/aeronautics industry talk about this eloquently and emotionally as well they might. The authors remind us that a man can work for ten to fifteen years and, regardless of his ability, find that all the skills that he has acquired are a liability rather than an asset to his career. They say, "to put it bluntly, this is a lousy situation." Their article addresses some words of wisdom to employees, to employers, and to the government. They advise the employee to live defensively and put aside some of his earnings so as to be able to weather an enforced vacation and use the time to broaden or enhance his skills. To the employer, they suggest that they should be more frank with their employees in evaluations and also to balance fluctuating work loads by using "undertime" and overtime depending on whether there is a deficiency or surplus in the budget. They should also adopt a more flexible attitude toward work assignments and, above all, stop being paranoid about hiring older people. Finally, they ask government to adopt a policy which will smooth out the hills and valleys in the employment situation. To which all of us could say, Amen.



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COVER:

Scanning electron micrograph
of porous silica column packing
material. (Courtesy JJK)

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JAMES N. LITTLE

James N. Little received his B. S. in chemistry from the University of Kansas in 1962 and his Ph.D. in analytical chemistry from M.I.T. in 1966. After graduation he worked as a research chemist with Hercules Inc. in Wilmington, Delaware. In 1968, Dr. Little went to work for Waters Associates as a senior research chemist, and in 1969 was promoted to Manager, Chromatography Research. In 1971, he was promoted to his present position of Vice President.

Dr. Little has been involved in liquid chromatography for over ten years, specializing in the development of new chromatographic packings, analytical and preparative applications of liquid chromatography, and polymer characterization using gel permeation chromatography.

Dr. Little has over twenty publications and patents related to liquid chromatography and serves as a reviewer for papers dealing with liquid chromatography and polymer characterization for four leading journals. He has been an invited lecturer at universities, symposia, and government agencies, both here and abroad.

INTRODUCTION TO LIQUID CHROMATOGRAPHY

Liquid Chromatography (LC) is now being used routinely for separating organic compounds for analytical and preparative applications. The LC technique gives higher resolution and shorter analysis times than thin layer and column chromatography. An introduction to LC will be followed by applications concerning pharmaceuticals, natural products, polymers and industrial chemicals.

J. J. KIRKLAND

J. J. Kirkland received his A.B. (1948) and M.S. (1949) degrees from Emory University. In 1953, he received his Ph.D. from the University of Virginia and in 1974 was awarded a D.Sc. degree from Emory University. From 1950-1951, Dr. Kirkland worked for the Hercules Powder Co. in Wilmington. In 1958, he began working for his present employer, the E. I. du Pont de Nemours and Co., Inc.

Dr. Kirkland is on the editorial board of the *Journal of Chromatographic Science* and the Instrumentation Advisory Panel of *Analytical Chemistry*. He is editor of *Modern Practice of Liquid Chromatography* (1971) and co-author of *Introduction to Modern Liquid Chromatography* (1974). He is also associate professor of two ACS short courses, "Modern Liquid Chromatography", and "Solving Problems With Modern Liquid Chromatography."

Dr. Kirkland was the recipient of the 1972 ACS Award in Chromatography and the 1973 ACS Delaware Section Award. His research interests include liquid and gas chromatography, residue analysis, colorimetric analysis, polarography, microanalysis, ultraviolet and infrared spectrophotometry, and quantitative organic reactions.

TRENDS IN HIGH-PRESSURE LIQUID CHROMATOGRAPHY

Since the development of high-pressure ("modern") liquid chromatography (HPLC) in the late 1960's, there has been a rapid increase in the technology associated with this versatile separation method. As a result, there is now a wide selection of apparatus, column materials and techniques for carrying out separations with all of the four liquid chromatography methods: adsorption, partition, ion-exchange, and steric exclusion. This lecture will define the trends of HPLC in several areas, including analytical and preparative column technology for optimum separations, and equipment and detector design. Particular emphasis is placed on the practical limitations imposed on liquid chromatography methods by particle size, mobile phase effects, pressure input and extra-column effects. Application of the HPLC technique in some new areas is suggested.

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FEBRUARY MEETING

DATE:

Wednesday, February 19, 1975

PLACE:

Eudowood Gardens Lecture Room,
Eudowood Plaza, Joppa Road near
Goucher Boulevard

SPEAKERS AND TOPICS:

5:30 pm
Dr. James N. Little, Waters Assoc.
"Introduction to Liquid Chromatography"

8:30 pm
Dr. Jack J. Kirkland, E.I. duPont
de Nemours and Co., Inc.
"Trends in High Pressure Liquid Chromatography"

SOCIAL HOUR:

There will be a social hour after the meeting. Refreshments will be served.



DR. JACK J. KIRKLAND

COCKTAILS AND DINNER:

Eudowood Gardens Dining Room.
Cocktails 6:30 - 7:15 courtesy of
Waters Associates and Perkin-Elmer.
Hot buffet dinner (7:15) \$5.50
per person. Retired chemists,
students, and their spouses may
attend the dinner at \$3.50 each.
Reservations are necessary for the
dinner and should be made by
mail or phone with

ACS Reservations
c/o Dr. Allen Bednarczyk
McCormick and Co., Inc.
204 Wight Avenue
Hunt Valley, Maryland 21030
(Use form on p. 6)

Phone 667-7480, 667-7470
ASK FOR ACS RESERVATIONS

It is not necessary to be a member of the American Chemical Society to attend the dinner or the talks. The talks may be attended without attending the dinner. You are invited to bring your spouse and friends to both the dinner and the meeting.



DR. JAMES N. LITTLE

LOCAL SECTION NEWS

TOWSON STATE COLLEGE

Construction of the addition to the science building is well underway. When completed in the fall of 1975, the wing will double our chemistry laboratory, classroom, and office space. Faculty have been busy ordering new equipment which should substantially improve our advanced undergraduate courses. A DTA-TGA magnetic susceptibility system, scanning polarimeter, and emission spectrograph have been ordered. The Perkin-Elmer R12 nmr will be equipped with decoupler and variable temperature. The routine infrared and ultraviolet instruments will be joined by a Perkin-Elmer 621 IR and a Cary 17 UV. Our range of capabilities will be greatly expanded by the Dupont 490B mass spectrometer and Tektronix scope. Like all of our present instruments, these will be used by undergraduate students in course work and research projects.

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TWO LOCAL STUDENT AFFILIATE CHAPTERS COMMENDED

Two local student affiliate chapters have been specially commended for excellence by the ACS Council Committee for Chemical Education.

They are the chapters at Mount Saint Mary's College, Emmitsburg, and Anne Arundel Community College, Arnold. The faculty advisers are Professor James J. Thomas and Amelia C. Finan, respectively.

The commendations are for the academic year 1973-74, and are based on the chapters' activities for that year. Only 42 of a total of 597 student affiliate chapters received this distinction.

+++++

If a little knowledge is dangerous, where is the man who has so much as to be out of danger?

---Thomas Henry Huxley

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There is enclosed \$ _____ (\$5.50 per person)* for dinner reservations at Eudowood Caterers, Eudowood Plaza, for the following persons.**

Name (Please print or type)

Affiliation

*Please make checks payable to Maryland Section, ACS and mail together with reservation form to Dr. Allen Bednarczyk, McCormick and Co., Inc. 204 Wight Avenue, Hunt Valley, Md. 21031, or phone 667-7480, 667-7470. Ask for ACS reservations.

**Return by Friday preceeding next meeting.

NICK NACKS
January, 1975
by Alan C. Nixon
CHEMICAL STRESS

Since not everyone, unfortunately, reads *Chemtech* it is worthwhile to bring to your attention an article in it for October, 1974, page 596, entitled "Occupational Stress Among Chemists," by Joy Reeves (a sociologist). It compares, by means of a survey, structural stress among dentists, chemists, and professors. Although the article is too long to abstract readily, some of her more pertinent findings are interesting. Thus, she found that dentists experience little stress while professors and chemists both experienced a high degree of structural stress, but whose consequences were not the same. Also, in the area of work and professional commitment, professors scored high in both areas, dentists had high work commitment and low professional commitment, and industrial chemists were low in both. These findings

seem to be related to the work structure in which the different groups of respondents are embedded. Professors have a high degree of freedom but in order to get ahead, have to demonstrate high professional commitment and have so many conflicting demands made upon them that they have to be extremely industrious. Dentists, on the other hand, have to work hard. To be successful a dentist has to have many patients, most of whom don't care what his standing in his profession is as long as he satisfies their needs. Industrial chemists, on the other hand, are enmeshed in such a rigid structure that most of them feel there is no way to beat the system and are not stimulated to try. This suggests that employers of industrial chemists could actually reap richer rewards by fostering a looser system, particularly one which allowed their employees to achieve much more in the professional sphere. This could be achieved by recognizing and rewarding professional activities.

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