

the Test Tube

1988 NEWSLETTER

THE DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY

Texas Tech University Lubbock, Texas

Editor: Henry J. Shine

Editorial Assistant: Jane Bradley



To Our Readers:

We hope that you will enjoy the information about departmental happenings and items concerning former students and coworkers which are contained in this ninth edition of our departmental newsletter.

The 6.5 million dollar Chemistry Building Renovation Project has now been completed. In early January, we moved into the new classrooms and offices, general chemistry and biochemistry laboratories, departmental shops, instruments rooms, and the MACLAB for computer-assisted instruction. We hope you will have an opportunity to stop by and see why we're so proud.

In September, we were pleased to welcome three new assistant professors to the Department. Dr. Bruce Whittlesey is a new member of the Inorganic Division, and Drs. James Harman and Richard Nakashima have joined the Biochemistry Division. On other faculty matters, Professor David B. Knaff has been designated a Paul Whitfield Horn Professor, the highest faculty distinction awarded by Texas Tech University.

We are pleased to acknowledge continuing support for our program in the form of an unrestricted grant from Dow Chemical U.S.A. and new support from Hoechst Celanese. Also the Jeanette and Joe Dennis Undergraduate Scholarship and the Song Prize were endowed. On the other hand, the Weymouth Corporation of Amarillo, which provided the bulk of our scholarship support for many years, has dissolved. In order to attract quality undergraduate and graduate students to our program, we simply must develop a new source of scholarship support. Hence, we turn to you, our friends and former students. Please respond generously to our solicitation. Only with your help can our program continue to develop. Thanks.

Sincerely,

Richard A. Bartsch

Richard A. Bartsch
Chairman

Changes in the Wind

Dr. Richard Bartsch has announced that he will give up the Chairmanship of the department and concentrate on research and teaching after the 1988-89 year. By that time he will have been chairman for 8 years. Understandable it is then that he will have arrived at the point of enough is enough. Sometime in the not-too-too-distant future, the department will begin its search for a new chairman.

Miss Mary Sufall, departmental secretary since September 1962, has also announced her retirement, but at the end of August, 1988. There are few of us left who remember the days when Miss Sufall was not the departmental secretary. The time has come, she says, to spend more of it on things of greater interest. More about these changes in the next newsletter.

And, More Changes

Elsewhere in this newsletter you will read that Dr. Jerry Mills and Dr. Michael Hampton are bringing out a lab book on microscale experiments. That points up a change that is taking place in chemistry departments over the country and one that is planned for our department.

A major change in the way organic chemistry laboratories are being taught at Texas Tech is being developed for implementation in the Fall, 1988. The laboratories (Chem 3105, 3106, 3205, 3206) will begin using microscale experiments. In this approach, experiments are typically done on 20-100 mg instead of 10-30 g of material. Not only is the cost of chemicals reduced dramatically, but (more importantly) safety is increased substantially, especially for fire hazards and the danger of spilling chemicals on the skin. Another major advantage is that the amount of chemical waste will decrease from 20-50 gallons per year to perhaps one gallon. Still another advantage expected will be that the students will be forced to learn better laboratory techniques, in order to isolate products when they start with just enough material to see.

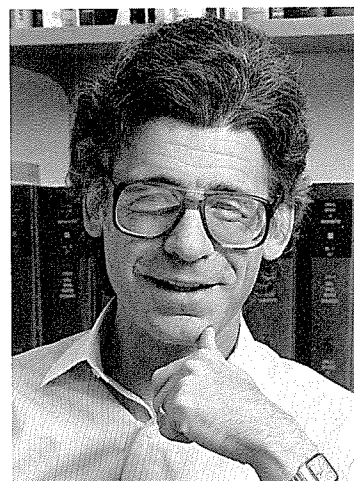
The laboratory will emphasize spectroscopy and other instrumental techniques. Microscale work becomes practicable only with the heavy use of instrumentation. A very important factor in being able to offer such a program at this time is the appearance, two years ago, of the pioneering textbook, by Mayo, Pike, and Butcher. At least one other text is currently available, and other publishers are rushing to get theirs out. The cost of new glassware kits and needed instrumentation will be borne to a large extent by funding (\$35,000) from the Texas Higher Education Assistance Fund (HEAF). Planning, implementation, training of graduate assistants, etc. will be conducted by Dr. John N. Marx.

Private Donations for Research Support

It is not often that we can say "thanks" to individuals for supporting research in the department. Dr. Robert Walkup has received such support for research on the Total Synthesis of The Aplysia toxin Tumor Promoters. His and our thanks go to Oncology Associates, Lubbock (Dr. David R. Close, M.D.) and the Oncology Clinic, Lubbock (Dr. Ali A. El-Domeiri, M.D. and Dr. Benny P. Phillips, M.D.).

Jeanette and Joe Dennis Scholarship Endowment

Last year we were delighted to report that the Dennises had established a scholarship fund with a donation of \$6,000. It is a pleasure to report again that the Dennises have now increased their donation with a further \$4,000. The fund is for scholarships for undergraduates pursuing a major in chemistry or biochemistry with any degree objective.



Department's Newest Horn Professor

Dr. David Knaff has been honored by Texas Tech University by being designated Paul Whitfield Horn Professor. The title Horn Professor is conferred on members of the faculty who have a distinguished national and international record of research and scholarly achievement. The first Horn Professorships were established in 1967 by recommendation of Tech's new President Dr. Grover E. Murray. Currently there are 20 Horn Professors in the University.

The Song Prize

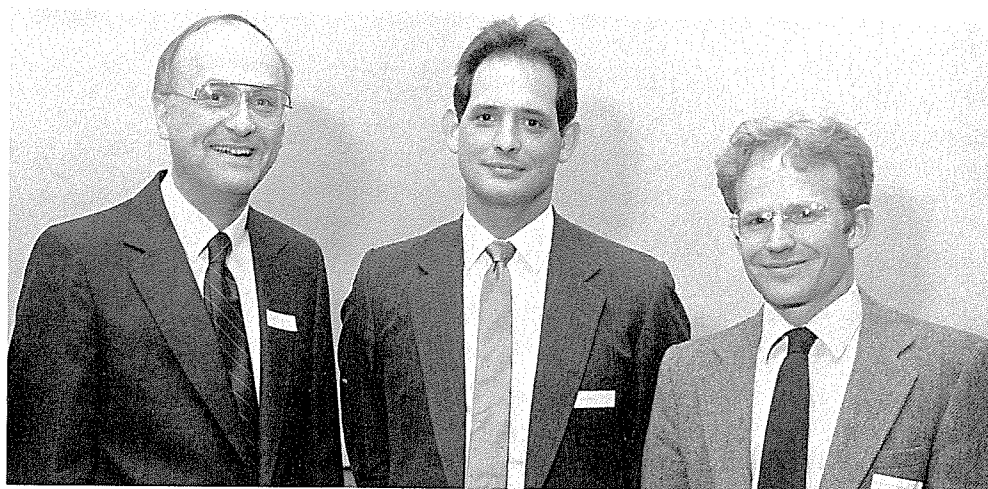
When Professor Pill Soon Song left our department last year he gave Texas Tech a donation of \$4,000, the interest on which is to be a prize for the best Ph.D. degree dissertation in the department each year. The first award will be made in 1989. To Pill-Soon Song, who was a stalwart member of our faculty for 20 years, we raise the hat and record our warmhearted thanks.

In Memoriam

Mrs. William (Frankie) Slagle, wife of the late and long-time teacher of general chemistry, Professor William Slagle, died peacefully in her sleep, January 30, 1988. Professor Slagle died in 1977.

The Chemistry and Biochemistry Department— American Chemical Society Annual Awards Banquet

This year the awards banquet was held in the ambience of the Fifty-Yard Line Restaurant. A second change this year was the inclusion of awards from our neighbor, South Plains College's Department of Chemistry. We were also pleased to have with us representatives from the Hoechst Celanese Corporation and Dow Chemical's Texas Operations, numbering among them several of our own exes. The banquet address was given by Mr. Keith Dobson of Zymark Corporation, who gave a stimulating and illustrated talk on "Robots in the Lab: An Introduction to a New Generation of Laboratory Assistants". Honored again this year were area high school teachers and finalists from West Texas high schools in the preliminary trials for the International Chemistry Olympiad. The Weymouth-Campbell Scholarships this year were the last to be awarded. These valuable scholarships, with which the Weymouth-Campbell Foundation has generously supported the department for a number of years, have now been ended. Pleasingly, the Dow Chemical Company has increased the number of its funded scholarships, partly offsetting the loss of those from the Weymouth-Campbell Foundation.



1987 Awards Banquet. L to R: Russell D. Larsen, Keith Dobson (banquet address) and Robert D. Walkup.

International Chemistry Olympiad, South Plains Section Finalists

Robert Bartsch and **Lin Wei** (Lubbock High School, Mr. Royace Aikin, teacher and coach); **Jeff Allen** (Coronado High School, Mr. Edgar Jarman, teacher and coach); **Joe Harris** (Plains High School, Mr. Macky McWhirter, teacher and coach); **Nathan Spoons** (Ms. Jeanelle Culp, Monterey High School, teacher and coach).

High School Teacher Awards by the American Chemical Society, South Plains Section

Outstanding High School Teacher: **Mr. Rondal Nauert** (Sundown High School).

Special Service Award for the Teaching of Chemistry: **Mr. Dan Kallus** (Midland High School).

Teaching Assistant Awards to Graduate Students

Texas Tech University Outstanding Graduate Student Teacher Award: **William McDowell** (Knoxville, TN).

Department of Chemistry and Biochemistry Award for Superior Performance as a Teaching Assistant: **Tracey Price**, (Denison, TX) and **J. Lynn Myers**, (Tulia, TX).

South Plains Chemical Research Symposium Awards

For outstanding presentation: **A. K. M. Mansurul Hoque** (Bangladesh), graduate; **Jeffry Nichols** (Katy, TX), undergraduate. For excellent presentation: **Nihal U. Obeyesekere** (Ethiopia) and **Kelly M. Myers** (Longview, TX), graduate; **Randy Menges**, (Big Spring, TX), undergraduate.



1987 Awards Banquet. Teaching Assistant awardees. L to R: J. Lynn Myers, Tracey D. Price and William L. McDowell.

Scholarships and Awards to Undergraduate Students, 1987

The Samuel Hunt Lee Memorial Award (to an outstanding freshman chemistry major), **Robert Livengood** (Plains, TX).

The CRC Press, Inc., 39th Annual Freshman Chemistry Achievement Award (to an outstanding student in freshman chemistry), **Steven Lusk** (Canadian, TX)

American Chemical Society Student Affiliate Scholarship (to an outstanding sophomore chemistry student), **Rodney Schluter** (Texarkana, TX).

The Texas Institute of the American Institute of Chemists, Student Award (for outstanding accomplishment in a baccalaureate program in chemistry or chemical engineering, and potential as a professional chemist), **Ingrid Dearmore** (Bothell, Washington).

The Merck Index Award (for outstanding achievement by a graduating senior), **Karin Strout** (Deposit, NY).

The Weymouth-Campbell Scholarships: for superior performance (as a freshman chemistry major) **Robert Livengood** (Plains, TX); (as a sophomore chemistry major) **Mark Corwin** (Big Spring, TX) and **Brian Simpson** (Lubbock, TX); (as a junior chemistry major) **Charles O'Rear** (Amarillo, TX) and **Raymond Smola** (Sweetwater, TX); (as a freshman biochemistry major) **Susan Coombes** (Lubbock, TX); (as a junior biochemistry major) **Jeffry Nichols** (Katy, TX); (as an incoming freshman high school student) **Catherine Lebeda** (Los Alamos, NM).

Dow Chemical Company Scholarships for outstanding achievement (as a junior biochemistry major) **Hai Phuc Dang** (Lubbock, TX) and **Sherri Fugate** (Idalou, TX); (as a senior biochemistry major) **Daniel Smith** (Levelland, TX), and **Susan Tsai** (Lubbock, TX).



1987 Awards Banquet. South Plains College awardees and faculty. L to R: Waqas Jalini, Traci Nance, and Traci Boyd, with Robert Beck and James R. Leggitt.



1987 Awards Banquet. Visitors from Hoechst Celanese Corporation, Pampa, TX, with (center) Jerry Mills. L to R: John Clemer (B.S., '76, M.S., '83) Denise Phillips (B.A., '86), Ade Becker, and Jay Trammel (B.S., '79).



1987 Awards Banquet. High School Teacher awardees. L to R: Rondal Nauert and Dan Kallus with former awardees Royace Aikin and Macky McWhirter.



1987 Awards Banquet. International Chemistry Olympiad South Plains Section finalists and coaches. L to R: Edgar Jarman, Nathan Spoons, Joseph Harris, Jeff Allen, Jeanelle Culp, and Macky McWhirter.



1987 Awards Banquet. Dow Chemical Scholarship awardees. L to R: Hai Phuc Dang, Daniel Smith, Sherri Fugate, with David A. Babb (Ph.D., '85).



1987 Awards Banquet. Weymouth-Campbell Scholarship awardees. L to R: Charles O'Rear, Jeffry Nichols, Susan Coombes, Robert Livengood, Mark Corwin and Brian Simmons.



1987 Awards Banquet. Awardees Ingrid Dearnore (L) and Karin Strout (R) with Dick Bartsch.

Chemistry Nobel Laureate to visit Tech

Nobel Laureate Professor R. Bruce Merrifield of Rockefeller University will be the 1988 Dads and Moms Association Visiting Professor at Texas Tech University on February 29 and March 1, 2. Professor Merrifield received the 1984 Nobel Prize in Chemistry for his development of methodology for chemical synthesis on a solid matrix. He will present a departmental seminar at 4:40 P.M. on Monday, February 29, and a lecture for general audiences on "Chemical Synthesis of Biologically Active Peptides" at 7:30 P.M. on Tuesday, March 1. In addition, he will make cameo appearances in several general chemistry and biochemistry classes during his three-day visit to the Texas Tech campus.

Departmental Majors as CAS Ambassadors

Jeffrey C. Nichols (biochemistry major) and Roger J. Wolcott (chemistry major) are serving as Ambassadors for the College of Arts and Sciences during the 1987-88 academic year. As Ambassadors, Jeff and Roger serve as hosts at college gatherings and also represent Texas Tech in visitations to high schools.

Graduate Degrees, 1987

Mary Ayres (M.S., Dr. Knaff) "Studies on *R. rubrum* Hemoprotein and Interaction of Cytochromes with *R. rubrum* Reaction Centers".

J. Milton Boyer (M.S., Dr. Knaff) "The Interaction of Ferredoxin with Chloroplast Ferredoxin-Linked Enzymes".

Jung K. Choi (Ph.D., Dr. Song) "Protein Topography and Binding Properties of Phytochrome".

M. Edward Grice (Ph.D., Dr. Chesnavich) "Theories of Chemical Reactions: The Orbiting Transition State for Linear Molecules, Classical Dynamics of Association and Dissociation in Collinear Reactions".

Don O. Henderson (Ph.D., Dr. Redington), "Vibrational Studies of Formic Acid".

Jae-Wook Huh (Ph.D., Dr. Song) "Characterization and Function of Stentorin, the Photoreceptor Protein in *Stentor coeruleus*".

Tae-Ik Kwon (Ph.D., Dr. Song) "Physicochemical Differences Between the PR and PFR Forms of Phytochrome".

Donald J. Kyle (Ph.D., Dr. Marx) "Sesquiterpene Syntheses: Occidenol and Phytuberin".

Edmund M. Ndip (Ph.D., Dr. Redington) "Vibrational Analysis and *ab initio* Studies of Propiolic Acid".

Tracey D. Price (M.S., Dr. Shaw) "Metal Dependent Beta-Lactamases of *Bacillus cereus*".

Rabindra K. Prusti (Ph.D., Dr. Song) "Role of Calcium Ions in Photosensory Transduction and the Photodynamic Action in *Stentor coeruleus*".

Thomas W. Robison (M.S., Dr. Bartsch) "Synthesis of Lipophilic Phosphonic Crown Ethers".

Bal R. Singh (Ph.D., Dr. Song), "Molecular Topology and Binding Properties of Phytochrome and Other Related Tetraphyrrolic Proteins".

Larry A. Spino (Ph.D., Dr. Armstrong) "Novel Uses of Organized Media in Chemical Analysis".

Karen D. Ward (M.S., Dr. Armstrong) "Separation of Alkaloid Isomers and Stereoisomers with Beta-Cyclodextrin Bonded Phases".

Timothy J. Ward (Ph.D., Dr. Armstrong) "Cyclodextrins and Micelles in Separations".

Huey Yang (M.S., Dec. '86, Dr. Dasgupta) "Measurement of Trace Levels of Reduced Sulfur Compounds".

Jesse Yeh (Ph.D., Dr. Mills) "Synthesis and Stereochemical Studies of Some Phosphorus-Phosphorus Bonded Compounds".

Undergraduate Degrees 1987

Lee Ann Boyle (B.S. Biochemistry)

Jerry L. Johnson (B.A. Biochemistry)

Elizabeth Lee (B.S. Biochemistry)

Daniel F. Smith (B.S. Biochemistry)

Jeffrey S. Stephens (B.S. Biochemistry, cum laude)

Todd A. Thacker (B.A. Biochemistry)

Toni K. Aldridge (B.S., Chemistry)

James A. Barron (B.A., Chemistry)

Mary E. Bodnar (B.S., Chemistry)

Linda P. Comiskey (B.S., Chemistry)

Ingrid K. Dearmore (B.S., Chemistry, summa cum laude)

Sean M. Dennis (B.S., Chemistry)

Leonard A. Garcia (B.A., Chemistry)

James E. Garza (B.S., Chemistry)

Joe A. Golden, Jr. (B.A., Chemistry, magna cum laude)

Denfrick H. Jackson (B.A., Chemistry)

Asra A. Lodhi (B.S., Chemistry)

Gregory W. Meek (B.S., Chemistry)

Randy A. Menges (B.S., Chemistry)

Karin E. Strout (B.S., Chemistry)

Susan S. S. Tsai (B.A., Chemistry, cum laude)

Stephen D. Wagdy (B.S., Chemistry)

Sawnra P. Webb (B.S., Chemistry)

Postdocs and Research Associates

Dr. Philip R. Brown (postdoc with Dr. Bartsch, 1986-87) is working with Tronac, Inc. in Provo, Utah.

Professor Witold Charewicz (visiting faculty member at TTU, 1981-82) has been elected Vice President of the Technical University of Wroclaw in Poland.

Dr. Michael M. Chau (postdoc with Dr. Kice, 1975-76) was named, early in 1987, senior research associate, coatings and resins groups at Pittsburgh Plate Glass's research and development center, Springdale, PA.

Dr. Simon Cohen (postdoc with Dr. Wilde, 1976-77) is at the MIT Lincoln Laboratories.

Dr. Anna Czech (postdoc with Dr. Bartsch, 1982-85) is a Research Scientist with Union Carbide in Tarrytown, New York.

Dr. Bronislaw P. Czech (postdoc with Dr. Bartsch, 1982-85) has received the 1987 Outstanding Technical Achievement Award from Techicon Instruments Corporation for the "Novel Synthesis of Sodium and Potassium-Selective Chromogenic Compounds."

Dr. Syamasri Gupta has returned to his position at Jadavpur University, India, after 18 months research with Dr. Dasgupta.

Dr. Yoshihara Hisamatsu has returned to Tokyo Institute of Public Health after a year's research with Dr. Dasgupta.

Dr. Charlotte Kämpf (postdoc with Dr. Knaff, 1985-87) is a postdoctoral fellow in the Department of Microbiology, Cornell University.

Drs. Ping Liu and Wei Lei, husband and wife team, have joined Dr. Dasgupta's research group after having received their doctorates from the University of Tokyo, 1986.

Professor Duck-Chul Oh, Department of Biology, Cheju National University, Korea, is spending a sabbatical year with Dr. Knaff.

Dr. Jaeson Rhee (postdoc with Dr. Dasgupta, 1986-87) has joined Dr. Pill Soon Song's research group, University of Nebraska.

Dr. Samir K. Roy has resumed his position at Bankura Christian College, India, after 18 months research with Dr. Dasgupta.

Dr. Hideharu Shintani has resumed his position at the National Institute of Hygienic Sciences, Tokyo, after 13 months research with Dr. Dasgupta.

Dr. Lyle W. Spruce, (Oklahoma State University) has joined Dr. Bartsch's research group as a postdoctoral associate.

Dr. Genfa Zhang (Environmental Research Institute, Shanghai, PRC) has joined Dr. Dasgupta's group.

Also leaving Dr. Dasgupta's research group were **Dr. R. S. Vithanage**, after three years of research, **Dr. Shen Dong** to return to Shanghai First Medical University, after three years of research, **Dr. Dayong Qi** to return to Academia Sinica, after a year of research, and **Dr. Jamal Surileh** to accept a National Research Council Fellowship in his home country, Canada, after 15 months of research.

Working with Dr. Wilse Robinson are Senior Postdoctoral fellows **Dr. Jaime Lee** (Colorado State University), and **Dr. Surjit Singh** (University of Waterloo, Canada); post-doctoral fellows **Dr. Sheng-Bai Zhu** (UC, San Diego) and **Dr. Timothy Fillingim** (Louisiana State University); and visiting scientists **Dr. M.-P. Palmyre Bassez-Muguet** (Université d'Angers, France) and **Dr. Frank Etzler** (University of Kentucky).

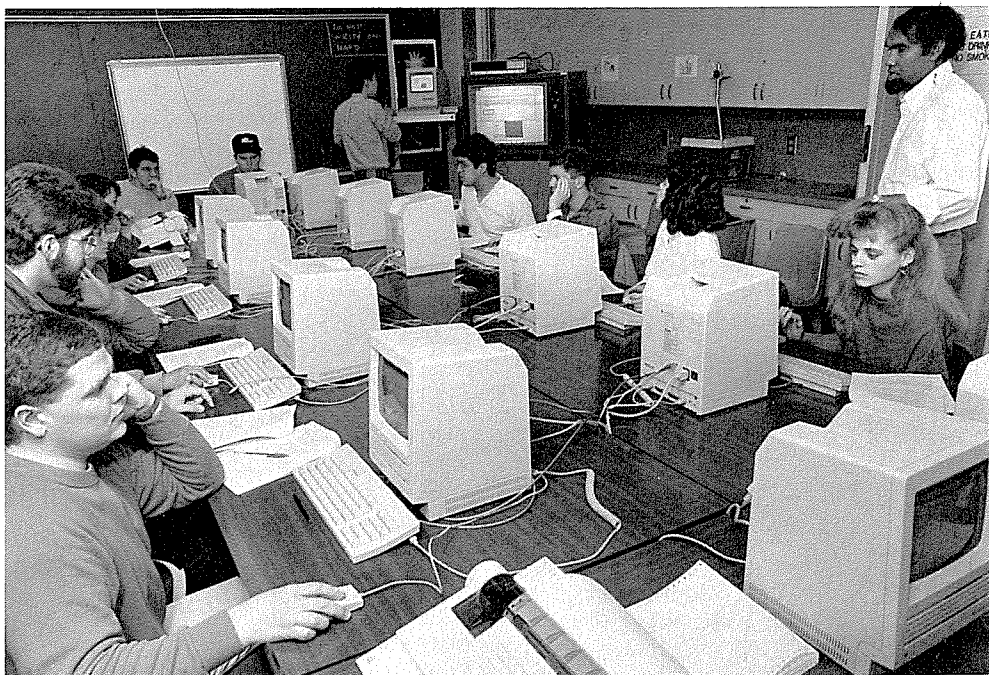
Saturday Seminar Series

Dr. Russell D. Larsen

The Saturday Seminar Series (S^3) for High School Chemistry Students included a talk last Spring by cardiac surgeon, Dr. Mario Feola, of the Texas Tech Health Sciences Center about his research on artificial blood. The Fall 1987 program had talks by Dean of Arts & Sciences Joe Goodin on artificial cotton, and by Dr. Roy Mitchell of our department who spoke on the chemistry of wine. The Series continues to expand in attendance. High school groups from Lefors, Dimmitt, Crosbyton, Monahans, Levelland, Sundown, Petersburg, Brownfield, and the local Lubbock high schools are attending.

Microcomputers in the General Chemistry program —TTU's MacLab

Dr. Russell D. Larsen



The MacLab.

The Department now has a fully-equipped microcomputer laboratory which is an integral part of the introductory General Chemistry Program. This laboratory has functioned in temporary quarters on the fourth floor of the South Wing since the Fall semester of 1986. Beginning with an Apple Computer, Inc. hardware grant of 7 Macintosh computers with printers connected in an AppleTalk network, the lab has now expanded to include 4 printers and 26 Macintosh SEs, two of which are Macintosh SE20 hard-disk file servers. The computers are connected by an AppleTalk/AppleShare network through which students can download the courseware to be used in their laboratory experiment that week. These microcomputers are used within all four of our freshman lab courses. Two of the eleven experiments in each lab course utilize these computers.

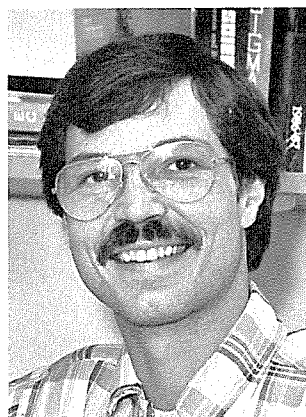
The principal reason for the computers is to teach students appropriate methods for analysis of data. Data analysis is an integral part of modern chemical laboratory practice. Our students also analyze

and graph trends using a chemical database, construct accurate molecular models on the computer and rotate them in three dimensions, and undertake titration and kinetics simulations that supplement and complement those that they have previously done with conventional lab equipment. The titration and kinetics experiments involve the plotting and analysis of a titration curve and the determination of a reaction order through plotting.

The microcomputer lab is normally open from 9-5 Monday through Friday and is staffed by MacLab teaching assistants, in addition to those TAs that accompany their sections to the MacLab on their scheduled days. The student writeups are novel in that students customize a lab report on the computer, then electronically copy and paste tables and graphs into it from their chemical software, and then print out their report to submit to their teaching assistants. Our MacLab is state-of-the-art and the manner in which it is being used, by freshmen, is attracting interest among chemical educators.

Meet Our New Faculty

We are pleased to be able to introduce to you three new members of the faculty who joined the department in the fall, 1987. Two appointments were made in the Division of Biochemistry and one in the Division of Inorganic Chemistry. The research interests of the new members of the faculty point up the department's emphasis of growing fields of instruction and research: the biological side of biochemistry, and organometallics chemistry.

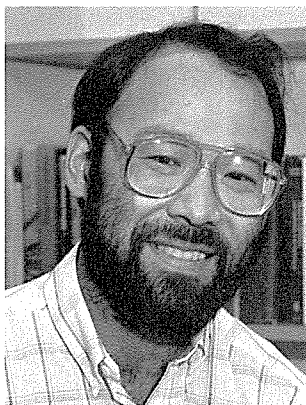


Dr. James G. Harman

Dr. James G. Harman, assistant professor, was born in and grew up in Avenel, NJ. He received the B.S. (1975) and M.S. (1977) degrees in biology from our neighbor in Las Cruces, New Mexico State University, and the Ph.D. degree (1982) in Microbiology from North Carolina State University. From 1982 until he joined Texas Tech, Dr. Harman was a Staff Fellow in the Biochemical Genetics Laboratory of the National Heart, Lung and Blood Institute of the National Institutes of Health.

Dr. Harman's research interests center on the mechanisms controlling gene expression in prokaryotic organisms. His research currently focuses on the study of the cyclic AMP receptor protein (CRP) of *Escherichia coli*. CRP is one of the better characterized DNA binding proteins of this organism and mediates the regulatory effects of cyclic AMP in the enterics. CRP provides a model system suited to the study of: (1) DNA:protein interactions; (2) cyclic nucleotide:protein interactions; (3) allosteric control of protein activity and (4) protein-mediated promoter

activation. The long term goal is to develop a more complete understanding of the mechanisms involved in cAMP-mediated protein activation and subsequent CRP-mediated transcription activation.



Dr. Richard A. Nakashima

Dr. Richard A. Nakashima, assistant professor, is a native of San Francisco, CA. He received the B.A. degree (1975) in biology from the University of California, Santa Cruz, the M.A. degree (1975) in zoology from the University of California, Davis, and the Ph.D. degree (1983) in medical sciences from the Medical College of Ohio, Toledo. Thereafter, Dr. Nakashima spent five years in post-doctoral research in the Department of Biological Chemistry, Johns Hopkins University School of Medicine. Dr. Nakashima was a National Merit Scholar (1969) and an Earle Anthony Fellow at UC Davis (1977). In 1983 he received an Individual National Research Services Award, National Cancer Institute.

Dr. Nakashima's research is in two related areas: (1) protein structure-function relationships and (2) regulation of metabolic pathways, particularly with respect to normal versus cancer cells.

All proteins possess a tertiary (3-dimensional) structure which is important in their function, whether enzymatic or structural. Changes in a single amino acid residue within a functionally important domain of a protein can markedly affect its activity. Professor Nakashima's goal is to identify functional domains of several glycolytic enzymes (hexokinase, phosphofructokinase, lactate dehydrogenase, and pyruvate kinase), to define the mechanisms by which these domains catalyze

chemical reactions, and to determine how changes in amino acid sequence at these sites affect protein function.

Rapidly growing cancer cells exhibit an elevated rate of glucose catabolism and lactic acid secretion. Several factors contribute to the elevated glucose utilization in tumors, including increased gene expression for glycolytic enzymes, changes in subcellular localization of enzymes and production of "deregulated" forms of these enzymes which are not subject to normal metabolic controls. Professor Nakashima is investigating the mechanisms by which these changes take place.



Dr. Bruce R. Whittlesey

Dr. Bruce R. Whittlesey, assistant professor, was born in Waterbury, CT. He received the B.A. degree (1978) in Natural Sciences from New College of the University of South Florida, and the Ph.D. degree (1985) in inorganic chemistry from our sister university, UT, Austin. Dr. Whittlesey was a postdoctoral fellow in the University of Illinois, Urbana, from 1985 until joining Texas Tech.

Dr. Whittlesey's research involves the synthesis of new transition metal complexes containing the heavier Group 13 elements (Al, Ga, In, Tl), and the development of these complexes as catalysts for organic synthesis and as precursors for the preparation of new inorganic materials.

A number of important industrial processes utilize transition metal complexes and Lewis acids as cocatalysts. One of the major goals of this research is the preparation of transition metal complexes having Lewis acid sites (in the form of a

Group 13 element) incorporated in the complex. These species are then examined to determine their ability to catalyze the addition of small molecules, (such as CO₂, HCN, and SO₂) to organic compounds. The complexes are characterized by single-crystal x-ray diffraction, as well as nuclear magnetic resonance and infrared spectroscopy.

Another area of interest is the synthesis of compounds having a transition metal, a Group 13 element, and various substituents that are easily removed by pyrolytic or photochemical means. These compounds are then investigated as to their possible use in the production of heterogeneous catalysts, superconducting materials, and solar cells.

We welcome also to our community Mrs. James G. (Margaret) Harman, Mrs. Richard A (Jan) Nakashima, and Mrs. Bruce R. (Charlotte) Whittlesey.

News of Faculty

Dr. Joe Adamcik continued as a member of the Board of Directors of the American Chemical Society. He attended Board meetings at the Spring (Denver, CO) and fall (New Orleans, LA) ACS meetings as well as the summer Board meeting at Belmont (MD). Dr. Adamcik, has announced his retirement at the end of the Spring Semester, 1988 in order to enter TTU's School of Law and prepare for a new career—in law.

Dr. Dan Armstrong left Texas Tech at the end of the Summer, 1987 to accept a position as professor of chemistry, University of Missouri, Rolla.

Dr. Richard Bartsch traveled to the Far East in July and visited Korea, Taiwan and Japan. He was an invited speaker for the Asian Chemical Conference in Seoul, Korea. Following the meeting he visited former coworkers who had received their doctorates at Texas Tech—Drs. Bong Rae Cho, Gwi Suk Heo, Jong Sun Lee, Byungki Son and Il-Woo Yang. Following three enjoyable days in Taiwan with Richard Chen and his family, he visited several locations in Japan and presented papers at the Younger Chemists in Tokyo meeting and at the Twelfth International Symposium on Macrocyclic Chemistry in Hiroshima.

Dr. Walter Chesnavich is masterminding the networking of computers within the department and also the connections with outside networks. The main line of Tech's new Academic Computer Network happens to run right through our building, making it easy to connect up with the campus network. Already, hooked up to this network from the department are a terminal server with a number of VT 100-compatible terminals, a DEC BT 340 color graphics terminal and a Macintosh computer. The objective of networking is, among other things, computer communication among offices in the department, and on and off the campus, nationally and internationally.

Dr. Sandy Dasgupta continues his appointment as Chairman of the Intersociety Committee's Subcommittee for the Measurement of Sulfur Compounds. Sandy gave invited lectures to the Jerome Instrument Co., Jerome, AZ, on "Measurement of SO₂ with a Goldfilm Analyzer" (March 1987) and at the Gordon Research Conference on Separation and Purification Methods, New London, NH, on "Trace Ionic Analysis" (August, 1987). He gave two lectures at the 194th ACS meeting, New Orleans, LA, (September, 1987) and two at the Dow Chemical Co., Midland, MI (October, 1987). During November and December, 1987, Sandy had a lecture tour in Japan. He gave a plenary lecture "Diffusion Scrubbers in Atmospheric Measurements" at the Meeting of the Japan Society of Air Pollution, Tokyo Institute of Public Health; a lecture on "Adventures in Suppressed Ion Chromatography" at the National Institute of Hygiene, Tokyo; and other lectures at the University of Tokyo and Kanagawa University, Yokohama. While in Japan, too, Sandy gave the Abeshoji Special Lecture, sponsored by the Abeshoji Company, entitled "Simple Detectors and Membrane Reactors for Ion Chromatography".

Last, but not by any means least, we are pleased to report Sandy's promotion to full professor, effective September 1, 1988.

Horn Professor David Knaff.

Elsewhere in this issue is the announcement that David has been made Horn Professor. In addition to this recognition of his academic achievement, Dr. Knaff was one of 1987's recipients of Texas Tech University's Presidential Achievement Award. Further recognition (but, this time without medals and money) is seen in David's appointment as Head, Photosynthesis Competitive Grants Program, USDA, and as Photosynthesis Correspondent for the journal *Trends in Biochemical Research*. The USDA appointment involves heading a committee of 10 scientists to review 100-125 grant proposals, for which something like three million dollars will be awarded.

During 1987 Dr. Knaff gave invited lectures at the Gordon Conference on Biochemical Aspects of Photosynthesis, New London, NH, on "Ferredoxin: Enzyme Complexes in Higher Plant Photosynthesis"; and at the International Conference of Photosynthetic Bacteria, Nyborg, Denmark, on "Electron Transfer Chains in Green Gliding Bacteria". A plenary lecture was given, also, at the University of California's (Berkeley) Photosynthesis Conference, Sonoma, CA, on "The Role of Cytochrome-C₂ in Bacterial Photosynthesis". In addition to this round of lectures, Dr. Knaff presented papers at the 31st Meeting of the Biophysical Society, New Orleans, LA, and seminars at Kansas State University; Mount Sinai Medical School, NY; University of California, Santa Cruz; the Max-Planck-Institute for Biochemistry, Martinsried, FRG; the Biochemical Institute, University of Zürich, Switzerland; the Irvine School of Medicine, University of California; and TTU's School of Medicine.

Yes, Dr. Knaff does indeed find time to teach—and run a very busy research group! In his activities in our department he has ordained a \$35,000 grant from HEAF (Higher Education Assistance Fund) funds for the purchase of an ultracentrifuge for the department's biochemistry division.

On the campus, Dr. Knaff has been appointed by VP Haragan to serve on a committee to draft evaluation guidelines for TATRP and TAREP grants. The committee is chaired by Mr. J. Fred Bucy, member of Tech's Board of Regents.

Dr. Russell Larsen is the President (1987-88) of the Southwestern and Rocky Mountain Division (SWARM) of the American Association for the Advancement of Science (AAAS). He is also Chairman-elect of the ACS South Plains Section, Co-Feature Editor for "Chemistry Principles Revisited" of the Journal of Chemical Education, Faculty Advisor to MacLubb, the TTU Macintosh User's Group, and Moderator, Saturday Seminar Series for High School Chemistry Students.

Dr. Larsen spoke at the 63rd Annual AAAS/SWARM meeting in Austin on "The Quantum Leap", and "Exploratory Data Analysis in the Freshman Laboratory". He was the organizer, moderator and a panelist of the Symposium "Great Expectations: What College Students Do Not Know" in the Welch Foundation Conference for High School Chemistry Teachers, held at UT, Austin. Russell was the organizer and senior chairman of two other symposia: "Microcomputers in Chemical Education" in the ACS Southeast Regional Meeting, Orlando, FL, and "Descriptive Chemistry: What Is It?" in the ACS Southwest Regional Meeting, Little Rock, AR. He was an invited speaker on "The Problem of Student Access" at AppleWorld 87, Los Angeles, CA, and on "Access to Technology" at the Conference on Computing in the Liberal Arts, held at Washington College, Chesterton, MD. Dr. Larsen served as a consultant on curricula materials and software for a magnet school to the Montgomery Blair Magnet School, Silver Spring, MD. Seminars were given at East Texas State University, the University of Dallas, and UT, Dallas. Continuing his commitment to chemical education, Dr. Larsen participated in workshops at the meeting of the Association of Chemistry Teachers in Texas, Trinity University, San Antonio, and was an In-Service orientation speaker for LISD at Monterey High School and Hutchinson Junior High School.

Dr. Jerry Mills presented papers on "Aspects of Phosphorus Stereochemistry" at the National ACS meeting in New Orleans, LA (September, 1987) and the Southwest Regional ACS meeting in Little Rock, AR (December, 1987).

Dr. Mills spoke also in two symposia on "Microscale General Chemistry Experiments" at the Southeast Regional ACS meeting in Orlando, FL (November, 1987) and at the meeting in Little Rock. In Orlando, Dr. Mills was the organizer of the Symposium. Jerry gave seminars during the fall at East Texas State University, the University of Dallas, and UT Arlington.

Dr. Mills and Dr. Roy Mitchell have published the Second Edition of "General Chemistry Experiments" through Morton Press. Their book has been adopted by approximately 30 schools across the country.

Dr. Mills has also coauthored with former student and alum Dr. Michael Hampton of the University of Central Florida the "Microscale Laboratory Manual for General Chemistry" through Random House.

Dr. Edward Quitevis. In November, 1987, Dr. Quitevis gave an invited lecture in the Department of Chemistry, LSU, Baton Rouge, on "Picosecond Pump-Probe Spectroscopy of Dyes in Polymer and Colloidal Solutions". He also presented a paper at the International Laser Science Conference, Atlantic City, NJ, on "Picosecond Pump-Probe Studies of Electronic Energy Relaxation in Aggregates of Pseudocyanine Adsorbed on Colloidal Silica".

Welch Professor Wilse Robinson has been elected to the Advisory Editorial Board, Journal of Physical Chemistry, and as a member of the Executive Committee, Division of Chemical Physics, American Physical Society. During November 17-20, 1987, Dr. Robinson was at the Argonne National Laboratory serving as a member of the DOE Chemical Science Review Committee.

Dr. Robinson gave numerous lectures on his research into the nature and structure of liquid water. Among them was an invited lecture at the 30th Okazaki Conference, Japan, on "Ultrafast Dynamics of Hydrated Electrons and Protons in Ionic Solution", and an invited paper at the SPIE meeting, Los Angeles, CA on "The Hydrated Electron—Jekyll and Hyde in a Test Tube". Lectures on "Water—Pure Substance and Solvent" were given at the University of Minnesota in April, and to the Texas Forum on Physical Chemistry, in May. Other lectures

were given at Florida State University, Arizona State University, the University of California, San Diego, and to Tech's Department of Physics.

Horn Professor Henry Shine spent the summer in Germany at the Institut für Organische Chemie, Universität Hamburg, during the final period of his Senior Distinguished U.S. Scientist Award from the Alexander von Humboldt Foundation. During that period, Shine was a guest lecturer in the Universität Hannover and the Hahn-Meitner Institut, Berlin. He was a plenary lecturer at the IUPAC Conference on Electron Transfer Reactions, Visby, Sweden and an invited lecturer at the 13th Sandbjerg Conference on Electrochemistry, Sandbjerg, Denmark. Shine presented papers on his research work also at the Conference on Organic Reactivity, Paris, and at the Vth European Symposium on Organic Chemistry, Jerusalem.

Dr. Robert Walkup spoke at the 1987 Gordon Conference on Natural Products Chemistry, New Hampton, NH on "Approaches to Ionophoric Macrolide Natural Products and their α -Methylene Analogues via Intramolecular Oxymetallations of Allenes". Dr. Walkup presented papers at the 193rd ACS meeting, Denver, CO, on "Intramolecular Oxy- and Amidometallations of Allenes: Diastereoselective Syntheses of 2,5-Disubstituted Tetrahydrofurans" and "Silicon-Functionalized Silyl Enol Ethers: Synthesis and Characterization of Alkoxydialkylsilyl Enol Ethers which are Chiral at Silicon". Bob is an active, traveling speaker in the exchange-speaker and recruiting program, in which capacity he presented research seminars at Trinity University and the University of Texas, San Antonio, Sam Houston University, Stephen F. Austin University, and Abilene Christian University.

Bob and Debbie Walkup became the happy parents of William Smith Vanderbilt Walkup on July 15, 1987.

Dr. Richard Wilde attended the Third International Laser Science Conference, Atlantic City, NJ (November).

New Research Grants

Dr. Richard Bartsch

A three-year, \$295,000 grant from the Department of Energy for continued studies of "Metal Ion Complexation by Ionizable Crown Ethers". He has also received a \$55,000, fifth year contract from Techicon Instruments Corporation for further development of "Chromogenic Crown Ethers for the Determination of Metal Ions in Blood". Finally, he is receiving \$70,000 for a two-year period as one of three co-investigators on a Department of Justice grant on "New Reagents for the Development of Latent Fingerprints".

Dr. Walter Chesnavich

American Chemical Society, Petroleum Research Fund: "Multiple Transition States in Ion Molecule Reactions", June, 1987, 3 years, \$52,500.

Dr. Sandy Dasgupta

U.S. Department of Energy: "Approach to Ionic Analysis", December 1987, 25 months, \$173,000.

Jerome Instrument Company: "Jerome Postdoctoral Fellowship", June 1987, 1 year, \$25,200.

Dow Chemical Company: "Pulsed Gas Carrier Stop-Flow Analysis", February, 1988, 1 year, \$29,816.

Shell Research and Development Company: "Flow Injection Analysis for Process Measurements", June, 1987, 1 year, \$25,000.

Dr. John Foley

Robert A. Welch Foundation: "In Situ Infrared Studies of Adsorption on Electrodes", June, 1987, 3 years, \$75,000.

American Chemical Society, Petroleum Research Fund: "Attenuated Total Reflection Infrared Spectroelectrochemistry", September, 1987, 2 years, \$18,000.

Dr. David Knaff

Robert A. Welch Foundation: "Electron Transport Mechanisms in Metallo-Proteins", June, 1987, 3 years, \$75,000.

U.S. Department of Agriculture: "Protein Complexes in Photosynthetic Electron Transport", September, 1987, 3 years, \$195,000.



Representatives from Dow, Texas Operations, present an unrestricted \$5,000 grant to the Department. L to R: Larry Wright (Vice President for Texas Operations), Ric Massie, Ticket Henry, Dick Bartsch, and Elaine Reed (Director, Recruiting and College Relations—Southwest Regional).



Representatives from Hoechst Celanese Co. present an unrestricted \$2,000 grant to the Department. L to R: Jay Trammell, Denise Phillips, Ade Becker, and Dick Bartsch.

Dr. Jerry L. Mills

Higher Education Assistance Fund: "Phosphorus Single and Double Bonds—Stereochemistry of Addition Reactions", September, 1987-August, 1988, \$1,000.

Dr. Wilse Robinson

Robert A. Welch Foundation: "Water as a Pure Liquid and Solvent", June, 1987, 1 year, \$50,000.

Dr. Robert Shaw

NIH Biomedical Research Grant Support Program at Texas Tech: "The Mechanism of Cytotoxicity of Methenoglobin", September, 1987, 1 year, \$4,380.

TTU/SORF, Institute for University Research, College of Arts and Sciences: "Biological Nitrogen Assimilation: Nitrite Reductase", September, 1987, 1 year, \$2,400.

Dr. Henry Shine

Robert A. Welch Foundation: "Radical and Cation-Radical Reactions at Nitrogen Centers", June, 1987, 3 years, \$87,000.

News of Alums

Dr. Joseph B. Ashton (B.S., '52) has been employed with Shell Oil Company for 28 years after obtaining a Ph.D. in organic chemistry at UT. This year (1987) he began a new job at Shell as engineering advisor with the computer contrast group in the Manufacturing and Technical Department. The Ashton's daughter, Beverly, is also a Tech graduate, having received the B.A. (math) degree in July, 1987. Beverly is now a substitute teacher in Spring Branch while studying computer science.

James L. Booker (M.S. '65, Dr. Thompson) is the Director for the Analytical Research Laboratory of Kimberly-Clark Corporation in Neenah, Wisconsin.

Hollis (Chip) Boss (B.A., '81, and M.S., '85), in his capacity as a chemist for the Department of the Army, works at the Pentagon in Washington, D.C.

Dr. Alan Burke (B.A., '83) graduated M.D. (TTUSM) in May, 1987, and began his Family Practice residency at the Medical Center Hospital, Conroe, TX in July.

Dr. Ta-Chau Chang (M.S., '80, Dr. Wilde) is a postdoctoral fellow at Iowa State University, Ames, Iowa.

Richard S. Chen (M.S., '81, Dr. Bartsch) is the Administration Manager for Suntex Instruments Company, Ltd. in Taipei, Taiwan.

Dr. Bong Rae Cho (Ph.D., '80, Dr. Bartsch) is on sabbatical leave from Korea University for the period of January, 1988-August, 1989 and is appointed as Visiting Professor in the Department of Chemistry and Biochemistry of TTU.

Dr. Michael Davidson (Ph.D., '86, Dr. Knaff) has completed a year's postdoctoral research at Mt. Sinai School of Medicine, and has entered the MBA program at Tennessee Tech.

Dr. Karolyn Kirby Eisenstein (B.S., '63; Ph.D., Yale, 1968) has settled into a new field, semiconductors, after years of teaching chemistry. Karolyn has become the Assistant Director of the University of Illinois Center for Compound Semiconductor Microelectronics. Karolyn is married to a physicist and has two teenage sons.

Dr. David H. Ewalt (B.A., '80) has completed his M.D. degree at Southwestern Medical School, and is currently doing a residency at Parkland Memorial Hospital, Dallas, in urology.

Dr. L. Oscar Farng (Ph.D., '80, Dr. Kice) is a research chemist with Mobil Research, Princeton, NJ.

Dr. Dale F. Gaul (Ph.D., '85, Dr. Knaff) is a postdoctoral fellow in the Department of Biochemistry, Colorado State University, Fort Collins.

Dr. Gary Gray (Ph.D., '84, Dr. Knaff) has accepted a position as assistant professor, Pennsylvania State University School of Medicine, Hershey Campus.

Dr. M. Edward Grice, (Ph.D., '87, Dr. Chesnavich) is a postdoctoral fellow at the University of New Orleans.

Dr. J. R. "Bobby" Hudgins (B.A., '78; M.D., UT Galveston, '84) finished his residency in Internal Medicine at the University of Oklahoma in June, 1987. Having married in April, 1986, he and his wife plan to travel for six months before entering into private practice.

Dr. Robert Lehman (B.S., '77; M.D., '82) has completed his residency in internal medicine and is currently training in cardiology at the University of Oklahoma.

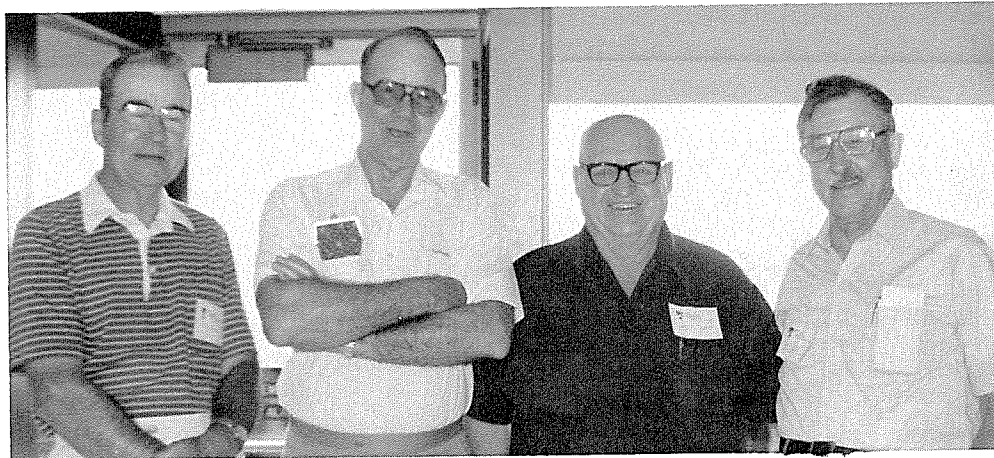
Dr. Yung Liu (Ph.D., '83, Dr. Bartsch) is a Plasma Etching Engineer for Texas Instruments in Lubbock.

Dr. Koonha Park (Ph.D., '83, Dr. Shine) assistant professor in the Department of Chemistry, Chung Nam National University, Korea, is a member of the research team which has received one of the largest Korean research grants.

Cecil Pinkerton (B.A., '42) retired to Tampa, Florida in 1986 from the U.S. Public Health Service Commissioned Corps. Cecil has written that in 1942 he was a chemistry lab assistant to Dr. Robert Goodwin (later President of Tech), and that at that time Dr. Joe Dennis (later Head of the Department) was making plastics out of cotton seed. (Remember that, Joe?). After graduating in 1942 Cecil went to Washington, D.C., where he worked for a number of United States agencies: NBS, USDA, and the National Cancer Institute. Later, Cecil worked for 14 years with the EPA in N. Carolina.

Tracey D. Price (B.S., '84; M.S., '87, Dr. Knaff) has joined Eli Lilly (pharmaceuticals), Indianapolis, IN, as a research biochemist.

Dr. Michael J. Puglia (Ph.D., '86, Dr. Bartsch) is a Project Leader for the Dry Chemistry Research Laboratory of the Diagnostics Division of Miles Laboratories, Elkhart, IN.



Class of '37. Four "senior citizens" from TTC days photographed in front of the Museum, May 14, 1987, on the occasion of the 50th anniversary of the class of '37. L to R: Dysart Holcomb (B.S., Chem E, Ph.D., Michigan, Dean of Tech's College of Engineering from 1950 to 1955), H. A. Holcomb (B.S., Chem E, Ph.D., UT), Leldon Hudson (B.S., Ag), and Edwin Parker (B.A., Chem., Ph.D., UT).

Dr. Edwin D. Parker (B.A., '37; Ph.D., UT) sent us the photograph in this issue which features four Tech exes from the class of 1937. The photo was taken by Ed's wife, Esther, at the Tech Museum on May 14 when the exes were on campus celebrating their 50th class anniversary. In that photo with Ed are shown **Dysart Holcomb, H. A. Holcomb and Leldon Hudson**. Ed wrote that all four are from Wellington (Collinsworth County), and all attended Wellington High School, and attributed their interest in chemistry in large part to their excellent chemistry teacher, E. B. Walchter. This Editor remembers, but only distantly, when Dysart Holcomb was Tech's Dean of Engineering.

Kenneth F. Rash (B.S., '69; M.S. '77, U.C. Davis) has written from Minneapolis that he is still not a chemist but a "well-educated" airline pilot with Northwest Airlines, "analyzing" carefully the merger mania of the airline industry.

Dr. Michael R. Smith (B.A., '80) has received the M.D. degree from U.T. Galveston and is currently a resident physician in the Department of Family Practice at TTU's Health Science Center.

Warren R. (Randy) Snyder (B.S., '81) was married in June, and was promoted to Supervisor of the State Crime Lab. in Houston in August, 1987. Randy's work in the Crime Lab. entails drug analysis, serology, trace evidence, and blood alcohol analysis, as well as testimony.

Eldon L. Stapp (B.S., '71; M.S. Dr. Carlyle, '73) is area manager for Betz Industrial, the Water Management Division of Betz Laboratories, Inc., Amarillo, TX.

Frank B. White, III (B.S., Ch.E. '59) is working with U.S. Bureau of Mines Helium Operations in the Mechanical Engineering Section. Frank reminisced about the old days on seeing the photos of the renovation in last years newsletter. He recognized the utility ways in the floor of the basement under the large lecture room (the old C101) where he had unit operations. Frank was a graduate assistant the year Chem E moved its equipment to its own building, and learned a lot about what the insides of process equipment looked like. Them days is gone, Frank, and we have said final farewell to our former colleagues, Gus Oberg and Jules Renard.

David Womack (B.S., '83) has moved to Arlington and is teaching chemistry and honors chemistry at Cedar Hill High School in southwest Dallas. He is also the UIL Science sponsor (his best student finished 2nd in the State Meet in May), and co-sponsor of the Junior Class and also of the organization "High on Life". In the fall, 1987, David planned to begin working on an MBA degree at UT-Arlington.

David sent news of other exes: **Lyndra Bills** (B.S., '83, Chem) was in her 3rd year in medical school in San Antonio. **Steve Stults** (B.S., '83, Chem) was in the last lap of his Ph.D. degree at U.C. Berkeley. **Rob Tschauner** (B.S., '83, Chem) was recently married and was about to finish his work in medical school. **Rick Matos** (B.S., '83, Chem) was about to finish his Ph.D. at TAMU. **Lisa Burns** (B.S., '83, Chem) was nearing completion of her graduate work in medical microbiology. Thanks for the news. David.

Dr. Shi Ming Wu (Ph.D., '77, Dr. Shine) has left the University of Illinois, Urbana, to join the research labs of Mobil Research, Princeton, NJ.

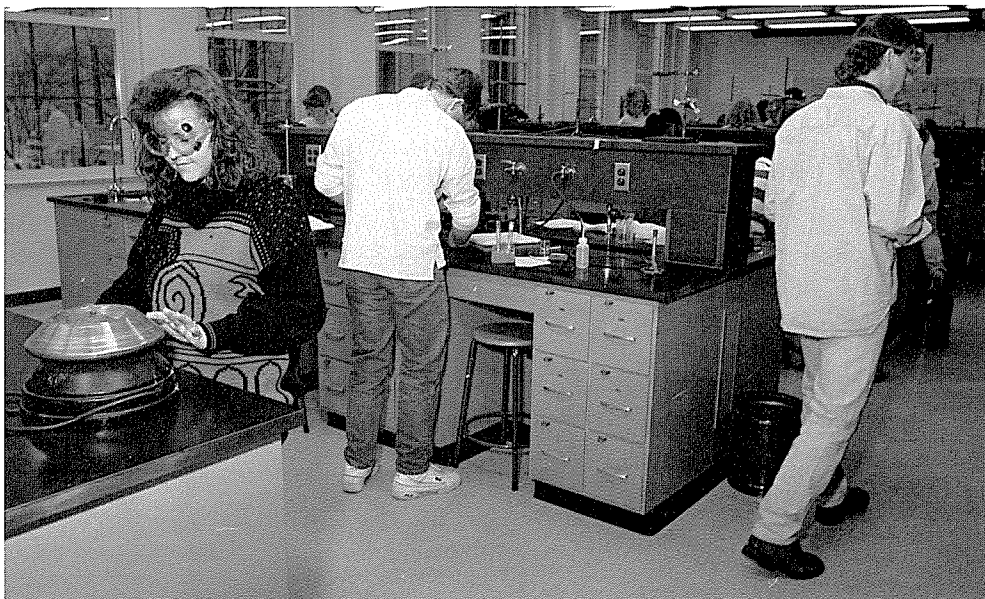
Dr. Max Wynn (Ph.D., '86, Dr. Knaff) is a postdoctoral fellow in the Division of Plant Biology, University of California, Berkeley.

Huey Yang (M.S., '86, Dr. Dasgupta) has entered the Ph.D. program at UT, Austin.

Dr. Taehyoung Zyung (Ph.D., '86, Dr. Wilde) is a postdoctoral fellow at the University of Illinois, Urbana.



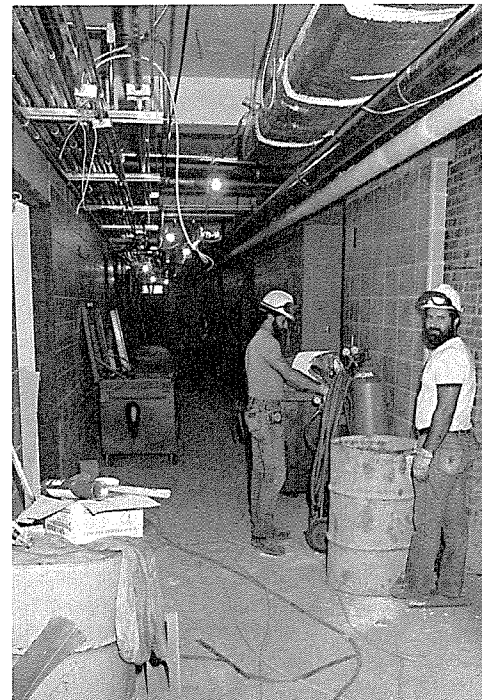
The familiar old building. No change has been made in the outer appearance.



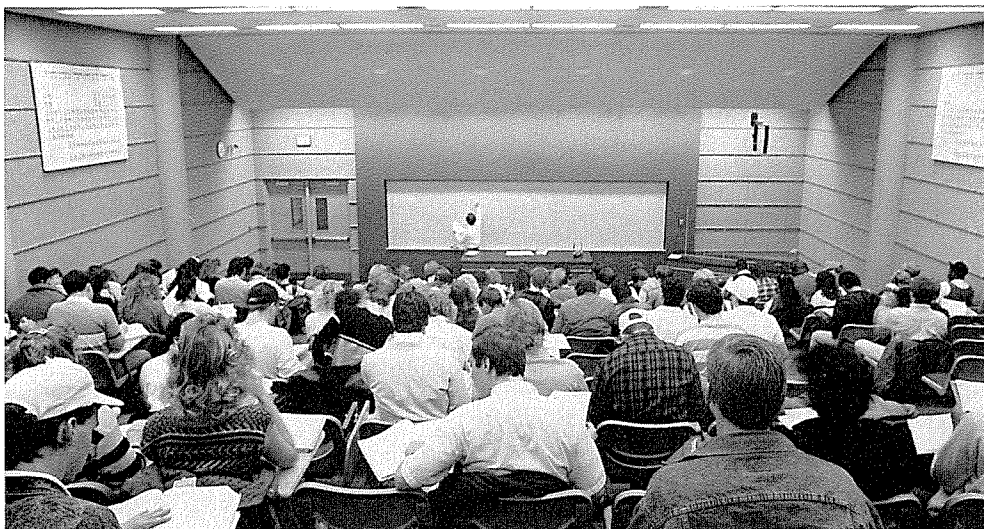
A new general chemistry lab, first floor, south side of renovation.



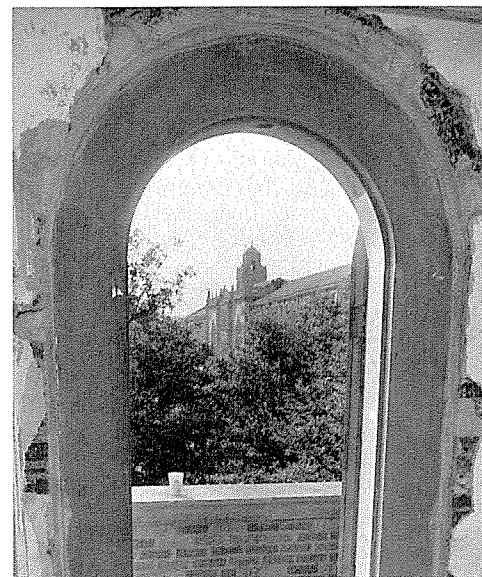
The old C-112 undergoing its face-lift.



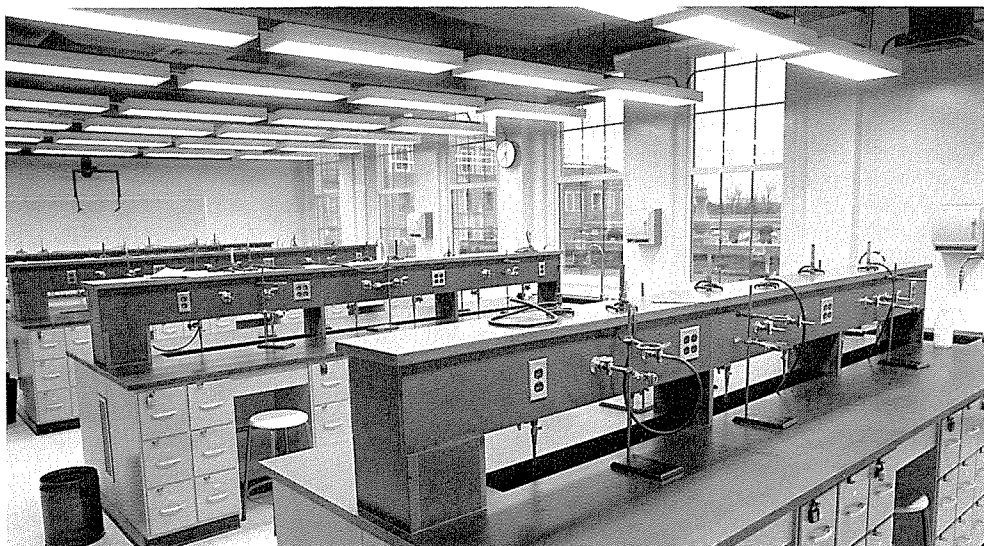
The corridors undergo a face-lift, too.



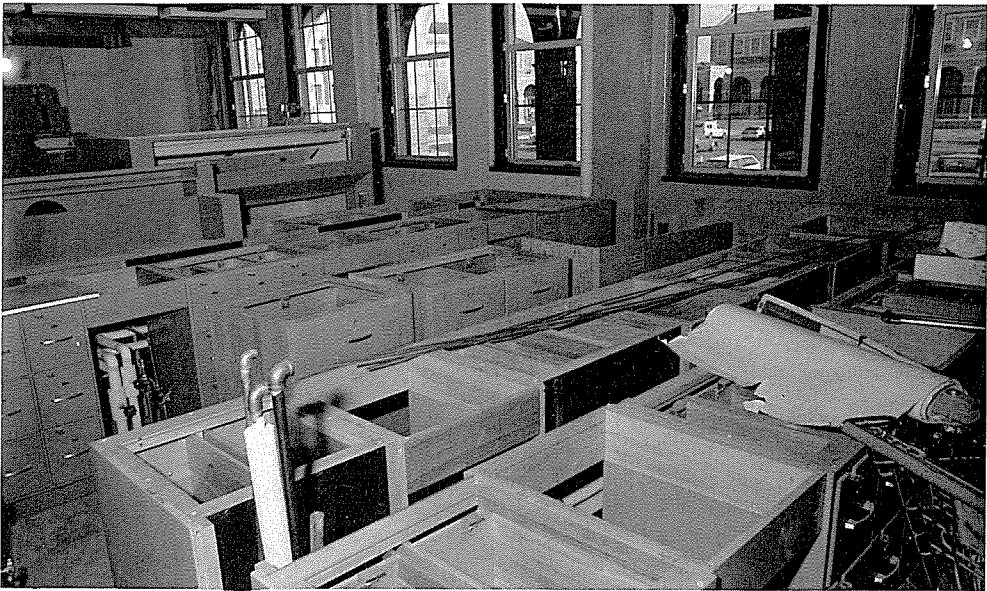
What was C-112 is now C-107.



Looking eastward toward the "Ad" building.



One of the 10 new general chemistry labs, this one for 24 students, second floor north overlooking the quadrangle.



One of the 10 general chemistry labs in the making, first floor north side, looking on to the quadrangle.



Lab work is what its all about.

Classnotes

Do you enjoy reading about friends and classmates? Why not return the favor—drop us a line and a (preferably black and white) photo.

- ☐ Married?
- ☐ New Job?
- ☐ New Baby?
- ☐ Promoted?
- ☐ Take a Trip?
- ☐ See a Classmate?
- ☐ Moved?
- ☐ Back in School?
- ☐ Other?

Send us details: _____

Name _____

Class _____ College _____

Address (_____ New?) _____

Where are you, alums?

Let your news pour in. Send it now before you forget, and before your good intentions join all others in paving the road to you know where.

Texas Tech University
Department of Chemistry & Biochemistry
Lubbock, Texas 79409

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