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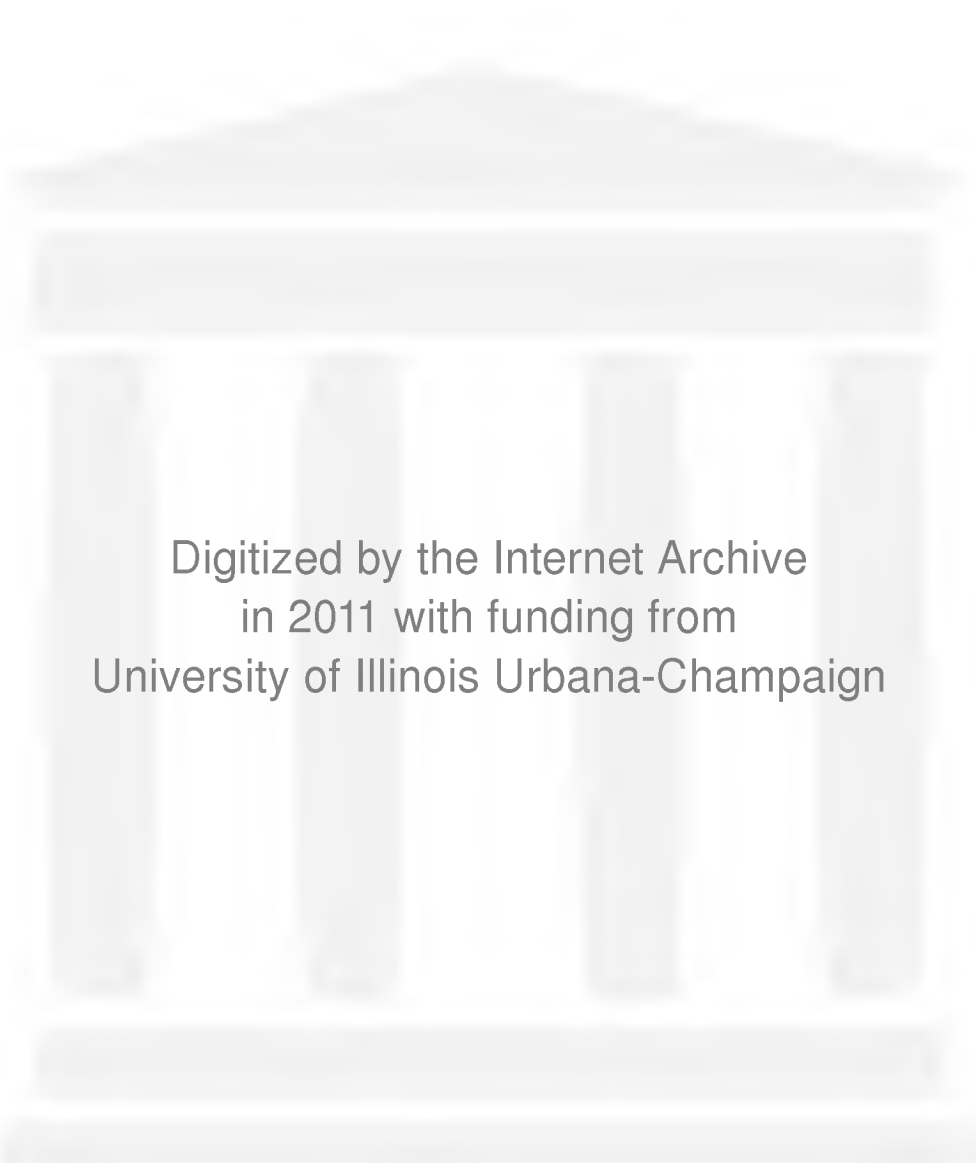
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# NINETEENTH ANNUAL NEWSLETTER

DEPARTMENT of GEOLOGY  
University of Illinois  
Urbana

1968-69

GEOLOGY LIBRARY





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## To the Alumni:

When I wrote to you in June, the start of the 1969-70 academic year seemed quite distant--now it is here. The lull that followed the close of the summer session has been replaced by a quickened tempo with the return of students to Champaign-Urbana. Fortunately, the Departmental Newsletter was almost ready to "go" when they returned.

We appreciate the response we have had from alumni and friends for news to be included in this Newsletter. Although information about new staff appointments, other changes in the Department, and research activities of the staff will be found in the Newsletter itself, I would like to comment further on several exciting new programs presently being developed in the Department and a change in the undergraduate curriculum.

For the past two years the Department of Geology has been involved in re-evaluation of its undergraduate program in geology. The curriculum and course offerings of the Department have been critically examined in consideration of the needs of students facing a modern graduate curriculum or professional work in the geological sciences today. It was recognized that greater emphasis needed to be placed on integrating traditional training with more modern approaches, and with developing certain intermediate courses that would provide a smoother transition from elementary courses of the undergraduate program to the more advanced work of the graduate program. As a result of our evaluation, we proposed and have received approval for a new curriculum leading to the Bachelor of Science degree in Geology, and a modification of the requirements for a major in geology leading to the Bachelor of Arts or Science in the sciences and letters curriculum. The new curriculum in geology is designed for students who plan to enter graduate study in geology and become professional geologists. It offers more training in geology and basic science than is required of students who make geology their major subject in the sciences and letters curriculum in liberal arts and sciences. The latter program is intended for students wishing to obtain a background in geology for use in a related field, such as law, library science, or secondary teaching.

We anticipate new and exciting developments in sedimentology and marine geology in the immediate future. We have appointed Dr. George deV. Klein, presently at the University of Pennsylvania, to replace Adrian F. Richards, who resigned this year to accept a position at the Center for Marine Studies at Lehigh University. As many of you know, Dr. Klein has been largely concerned with the distribution of shallow marine sediments, the mechanisms of sediment transport, the stability of sedimentary features in near-shore environments, and the interpretation of these environments from the sedimentary record. We have also appointed, on a part-time basis, Dr. Daniel J. Stanley, who is Supervisor and Curator of the Sedimentology Division of the Smithsonian Institution. Dr. Stanley has been very active in research projects pertaining to modern and ancient deep-sea sediments--including their origin and dispersal and depositional patterns. Through this latter appointment, opportunities will be open to our graduate students to participate in ocean cruises and programs in sedimentology and marine geology being carried on by the Smithsonian Institution. Professor Klein will join us in February and Professor Stanley will spend several weeks with us in both semesters of the coming year.



The appointments of Dr. Patrick A. Domenico in ground-water hydrology and Dr. Franklin D. Patton in engineering geology last September provided the necessary complement to the research and teaching areas of Professors Deere (engineering geology), Donath (structural geology), Eades (applied mineralogy), and Johnson and White (Pleistocene geology) to make this department one of the strongest and most attractive places in the country for graduate work in engineering geology and ground-water geology. And the permanent appointment of Dr. Dennis S. Wood, who has held a visiting appointment in the Department for three semesters, adds new areas of competence in structural geology that, along with present staff members D. E. Anderson, Chapman, and Donath, make this department one of the best for graduate study in this important field of geology.

Since the retirement of Dr. Ralph Grim and because of the resignation of Dr. F. Michael Wahl, who left to become Chairman of the Geology Department at the University of Florida, Gainesville, we have given serious thought to the needs of the Department in the areas of clay mineralogy and sedimentary geochemistry. Significant steps in meeting certain needs in these areas were taken with the appointment last year of Dr. Necip Guven and the more recent appointment of Dr. Donald L. Graf. We were fortunate to have had Dr. Graf with us from the University of Minnesota as a visiting professor during the second semester this past year to give a special short course in sedimentary geochemistry. Along with the continuation of research activity in other areas of sedimentary geochemistry, he plans to begin an experimental program to measure the properties of clay membranes as a function of pressure, temperature, mineralogy, and solution composition. Among other research interests, Dr. Guven is undertaking the study of the crystal structure of the important clay mineral, illite. These additions to our staff will contribute greatly to our program in clay mineralogy, as well as to those in sedimentary mineralogy and geochemistry.


Following numerous discussions among many individuals about the proposed geophysics program and directions it might take, and largely through the efforts of Dr. J. Rimas Vaisnys, who spent 1968-69 in the Department as a Visiting Associate Professor while on leave from Yale University, we have interested two outstanding young solid state physicists in applying their expertise to problems of geological nature. Dr. Jon T. Holder is an experimental solid state physicist who has been working on the thermodynamic properties of solids. He has just completed a year of postdoctoral work with Professor Granato in the Physics Department, and has been involved in ultrasonic studies of defects in crystals and of nonlinear elastic constants of materials. Dr. Victor Palciauskas is a theoretical solid state physicist who has just completed his Ph.D. under Professor Kadanoff in Physics. His work has been on the theory of phase transformations, and he is interested in applying techniques of mathematical physics to geological problems. Both are now giving courses dealing with topics in solid state physics and mathematical methods that are of importance to workers in the geological sciences. In connection with the geophysics program, Dr. Vaisnys holds an appointment as Visiting Lecturer and will spend 10-11 weeks with us during the year.



Two other appointments have been made to provide much needed assistance in the administration of the Department. Dr. W. Hilton Johnson has been appointed Assistant to the Head and will devote approximately 50 per cent of his time to coordinating educational activities of the Department. William R. Latham III was also appointed Assistant to the Head and will coordinate various business matters. Mr. Latham is working on a Ph.D. in economics. These appointments have contributed substantially to the orderly handling of the administration of the Department, and are providing me with much-valued time to participate in limited research and teaching activities.

We hope that you find this Newsletter interesting, and we welcome news of your recent activities that might be of interest to your fellow alumni for inclusion in the next issue.

Sincerely yours,

  
Fred A. Donath  
Professor and Head

9-15-69





## GEOLOGY STAFF, 1968-69

## ACADEMIC STAFF:

Fred A. Donath, professor and head of department  
 David E. Anderson, assistant professor  
 Thomas F. Anderson, assistant professor  
 Daniel B. Blake, assistant professor  
 Albert V. Carozzi, professor  
 John L. Carter, research associate  
 Carleton A. Chapman, professor  
 Charles W. Collinson, professor  
 Don U. Deere, professor  
 Patrick A. Domenico, associate professor  
 James L. Eades, research assistant professor  
 Lester S. Fruth, Jr., research associate  
 John C. Frye, professor of geology and chief, Illinois Geological  
     Survey  
 Donald L. Graf, visiting professor (Semester II)  
 Ralph E. Grim, research professor emeritus  
 Necip Glüven, assistant professor  
 Arthur F. Hagner, professor  
 William W. Hay, professor (on leave, Semester I and II)  
 Donald M. Henderson, associate professor (on leave Semester II)  
 W. Hilton Johnson, associate professor  
 Ralph L. Langenheim, Jr., professor (on leave, Semester II)  
 William R. Latham III, assistant to the head  
 C. John Mann, assistant professor  
 Franklin D. Patton, associate professor  
 Robert W. Pierce, instructor  
 Adrian F. Richards, professor  
 Philip A. Sandberg, assistant professor  
 Harold W. Scott, professor emeritus  
 J. Rimas Vaisnys, visiting associate professor  
 F. Michael Wahl, associate professor  
 Harold R. Wanless, professor emeritus  
 George W. White, research professor  
 Dennis S. Wood, visiting lecturer (Semester II)

## OFFICE, LIBRARY, AND LABORATORY:

Shirley Ate, clerk-typist  
 Candace Baker, clerk-typist  
 John F. Bauerle, machine shop supervisor  
 Sara Brown, clerk-typist  
 Donald D. Dodson, instrument maker  
 Charlotte Lake, clerk-stenographer  
 Leslie R. Lewis, draftsman-illustrator  
 Janice C. Nicholson, clerk-typist  
 Jack O. Pullen, thin-section technician  
 Robert L. Roderick, laboratory assistant  
 Dorothy G. Smith, secretary  
 Harriet W. Smith, geology librarian  
 Ann Travis, clerk-typist  
 Barbara Vierra, clerk-typist



## POSTDOCTORAL FELLOWS:

Lubomir F. Jansa	RN Dr '56 CSc '67	Masaryk University Charles, Prague, Czech.
Hermann Pfefferkorn	BS '62, MS '66, PhD '68	Univ. of Munster
John Roberts	BS '59 PhD '63	New England, Armidale Western Australia

## FELLOWS:

## University of Illinois Fellowships

Johan P. deVilliers	BS '64 PhD '69	Orange Free State Illinois
Ian M. Steele	BS '66	Rensselaer Polytechnic
Sherwood W. Wise	BS '63 MS '65	Washington & Lee Illinois

## NDEA IV Fellowships

David L. Gross	AB '65 MS '67	Knox College Illinois
Michael C. Moore	BS '65	Indiana
Richard P. Sanders	BS '65, MS '67	Northern Illinois

## National Science Foundation Traineeships

Alan T. James	BS '68	Illinois
Stephen R. Moran	BA '65 MS '67, PhD '69	College of Wooster Illinois

## National Lead Company (Baroid Division) Fellowship

Margaret A. Kasowski	BS '64 MS '68	Univ. of Ottawa Illinois
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## TEACHING ASSISTANTS:

George J. Allgaier	BS '64, MA '69	Univ. of N. Y. at Buffalo
Matthew J. Avcin	BA '65	Lafayette College
Nathan J. Ayer	AB '62, MS '65	San Diego State
Glenn R. Buckley	BS '67, MS '68	Wayne State
William J. Byrd	BS '66	Wisconsin at Milwaukee
Rufus T. Getzen	BA '65 MS '67	Wake Forest South Carolina
Michael Hansen	BS '65 MS '67	Idaho State North Carolina-Chapel Hill
Gerald V. Henderson	BS '57, MS '58 PhD '69	Brigham Young Illinois
Alan K. Kuhn	BS '63 MS '68	Duke Colorado State
Chang-lu Lin	BS '64 MS '67	Natl. Taiwan Univ. Washington State
Raul S. Lopez	Geologo '64	Natl. Univ. Cordoba
Alexander J. Maltman	BS '67	Univ. of Liverpool
Bruce A. Masters	BS '59 MA '62	Valparaiso California at Berkeley
Patrick T. McCullough	BS '64 MS '68	Univ. of British Columbia Illinois
Sahar A. McCullough	BS '65	Damascus University
Frank J. Nowak	BS '67	Notre Dame
Douglas E. Pride	BS '64, MS '66	Wisconsin at Madison
C. Prasada Rao	BS '60, MS '61	Central Coll. Bangalore
James E. Roche	BS '62 MS '67	Wisconsin Illinois
Michael L. Sargent	BS '64	Wisconsin



Charles H. Simonds	BS '67	Stanford
	MS '69	Illinois
Brian J. Sinclair	BS '64	McGill University
William Size	BS '65, MS '67	Northern Illinois
Alan F. Skrzyniecki	BS '66	Toledo
Richard A. Smosna	BS '67	Univ. of Michigan
Ronald D. Stieglitz	BS '63	Wisconsin at Milwaukee
	MS '67	Illinois
Heribert Stindl	BS '63	Justus Liebig
	MS '65	Kansas State
Gary D. Stricker	BS '63, MS '65	Wayne State
Thomas R. Worsley	BS '65	City Coll. of New York
	MS '67	Tennessee
William H. Wright III	BA '65	Middlebury
	MA '67	Indiana
<b>RESEARCH ASSISTANTS:</b>		
R. James Kirkpatrick	BA '68	Cornell
Chao-li Liu	BS '64	Natl. Taiwan Univ.
	MS '67	Washington State
Donald Marszalek	BS '61, MS '69	Illinois
Donald G. Miller	BS '68	Illinois
<b>OTHER GRADUATE STUDENTS:</b>		
Ramakant P. Agaste	BS '55, MS '57	University of Poona, India
Donald B. Allen	AB '61	Fresno State
	MS '66	Illinois
Susan B. Avcin	BA '67	College of Wooster
Paul R. Boyer	BS '63	Allegheny College
	MS '65, PhD '69	Illinois
Ross D. Brower	BS '63	Purdue
	MS '69	Illinois
Robert Brownfield	BS '50	St. Louis University
	MS '55	Illinois
Louis W. Butler	BS '61, MS '64	San Diego State
Thomas L. Chamberlin	BS '68	Michigan State
William E. Cote	BA '62	Univ. of Massachusetts
	MS '67	Illinois
Sergio N. A. DeBrito	BA '63	Escola de Minas de Ouro Preto, Brazil
Thomas P. L. Dowell, Jr.	BS '49	Emory University
Peter J. Ealey	BS '63	Birmingham
	MS '66, PhD '69	Illinois
Richard W. Ely	AB '62	Cornell
	MS '69	Illinois
Gordon S. Fraser	BS '68	Illinois
James C. Gamble	AB '62	Earlham College
	MS '67	Illinois
Abdul-latif Hamdan	BS '64	Damascus University
Joyce S. Hanson	BA '67	Marquette University
Paul C. Heigold	BS '57, MS '61, '63	St. Louis University
	PhD '69	Illinois
Randall E. Hughes	BS '66	Illinois
Donald O. Johnson	BS '65, MS '66	Northern Illinois
Milton A. Kanji	Geologo '60	Univ. de Sao Paulo, Brazil
Ronald A. Kern	BA '68	Univ. of Rochester

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John D. Kiefer	BA '61	St. Joseph's College
	MS '65	Illinois
Warren L. King	BA '64	State Univ. of Iowa
Thomas F. Lawry	BS '32	Allegheny College
	BS '35	Univ. of Pittsburgh
Richard L. Leary	BS '58	Virginia Polytechnic
	MS '61	Univ. of Michigan
Murray R. McComas	BA '56, MA '66	Colorado State
Alberto Nieto-Pescetto	BA '61	San Marcos
	MS '64	Washington University
William A. Olsson	BA '66, MS '68	Southern Illinois
James E. Rogers	BS '67	Western Illinois
Frank B. Sherman, Jr.	BA '57	Dartmouth
	MS '68	Colorado State
Michael P. Stephens	BS '68	Univ. of Texas
Peter J. Tarkoy	BS '64	City Coll. of New York
	MS '67	Tennessee
James G. Ward	BS '61	College of Wooster
Margaret J. Weatherhead	BS '69	St. Joseph's College
Owen L. White	BS '58	Univ. of Melbourne
	MS '61	Univ. of Toronto





## NEWS OF STAFF MEMBERS

DAVID E. ANDERSON. Professor Anderson has devoted a great deal of his time this past year to putting his research laboratory into working order. The laboratory, to be used for experiments in multicomponent isothermal diffusion and thermal diffusion in minerals and mineral glasses, is nearing completion. Remodeling of the area has been completed; two isothermal diffusion furnaces and supporting equipment have been installed and are being tested; and a third furnace will be constructed in the near future. Special laboratory equipment for this project, funded by National Science Foundation and the University Research Board, is being constructed in the departmental machine shop and in the glass-blowing shop. The completion of Professor Anderson's laboratory will not only further his research but also that of three PhD students and two MS students currently working toward degrees under his supervision.

Professor Anderson taught both undergraduate and graduate courses this past year and led his classes on field trips to Missouri, Michigan, and Kentucky. As advisor to the Geology Club, he headed another field trip to Michigan. He also served as a member of the staff of the Geology Summer Field Camp at Sheridan, Wyoming during the summers of 1967 and 1968.

In April, 1969, he attended a meeting of the American Geophysical Union in Washington, D. C.

THOMAS F. ANDERSON. During 1967-68 Professor Anderson spent a leave of absence doing postdoctoral research at the Enrico Fermi Institute of the University of Chicago. His research there involved the investigation of self-diffusion of carbon and oxygen in carbonates under high CO<sub>2</sub> pressures, and the determination of equilibrium oxygen isotope fractionation factors in pyroxenes and olivines.

With the establishment of a research facility in isotope geochemistry at Illinois, Professor Anderson will be able to begin a study of the rates and mechanisms of isotope exchange reactions in mineral systems. He hopes to interest other staff members in the application of stable isotope variations to particular geologic problems. It is anticipated that the laboratory facilities will be in routine operation by the end of the year.

Doctor Anderson taught two new courses in geochemistry this past academic year. He also participated in the summer institute, "Digital Electronics for Scientists", at the University of Illinois and gave a lecture at the Illinois State Geological Survey on the kinetics of isotope exchange in carbonate minerals.

DANIEL B. BLAKE. Professor Blake spent a major portion of last summer in Washington, D. C. where he carried out research on echinoderms at the United States National Museum. This past academic year he taught courses in historical geology, and biostratigraphy. In addition, he and Professor Patton served as coordinators for the scheduling of colloquia and special lectures.

Next year he will be on leave and plans to spend the year studying Bryozoa at United States National Museum in Washington, D. C.



ALBERT V. CAROZZI. In the fall semester 1968-69, Professor Carozzi initiated a new course on the history of geology which will be part of an interdepartmental program in the history of science of the Liberal Arts and Sciences College.

In October 1968, the University of Illinois Press published his annotated translation from the French of Telliamed of B. de Maillet (1748), an ultra-neptunian theory of the earth. (Congratulations are due Professor Carozzi for having this outstanding work selected for the 1969 Association of American University Presses Book Show.) He has now completed an annotated translation from the Latin of An Introduction to the Natural History of the Earth of R. E. Raspe (1763) in collaboration with Mrs. Audrey N. Iversen, our former Geology Librarian now at the University of Maryland. An appointment as associate member of the Center for Advanced Study at the U. of I. this fall will allow Professor Carozzi to begin a translation of the Voyages dans les Alpes of H. B. de Saussure, an 8-volume classic (1779-1796). In recognition of his studies in the history of geology he has been appointed a Corresponding Member of the International Committee on the History of Geological Sciences.

In the field of sedimentary petrography, Doctor Carozzi continues with his graduate students the microfacies study of carbonates in the Middle West and in Nevada, concentrating presently on Devonian and Mississippian rocks. In the fall of this year his translation from the French of the book of L. Cayeux, Limestones and Dolomites (1935), a classical volume long out of print, will fill a need in that particular field.

Professor Carozzi served on several committees of the Society of Economic Paleontologists and Mineralogists and as councillor for mineralogy in 1968-69. He lectured in Rio de Janeiro in July for the American Association of Petroleum Geologists continuing education program and will attend a seminar in recent carbonate cementation in Bermuda this September.

His supervision of mineral exploration in the Ivory Coast with Professor Ralph E. Grim continues, now in its ninth year, and programs are being prepared for 1971-75.

JOHN L. CARTER. Doctor Carter has been continuing his study of Carboniferous brachiopods. He and his wife, Ruth, have spent many weekends on trips through the central United States, where they collected Mississippian brachiopods.

Dr. Carter taught a course this past spring semester on historical geology and says he enjoyed it very much, although, he adds, "once a year is enough!" The Carters have purchased a new home in Champaign at 1611 Cornell Drive.

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CARLETON A. CHAPMAN. Professor Chapman toured Ireland with Mrs. Chapman for three weeks in June, 1968. They travelled about 2,500 miles by car and visited many points of geologic, scenic and historical interest. A major purpose of the trip was to scout the country for potential geologic problems to be studied during an anticipated leave of absence in 1971. The geologic highlights of the visit included the coastal geology of the Ring of Kerry and Killarney area, the granitic intrusions of the Mourne Mountains and of County Donegal, the metamorphic rocks of Connemara and the Antrin Plateau, and Giant's Causeway.

During the school year Professor Chapman devoted full time to undergraduate and graduate teaching and to research. In conjunction with several thesis studies by graduate students, he carried on an investigation of the origin and mechanics of emplacement of the Maine coastal granites. Theories developed in Maine are now being tested by two students on the plutons of the White Mountain magma series in eastern New Hampshire and western Maine.

In June 1969, Professor Chapman attended the Symposium on Alkaline Rocks at a joint meeting of the Geological Association of Canada, the Mineralogical Association of Canada, and the Mineralogical Society of America at the University of Montreal. Later he and Mrs. Chapman attended their son's graduation from the University of Rochester in Rochester, New York.

CHARLES W. COLLINSON. During the past year, Professor Collinson divided his time between the Geology Department and the Geological Survey where he has just been appointed Head of the Stratigraphy and Areal Geology Section. He has continued studies of the Devonian paleogeography and paleoecology in the northern Midcontinent and in February took his Marine Environments class to the Florida Keys where they examined a variety of carbonate environments in nearshore and inshore areas.

During the winter months, Dr. Collinson was very active as Chairman of the Geological Society of America Committee on Publications wherein he devoted much time to modernization of the G.S.A. publication program. A new abstract series, broader subject coverage, short publication delay and colored dust jackets are some achievements arising from the revitalized program. He reported the results to the G.S.A. Council in Mexico City in November and was asked to continue for an unprecedented fourth year as special consultant to the Council.

Dr. Collinson was also deeply involved in revision and expansion of the G.S.A. - American Geological Institute Bibliography and Index of Geology which abandoned the printing of abstracts, substituted descriptors (key words), and expanded coverage to include references from Abstracts of North American Geology, Geophysical Abstracts and other such publications with a goal of eventually offering broad subject coverage of the world's earth science literature.

In May, Professor Collinson participated in the 2nd Annual Meeting of the Pander Society at Columbus, Ohio where he presented the Conodont Chronology of the North American Mississippian which has been included in a G.S.A. Memoir, now in press.



DON U. DEERE. Professor Deere attended the Rock Mechanics Symposium in Madrid in September and met with the International Commission on Standardization of Laboratory and Field Testing of Rock, of which he is chairman. He also made several visits to Churchill Falls Hydroelectric Project in Labrador as consultant to the design engineers. Dr. Andrew H. Merritt (PhD '68) is the senior geotechnical engineer at the site.

In conjunction with his position as a consultant to an iron ore mining firm in Chile, Professor and Mrs. Deere spent a week in that country in April. The primary purpose of the trip was to consider the deepening of an open-pit mine from 500 feet to 1,000 feet over the next few years.

PATRICK A. DOMENICO. A newcomer to the Department, Professor Domenico received BS and MS degrees from Syracuse University and earned his PhD degree in 1967 from the University of Nevada, Reno. He held a research associate position in Hydrology at the Desert Research Institute from 1962 until his appointment as associate professor of geology.

A new hydrology laboratory has been completed on the third floor of the Natural History Building for Professor Domenico's use. He has spent much of his time over the past year arranging, supplying, and making the lab functional. In addition, he taught hydrogeology, advanced hydrogeology, and an undergraduate geology course for engineers during the academic year.

In June, 1969, Dr. Domenico was chairman at the Penrose Conference, American Water Resources Association meeting in Milwaukee, Wisconsin on "Groundwater Systems Analysis".

FRED A. DONATH. Although most of his time was understandably spent on administrative matters, Professor Donath continued his research during the past year on the effects of anisotropy on the deformational behavior of rock. One of the papers which resulted from this study, discussing the origin and significance of kink bands, has just appeared in the Geological Society of America Memoir on Igneous and Metamorphic Geology (Memoir 115) in honor of Professor Donath's former colleague and close friend, the late Arie Poldervaart.

With the able assistance of his research associate Dr. Lester S. Fruth, Professor Donath also got his high pressure laboratory for experimental rock deformation into working order during the past year. Equipment is available in the laboratory for nearly all types of rock deformation testing and for consolidation testing of sediments. Work on the deformational behavior of most common rock types under various pressures, temperatures, and strain rates will continue, with emphasis on understanding the mechanisms of deformation, the conditions under which the mechanisms operate, and the application of this understanding to the interpretation of natural geologic deformation.

During the spring semester Professor Donath gave a graduate course on principles of structural geology like that which he had developed and given for a number of years at Columbia University. Also during the spring, he gave 12 hours of lecture on dynamic structural geology





to the Wyoming Geological Society in Casper, Wyoming, as part of the American Association of Petroleum Geologists Continuing Education Program. Earlier in the year he had given lectures at the University of Massachusetts, Amherst College, and Smith College.

In April, he attended the meetings of both the AAPG in Dallas and the American Geophysical Union in Washington, D. C.

JAMES L. EADES. Doctor Eades' ten hours of allotted time per week on the Scanning Electron Microscope revealed many secrets which were tied up in soil stabilization, calcination of various limestones, concrete effected by fire, mortar and other industrial minerals and compounds. He cooperated and shared his microscope time with many researchers having mutual interests, especially Dr. Guerry McClellan (PhD '64) from Tennessee Valley Authority research, with whom he coauthored a paper.

This research led to many requests for lectures on industrial mineral problems and Dr. Eades responded by lecturing to groups in Atlanta, Georgia, Toledo, Ohio, and Rapid City, South Dakota. He spoke at the annual Engineering Geology Symposium which was held at the University of Illinois this year, the Lime and Lime Flyash Committee meeting of the Highway Research Board in Washington, D. C., and also gave a paper at the annual American Society of Testing Materials meeting held in Atlantic City, New Jersey.

This past year, Dr. Eades along with five professors from the U. of I. Engineering Department, served as advisors to an Agency for International Development program which was set up between the United States and Ghana, Africa. The two-year program is to study ways of stabilizing lateritic soils. The group made a trip to Ghana and visited the laboratories at Kumasi. They plan to return later this year for further study.

JOHN C. FRYE. The past academic year has been filled with many activities and committee positions for Professor Frye. During 1969, he completed a three-year term as chairman of the Committee on Space Programs for Earth Observations, National Academy of Science-National Research Council, the advisory to the United States Department of the Interior. He will continue as a member of this committee, and of the Panel on Geology and Mineral Resources. He also served on the Committee on Mineral Science and Technology, the National Academy of Science-National Academy of Engineering-National Research Council, the advisory to the U. S. Bureau of Mines. His report on the state of mineral science in the U. S. will soon be published.

In addition, Professor Frye served on the Committee on Radioactive Waste Management, NAS-NAE-NRC, advisory to the Atomic Energy Commission; the Committee on Health Physics, advisory to the Director of Oak Ridge National Laboratory; the Committee on Federal, State and Local Government Relations of the American Association of Petroleum Geologists, of which he was chairman; the Executive Advisory Committee on Future Oil Provinces of the U. S. of the National Petroleum Council; the Executive Committee of



Illinois Water Center, University of Illinois; and the Executive Committee on Natural Sciences of the U. S. National Commission for UNESCO. He is a member of the Earth Sciences Division of NRC, and started terms on the Geophysics Research Board, NAS-NAE-NRC, and the Executive Committee of the American Institute of Professional Geologists. He will continue as an associate editor of the Geological Society of America.

RALPH E. GRIM. During 1968 Professor Grim visited Australia twice at the invitation of the Western Australian government to consult on industrial minerals. Following one of these visits, he went to South Vietnam for the Agency for International Development to assess what was known of the mineral resources in that country and what persons and facilities were available to study these resources. The TET offensive occurred during his visit and he was trapped in Saigon for ten days.

Professor and Mrs. Grim spent February, 1969, in Johannesburg, South Africa, at the invitation of the Rand Afrikaans University, where he gave a series of lectures in clay mineralogy. During the visit he also participated in a symposium organized by the South African government on petroleum prospecting activities in that country.

This past summer, he prepared an article on clay mineralogy for the Encyclopedia Britannica. In August, Professor and Mrs. Grim left for Tokyo, Japan, where Professor Grim will serve as chairman of some of the sessions of the International Clay Minerals Conference. They will be returning home via Taiwan, Hong Kong, the Philippines and Hawaii.

The Grims are now residing in Delavan, Wisconsin (Box 581, R. R. #4).

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NECIP GUVEN. Professor Guven continued his research in mica polymorphism and in the structure of pigeonite (a monoclinic pyroxene), as well as initiated an electron diffraction study of clay minerals. He also offered courses on X-ray mineralogy and computer programming. The course in small-computer programming (PDP-8/S computer) and its use in automatic data processing was the first one of its kind at the University and was attended by students from the Chemistry Department as well as by students in geology.

Professor Guven finished a computer program called "CRAS" to be used for automatic data collection in the Department of Geology. The computer and data acquisition equipment is installed in Professor Donath's laboratory and will be used primarily by him and Professor David Anderson in their experimental programs; however, the equipment is available for instructional purposes and to others having need for it.

ARTHUR F. HAGNER. During the past year and a half, Professor Hagner has been busy with teaching, research, and organizing the new laboratories for mineral deposits and mineralogy. He has acquired new equipment for the laboratory and also added a number of suites to the mineral deposits collection.



Professor Hagner's research has been devoted to completing several projects initiated some years ago in Wyoming. These include a study of the titaniferous iron deposit at Iron Mountain, Wyoming, the associated anorthosite complex, and a nearby area of metasomatic gneisses and cordierite-bearing metanorite.

For the past two summers he has supervised several students and their PhD and MS thesis problems in Wyoming, and served as a staff member at the Geology Summer Field Camp at Sheridan, Wyoming.

WILLIAM W. HAY. Professor Hay spent June, 1968, as a guest lecturer in the Geology Department of the Hebrew University in Jerusalem, Israel. In July, he travelled through Europe visiting Hans Bolli and Peter Roth at the Swiss Federal Institute of Technology; Hans Schaub at the Natural History Museum in Basel; Ben Prins at Shell in the Hague; Tom Barnard at the University of London; and Pavel Cepek at the Czechoslovak Academy of Sciences in Prague.

In September, 1968, Professor Hay started his double role as a staff member of both the Department of Geology at the University of Illinois and of the Institute of Marine Sciences of the University of Miami. He now maintains homes in both Champaign and Miami.

Within the past year, Professor Hay has completed a paper with Pavel Cepek on the calcareous nannofossils of the Upper Cretaceous. He also attended a meeting of the Gulf Universities Research Consortium in Gainesville, Florida, where he participated in discussions on oceanic drilling. In November, he attended the Geological Society of America meeting in Mexico City, and in December, the American Association for the Advancement of Science meeting in Dallas, where he presented a paper on the Upper Cretaceous coccoliths to the Society for the Study of Evolution.

One of Professor Hay's most exciting and rewarding experiences of the past year came when he joined the D/V Glomar Challenger for Leg IV of the Deep Sea Drilling Project. On the trip from Rio de Janeiro to Panama, nine major sites were drilled--six in the Atlantic and three in the Caribbean. Professor Hay will be presenting some of the results of the cruise at the GSA meeting in Atlantic City this fall. Upon landing in Panama, he travelled in Mexico City and Guatemala for a week to see Antigua, Lake Atitlan, and Chichicastenango.

In addition to travelling between Urbana and Miami, he worked on the results of the Leg IV Cruise; attended a meeting of the American Association of Petroleum Geologists in Dallas; presided over the Society of Economic Paleontologists and Mineralogists special interest group meeting on planktonic microfossils at Southern Methodist University; and was named organizer of the SEPM Research Symposium for 1971. At the end of May he attended a meeting of the Leg IV scientists at Scripps Institute of Oceanography in La Jolla, California, and while there had an opportunity to visit with the Wanlesses. In June, he returned to Urbana, and in early July attended the JOIDES Stratigraphy Paleontology Panel, and the International Union of Geological Sciences Working Group for Zonation of the Cretaceous and Tertiary in Deep Sea Sediments.



DONALD M. HENDERSON. Professor Henderson spent the summer of 1968 and this summer in the Liberal Arts and Sciences office serving as advisor to entering undergraduates and transfer students. Fall semester Professor Henderson taught the mineralogy course for undergraduate students.

The spring semester of 1969, Professor Henderson was on sabbatical leave, during which time he was involved in research on petrologic mineralogy of the White Mountain batholith in New Hampshire, and in a study of a number of aspects in theoretical and petrological mineralogy.

In November, 1968, Professor Henderson attended the Geological Society of America convention in Mexico City. He has been elected a Fellow of the Mineralogy Society of America.

W. HILTON JOHNSON. During the past year, Professor Johnson has assumed more administrative duties within the Department. His title is Educational Coordinator and he serves as the primary liaison officer between the Department and other University groups in educational matters, and between students and administrative groups within the Department. He has been deeply involved in the development of a new undergraduate curriculum in geology, revising the undergraduate major program in geology, and in the development of a new program of graduate standing and graduate degree requirements.

Professor Johnson has continued to be active in teaching the beginning geology courses. Last year he taught physical geology, worked with the honors students in physical geology, and took the Spring Vacation field trip course to the Smoky Mountains. In the coming year he will work with Professor White in geomorphology, and will teach a Pleistocene geology course in the spring that he had developed and given during the spring of 1968.

For the past two years and this summer, Professor Johnson has been developing a lithostratigraphic classification of the Pleistocene deposits near Danville, Illinois. Graduate students, Stephen Moran and David Gross, have worked with him on this project. They gave a paper at the Till Symposium at the North-Central Section meeting of the Geological Society of America in Columbus, Ohio. During the year, Professor Johnson also attended the GSA meeting in Mexico City, the International Symposium on Antarctic Glaciological Exploration in Hanover, New Hampshire, and the Friends of the Pleistocene Field Conference in Saskatchewan.

RALPH L. LANGENHEIM, JR. The past two summers Professor Langenheim has been on the staff at the Geology Summer Field Camp in Sheridan, Wyoming. He was appointed Director of the 1969 camp. After the completion of field camp in 1968 he spent the month of August in the Pioche, Nevada area supervising graduate and undergraduate research in the Ely Springs and West Ranges, and will spend the same amount of time this year in the Silverhorn Mining District, working on similar projects. He did additional field work during the semester break in the Arrow Canyon Range, Clark County, Nevada.





Professor Langenheim spent his sabbatical leave during spring semester, 1969, working on research publications dealing with Nevada geology, the Tertiary of southern Mexico, and conodont ultrastructure--the latter in conjunction with Robert Pierce's PhD thesis research. He presented technical papers at the Cordilleran, Southeastern and North-Central section meetings of the Geological Society of America, as well as at the national meeting in Mexico City.

Professor Langenheim has remained Secretary of the Paleontological Society and has been nominated for what will be his terminal year in that capacity in 1969-70.

C. JOHN MANN. The teaching activity of Professor Mann during the past year included historical geology, stratigraphy, and mathematical geology. His continuing research investigations into cyclicity and periodicity of geologic phenomena has led to a study of the extent of randomness in nature and the nature of randomness.

This past summer, Professor Mann was on the staff of the University of Illinois Geology Summer Field Camp held at Sheridan College, Sheridan, Wyoming. While there, he spoke before the Wyoming Geological Association on the "Significance of Randomness in Geological Phenomena."

FRANKLIN D. PATTON. Professor Patton, recently appointed associate professor, is not a stranger to the Department of Geology. He received his MS in 1961 in Civil Engineering and his PhD in 1966 in Geology from the University of Illinois, and spent two years as a teaching assistant and a U of I Fellow. After the completion of his degree, he was a postdoctoral fellow (NATO) at the Laboratorio Nacional de Engenharia Civil, Lisbon, Portugal. From 1967 until his return to the U of I he held a position as an assistant professor of geology at the University of Wisconsin.

A teaching-laboratory for engineering geology has been remodelled and plans are underway for a new laboratory facility for the preparation, description, and testing of soil and rock specimens. This new lab will complement the existing facilities of the Civil Engineering and Geology Departments and will aid Professor Patton in his work.

This year, Professor Patton assisted with several short courses on rock mechanics given jointly by Professor Deere of Geology and Professors Hendron and Cording of Civil Engineering. These short courses were given to engineering groups in Denver, New York, Washington, D. C., and most recently in Morgantown, West Virginia in conjunction with a conference on engineering problems in Appalachian shales.

Professor Patton's most interesting work this year involved a ten-day trip to eastern Peru to investigate the causes of a number of landslides along a highway.

The Pattons now have a son, John Douglas, who was born in September, 1968.



ROBERT W. PIERCE. This past year, Mr. Pierce had a joint appointment with the Division of General Studies and the Department of Geology. His teaching assignment included the physical science course and an agricultural geology course. He also led a group of students on a field trip through the Smoky Mountains during spring vacation.

Some research which he did has resulted in a geologic note entitled, "Ultrastructure in Palmatolepis species and Polygnathus species", published in the July, 1969 issue of the Geological Society of America bulletin.

Mr. Pierce's dissertation research is, "Ultrastructure and Biostratigraphy of the Conodonts of the Monte Cristo Group, Arrow Canyon Range, Clark County, Nevada". Part of this research has been submitted to GSA as an article, "Surface Patterns on Selected Mississippian Conodonts".

Mr. Pierce will join the faculty of the Department of Geology, University of Florida at Gainesville in September, 1969, as an assistant professor of geology where he will continue his research of Paleozoic rocks. The Pierces have purchased a home at 5012 NW 16th Place, Gainesville, Florida 32601.

ADRIAN F. RICHARDS. Professor Richards had quite a busy year in 1968-69. He supervised two PhD theses, one MS thesis and one BS thesis. He taught oceanography and an engineering honors course, "Ocean Engineering". He was guest speaker at several universities and colleges throughout the country and made an appearance on one of Champaign's TV stations, talking about college programs in oceanography.

He was elected vice president of the Marine Technology Society in June, 1969, and senior member of the Instrumentation Society of America. In April, he attended the American Geophysical Union meeting in Washington, D. C., where he presented a paper written with Donald G. Miller, Jr., research assistant, entitled, "Effective overburden pressures in carbonate sediment, Exuma Sound, Bahamas."

Professor Richards has accepted a position at the Center for Marine Studies at Lehigh University, Bethlehem, Pennsylvania. The position is effective this September.

PHILIP A. SANDBERG. During the past year and a half, Professor Sandberg has continued his research on Late Cenozoic and modern Ostracoda from the Americas. Paul Plusquellec (PhD '68) worked with him as a research associate during 1968-69. Their joint efforts include anatomical studies of modern forms and scanning electron microscopy of shell and soft part structures of modern and fossil forms. Dr. Plusquellec is now employed by Texaco, Inc., in New Orleans.

Professor Sandberg is also researching skeletal ultrastructure and its relationship to mineralogy in cheilostome Bryozoa and techniques of specimen preparation for and stereophotography with the scanning electron microscope. This past year he taught historical geology, paleontology and stratigraphy, honors historical geology and Cenozoic stratigraphy.



HAROLD W. SCOTT. Professor and Mrs. Scott spent the fall of 1968 in East Lansing, Michigan where Professor Scott was a Visiting Professor at Michigan State University. They returned to their home in Urbana in time for the Christmas holidays, and then spent the remaining winter months in Florida. This was partially spent as vacation time and preparation time for three papers which Professor Scott has prepared to be published.

Professor Scott has accepted a position as chairman of the Department of Geology at MSU; the appointment was effective June 1, 1969. The Scotts write that they are delighted with the beautiful campus at MSU and the University is exciting; however, they have changed one mode of life in that they are now apartment dwellers at 2900 Northwind Drive, East Lansing.

PAUL R. SHAFFER. Professor Shaffer, member of the geology faculty since 1947, acting head of the Department in 1960-61, and associate provost 1963-66, resigned his staff position July 1, 1968 to take a position as director of the International Programs Office of the National Association of State Universities and Land-Grant Colleges. He has been on leave from the University since 1966, serving as head of the International Science Development Section of the National Science Foundation. In his new post, he will succeed Louis B. Howard, formerly dean of the College of Agriculture at the University of Illinois. Professor Shaffer worked closely with the College of Agriculture, being responsible for geology courses taken by agriculture students.

F. MICHAEL WAHL. For the past few years, Professor Wahl has supervised the remodelling of office and laboratory space in the Natural History Building, and now he is once again supervising remodelling and construction--this time, at the Department of Geology, University of Florida in Gainesville, where he has accepted a position as chairman of that department. His appointment will become effective September 1.

In 1968-69, Professor Wahl taught clay mineralogy and an undergraduate graduate course in rocks and minerals, and physical geology. He also supervised two students doing research for MS degrees and served as honors advisor to undergraduates in geology.

At this writing, the Wahls are now settling in their new home at 3111 NW 18th Place in Gainesville.

HAROLD R. WANLESS. During 1968, Professor Wanless spent six months at Scripps Institution of Oceanography in La Jolla, California, working on a book describing the coasts of the United States, including Alaska and Hawaii, with Dr. Francis Shepard, a former University of Illinois geology professor. Now the chapters have all been written and the parts dealing with the Atlantic and Gulf coasts have been transmitted to the publisher. The book will contain more than 500 illustrations. The two authors hope to complete the book by September 1, 1969.



In addition, Professor Wanless has had four major papers published this year. They discussed environments of coal deposition; tectonic versus eustatic explanations of Late Paleozoic cyclic sedimentation; marine and nonmarine facies of the Upper Carboniferous of North America; and coastal changes on the North Carolina coast, a paper written in conjunction with Mohammed El-Ashry (PhD '66). A fifth paper, coauthored with several students of recent years, on Late Paleozoic deltas, has now been sent to press.

The Wanlesses have not been away from La Jolla this summer except to attend the American Association of Petroleum Geologists meeting at Dallas and to drive to Flagstaff, Arizona to see their son, Hal. He is starting his PhD thesis at Johns Hopkins on Sedimentary structures in carbonate tongues in the Cambrian of the Grand Canyon.

While in Urbana in the fall and winter of 1968-69, Professor Wanless largely worked on a part of the U. S. Geological Survey Paleotectonic Project, the Pennsylvanian folio, on the stratigraphic and geographic distribution of Pennsylvanian coal in the United States. This has been completed and transmitted.

Professor Wanless hopes to spend most of the fall, winter, and spring in Urbana working on other projects. In June, 1970, the Wanlesses will be leaving for Dalhousie University, Halifax, Nova Scotia, where he has been appointed to a distinguished professorship for six months.

GEORGE W. WHITE. In August, 1968, Professor and Mrs. White attended the 23rd International Geological Congress in Czechoslovakia, the sessions of which were to extend from August 18th to August 28th. Professor White, as vice-president of the International Committee for the History of Geological Sciences, was to participate in the work of the Committee and to give a paper at the historical symposium. After two days, the Congress was interrupted on the morning of August 21st by the Russian invasion. Professor and Mrs. White left Prague on August 23rd on the famous refugee train that carried four times the usual capacity and took fourteen hours to reach Frankfurt. The trip was made without food or water.

Upon telephoning his friend Harold Holmes, editor of the Champaign News-Gazette, so that a note could be placed in the paper about their escape, Professor White was told to "keep talking" and the invasion story, which lasted 50 1/2 minutes (at \$3.00 per minute), was printed as the lead story in the next day's newspaper.

Professor White is editor of a series of facsimile reprint volumes of early classical works in geology, published by Hafner Publishing Company. Four volumes in the series, Contributions to the History of Geology, have appeared in the last eighteen months, each with an editorial introduction by Professor White. The volumes are American Mineralogical Journal, 1810-14; C. F. Volney, View of the Soil and Climate of the United States of America, 1804; Monthly American Journal of Geology and Natural Science, 1831-32; and Nicholas Steno, Prodromus, 1669, translated, 1916. Now in press is volume V, which will contain all of the James Hutton material which has never been reprinted. Volume VI, with an introduction by Professor Hagner, will be Robert Boyle's Origin and Virtue of Gems. Volume VII is also in process.





Professor White is also consulting editor for the Hafner Company and advises on the reprinting of more recent geological works which are not in the Contributions series and on new manuscripts submitted to the Company.

Professor White attended the Geological Society of America meeting in Mexico City, the American Institute of Mining Engineers meeting in Washington, and the North-Central section meeting of the GSA, at which he presented a paper on his statistical studies of till thicknesses.

In early May, Professor White attended the Midwest Friends of the Pleistocene Meeting in Saskatchewan and Alberta. It was particularly gratifying that of the 70 participants nine were his University of Illinois PhD's -- Earl Christiansen, William Meneley, and Sidney Whitaker of the Saskatchewan Research Council; John Cherry of the University of Manitoba; Con Acton, Chief of Saskatchewan Soil Survey; Hilton Johnson, University of Illinois; John Kempton, Illinois Geological Survey; Stephen Moran, North Dakota Geological Survey; and Lee Clayton, University of North Dakota.

DENNIS S. WOOD. After returning from the University of Leeds, England at the end of the first semester, Professor Wood taught structural geology and shared the advanced structure course with Professor Donath. Professor Wood continued active supervision of graduate and undergraduate research in aspects of structural geology. Professor Wood attended the Canadian Tectonics Conference in the spring of 1969 and presented papers on the quantitative study of natural rock deformation.

Professor Wood spent the past summer in Europe and continued his research into the deformation of rocks in orogenic zones. He was also the director of a summer school at the University of Wales on the sedimentation, stratigraphy and structure of the classical lower Paleozoic rocks of North Wales.



## RESEARCH PROJECTS OF THE ACADEMIC STAFF

The principal research projects of staff members during 1968-69 and source of funds (other than departmental) are given below:

- D. E. Anderson--Isothermal and thermal diffusion in multicomponent glasses and minerals. Supported by the National Science Foundation and University Research Board.
- T. F. Anderson--Self-diffusion of oxygen and carbon in calcite; Self-diffusion in carbonates at high pressure. Supported by NSF and University Research Board.
- D. B. Blake--Starfish ossicle morphology; Mid-tertiary ophiuroids from the Pacific Coast; Bryozoa of the Warsaw Formation.
- A. V. Carozzi--Microfacies study of carbonate microfacies in the Paleozoic of Nevada and the Middle-West; Eighteenth century history of geology.
- J. L. Carter--New Early Mississippian silicified brachiopods from Central Iowa; Bibliographic index of North American Carboniferous brachiopod species (1898-1968).
- C. A. Chapman--Orientation of inclusions in granites formed by gravitative accumulation; Mechanics of intrusion of the White Mountain Magma Series.
- C. W. Collinson--Conodont biochronology of the Mississippian system in North America; Conodont zonation of the Devonian Cedar Valley Formation and paleogeography; Origin and paleogeography of the "Hamburg Oolite"; Conodont biostratigraphy and origin of Champaign-Urbana moraine; Carbon-14 date of Urbana mastodon; North American Devonian conodont biostratigraphy. Supported by Illinois State Geological Survey.
- P. A. Domenico--Digital simulation of ground water-surface water systems.
- F. A. Donath--Deformational behavior in experimentally deformed rock; Development of kink bands in brittle anisotropic rock.
- J. L. Eades--Reactivity of calcium oxide as related to surface area; Study of calcium silicates with scanning electron microscope; Reduction of swell of montmorillonite with calcium hydroxide. Supported by National Lime Association.
- L. S. Fruth, Jr.--Compaction effects in carbonate sediments; Deformational behavior in experimentally deformed rock.
- J. C. Frye--Pleistocene geology in Illinois and adjacent states. Supported by Illinois State Geological Survey.
- Necip Güven--X-ray 68, a computer library for automatic crystal structure analysis; CRAS, a data acquisition program in PAL Assembler language; Electron diffraction of layer silicates.



- A. F. Hagner--Geochemistry of the titaniferous magnetite deposit at Iron Mountain, Wyoming; Structural control in the formation of metasomatic gneisses and granite, Ragged Top area, Wyoming; Introduction to Robert Boyle's "Origin and Virtues of Genes."
- W. W. Hay--Deep sea biostratigraphy with calcareous nannoplankton fossils; Probabilistic biostratigraphy; Function and formation of the test in foraminifera. Supported by NSF.
- D. M. Henderson--Mineralogy and petrology of the White Mountain magma series, N. H.; History, gases, digital computation, and application of rock norms to igneous petrography and petrology.
- W. H. Johnson--Pleistocene stratigraphy of the Danville, Illinois region; Cenozoic stratigraphy in portions of the Big Horn Mountains.
- R. L. Langenheim, Jr.--Stratigraphy, paleontology, and geology of the Arrow Canyon Range, Clark County, Nevada; Stratigraphy, paleontology, and geology of the Pioche area, east central Nevada; Ultrastructure of conodonts; Tertiary biostratigraphy and paleontology, southern Mexico.
- C. J. Mann--Extent of randomness in nature; Estimate of biasness in geologic outcrops; Spectral analysis of geologic data (periodicities and cyclicities).
- F. D. Patton--Failure mechanism of landslides; Shearing resistance of natural material.
- R. W. Pierce--Ultrastructure and biostratigraphy of the conodonts of the Monte Cristo Group, Arrow Canyon Range, Clark County, Nevada.
- A. F. Richards--Marine geotechnique (Office of Naval Research); Submarine geology (Institute for Oceanography, Environmental Science Services Administration).
- P. A. Sandberg--Shell microstructure, soft part anatomy, distribution and phylogeny of North American post-Oligocene brackish water cytherid Ostracods (supported by NSF); Ultrastructure and mineralogy of cheilostome Bryozoans.
- J. R. Vaisnys--Damping of Chandler wobble; Density and elastic constant distribution for Earth.
- F. M. Wahl--Study of weathering processes leading to element concentration.
- G. W. White--Pleistocene stratigraphy of the Allegheny Plateau; History of American geology; Bibliography for history of geology.
- D. S. Wood--Analysis of strain distributions in early Paleozoic slates of eastern North America and Great Britain.



## NEW TEACHING AND RESEARCH PROGRAM IN GEOPHYSICS

Undergraduate and graduate enrollment figures in U. S. colleges and universities indicate the field of geophysics to be one of the most actively growing areas of earth science. All other leading departments of geology have made strong commitments to one or another area of geophysics, but the Department of Geology at Urbana has not offered a program of instruction or supported graduate research activity in this field until the present time. An exceptional opportunity exists at the University of Illinois to develop an outstanding program in geophysics with emphasis on a solid state approach to the field. Such a program was recommended to the higher administration during the past year, and was one of three in the University for which funds were recommended by the State Board of Higher Education.

The program will lead to instruction and scientific investigation in an exciting new frontier of geophysics, but would be constructed on a strong foundation of traditional geophysics. Four appointments are being considered to develop the program: a geophysicist specializing in the classic area of wave propagation; a person concerned primarily with some aspect of potential theory; a third appointment in the area of theoretical solid state geophysics; and a fourth in experimental solid state geophysics.

An important step in the development of the new program in solid state geophysics was taken with the appointment last year of J. R. Vaisnys as visiting associate professor. Dr. Vaisnys, who was on leave from Yale University, has worked in areas of physical chemistry and solid state physics and is now applying the techniques and approaches of those fields to problems in geophysics. During the past year he created considerable interest in the proposed geophysics program among individuals in the other science departments, notably physics, and it was largely through his efforts that the Department of Geology was able to interest two outstanding young solid state physicists in joining its staff. One, Dr. Jon Holder, is an experimental solid state physicist, and the other, Dr. Victor Palciauskas, is a theoretician. Dr. Holder's main interests are the mechanical and thermal properties of solids. More particularly, he has been involved in ultrasonic studies of defects (point and dislocation) in crystals and of nonlinear elastic constants of materials. He has just spent a year of postdoctoral work in the University of Illinois Physics Department. Dr. Palciauskas recently completed his Ph.D. on aspects of the theory of phase transformations, and he is interested in applying techniques of mathematical physics to geological problems.

The development of a problem-oriented program involving individuals of diverse backgrounds with mutual interests in materials, processes, and environments hopefully will lead to strong interaction with present staff in other areas of geology, as well as with persons in several other departments - especially those involved in materials research. Undergraduate students with interest in chemistry, mathematics, and physics, now unaware of the exceptional opportunities for challenging study of geophysical problems, are expected to be attracted to the program. At the graduate level, more courses in geophysics and several staff members with strong ties to other departments should lead to some exciting new interdisciplinary programs. Outstanding programs in other areas within the Department of Geology and in the other sciences and engineering at Illinois will undoubtedly contribute significantly to the development of the new geophysics program.





## FACILITIES AND EQUIPMENT

Remodeling of certain teaching and research laboratories and other departmental facilities continued throughout 1967-68. Although this was restricted largely to painting, new lighting, and new flooring, these improvements along with new furnishings and equipment created valuable and efficient teaching, research, and office areas out of space that previously was almost unusable or, at best inefficient. The remodeling of laboratories for mineralogy, mineral deposits and economic geology, structural geology, sedimentology and carbonate petrography, stratigraphy and paleontology, and beginning geology was essentially complete by the end of the year. In addition, the new departmental office complex and student-staff lounge (Wanless Room), a thin-section laboratory, drafting room, and machine shop were finished and occupied during the year.

Although these changes will alleviate considerably certain space problems, with the addition next year and in the future of new staff members wanting to develop active research programs, space will continue to be one of the Department's most pressing problems.

The acquisition during the year of a number of badly needed microscopes and an atomic absorption unit for spectrochemical analysis will permit further development of modern training in mineralogy, petrology, paleontology, sedimentology, and structural geology; and the equipping of a thin-section laboratory provides a facility of great importance to nearly all fields of geology. Completion of the geology machine shop now makes possible the development of programs in experimental geology--especially in geochemistry, geophysics, petrology, and structural geology--that are at new frontiers of the science. The shop also provides a necessary support facility for other vital activities already well established.

The acquisition by the University, in large part through the efforts of several staff members in this department, of the scanning electron microscope has opened up possibilities for research previously thought not possible. The scanning scope thus represents a major breakthrough for several fields in geology, as it does for numerous fields of study among the other sciences.



## GEOLOGY LIBRARY

The Geology Department turned over its entire map collection for supervision by the Geology Library, and moved its cases of topographic maps, geological maps, aerial photographs, and related materials into Room 116 Natural History Building, which was returned to the Geology Library for use as a map room. Owing to limited personnel, the work of sorting and organizing these maps has progressed slowly. Five map series of the U. S. Geological Survey, the atlas of the moon, and additional geological maps covering North America and the eastern part of the United States were also transferred from the Main Library to the Geology Library. As funds permit the purchase of additional map cases, other geological maps will be transferred from the Main Library until there is world-wide coverage.

Restricted library budgets prevented the acquisition of any new equipment and reduced the annual book budget. Nevertheless, as of June 1, 1969, the library contained 53,969 volumes compared to 48,769 a year ago, and was receiving 2,110 periodicals and serials (1,876 a year ago).

Mrs. Harriet W. Smith, Geology librarian, attended the meetings of the Geological Society of America and Geoscience Information Society in Mexico City in November, 1968. Following the meetings she took a side trip to Yucatan to visit the Maya ruins of Chichen Itza, Uxmal and Kabah and to see the colonial city of Campeche. Mrs. Smith has been active in attending professional meetings again this year, and in June she presented a paper on the "Sources of Geological Information in Latin America" at the 14th Seminar on the Acquisition of Latin American Library Materials in San Juan, Puerto Rico.



## GRANTS AND AIDS

Budgeted university funds alone are inadequate to finance the full range of activities pursued by individuals in the Geology Department. Consequently, we must often turn to other sources for support of some activities. Major research projects of faculty members frequently receive support from the National Science Foundation agencies of the federal government, and the University Research Board.

There are other activities requiring funds which are not provided for from any of the above agencies. Fortunately, many private firms recognize the value of these activities and grant funds for them. During the past academic year funds were once again provided by the California Company, the Shell Company Foundation, the Esso Education Foundation, the Pan American Petroleum Foundation, and the National Lead Company. A new contributor was Buehler, Limited. Because these funds were available, the Department was able to provide support for the summer field and laboratory research activities of 12 graduate students for the summer of 1969 and for special photographic work for 2 graduate students. It also was possible to provide partial support for travel expenses for 7 graduate students to attend meetings of professional societies for the purpose of presenting papers. The National Lime Association again provided support for Professor Eades' work in clay mineralogy. The University of Illinois Foundation, which receives important contributions for Geology from alumni and friends, was another source of funds for departmental activities.



## FIELD ACTIVITIES

The 1968 geology summer field camp at Sheridan, Wyoming, enrolled 41 students from 15 different colleges and universities. The camp was directed by Professor W. H. Johnson. Other staff members included Professor D. E. Anderson, Professor A. F. Hagner, Professor R. L. Langenheim, James E. Roche, and Alan Smallwood from the University of Illinois staff; Professor F. L. Koucky from the University of Cincinnati; and Professor D. S. Wood from the University of Leeds, England.

Professor Donath visited the field camp for a week to examine the physical facilities and to discuss the field geology program with the camp staff. Headquarters for the camp were again at Sheridan College. The facilities there are excellent.

In June of this year, 40 students and 7 staff members left Urbana for Sheridan and the University's 20th annual geology summer field camp. Professor R. L. Langenheim, Jr. served as camp director. Others from the U. of I. staff included Professors Hagner and Mann. Allen Lappin and Glenn Buckley were graduate assistants. Also on the staff were Professor F. L. Koucky, University of Cincinnati, and Dr. Hermann Pfeifferkorn of the University of Munster, Germany.

From the base camp at Sheridan College, studies were made in the Bighorn Mountains. Field work included techniques of measuring and describing formations and various methods of mapping, including aerial photographs. The group also visited Yellowstone Park, the Grand Tetons and other points of geological interest in the Northern Rockies.

During the 1968-69 academic year geology students had the opportunity to participate in a number of field trips which are listed below:

<u>Course</u>	<u>Place Visited</u>
Physical Geology	Starved Rock and Danville, Illinois
Physical Geology (Honors)	Fredericktown, Missouri and Fithian Illinois
Historical Geology	Danville, Illinois and Cagles Mill, Indiana
Mineralogy	Marquette, Michigan
Structural Geology	Gatlinburg, Tennessee
Stratigraphic Paleontology	LaSalle, Illinois
Regional Field Geology	LaSalle, Chester and Canton, Illinois; Marion, Kentucky; Burlington, Iowa; Hannibal, Missouri
Sedimentary Petrology	The Dunes, Michigan
Geology for Civil Engineers	Baraboo, Wisconsin
Advanced Studies in Geology	St. Louis, Missouri; Evansville, Indiana; Grant City, Illinois; and the Florida Keys





## SPECIAL LECTURES

Twenty-six lectures were given during the year by outstanding scientists from many parts of the country and the world who represented a wide variety of disciplines and interests. These are listed below:

- Karl K. Turekian, Yale University, "The silica problem in the oceans." October 5, 1968
- Martin Halpern, Southwest Center for Advanced Studies, Dallas, Texas, "Radiometric ages bearing on the concepts of a 'Samfrau' and Andean orogenic belt." October 17, 1968
- John Kuo, Columbia University, "Tidal deformation of the solid earth." October 21, 1968
- Gerald O'Brien, Shell Oil Company, film and talk on "Carbonate sands." October 31, 1968
- Guerry McClellan, Tennessee Valley Authority, Muscle Shoals, Alabama, "Crystal chemistry of carbonate apatite." November 7, 1968
- G. D. Sharma, University of Alaska, "Distribution and source of silica in southeast Alaska." November 18, 1968
- Lyle McGinnis, Northern Illinois University, "Mascons and crustal bending in the continental interior." December 2, 1968
- Daniel J. Stanley, Smithsonian Institution, "Quaternary sediments and dispersal patterns on the continental margin off Nova Scotia, Canada." December 9, 1968
- John James Prucha, Syracuse University, "Sedimentary rock deformation related to structure in the basement." December 11, 1968
- Henry T. Hall, University of Minnesota, "The Fe-S system." December 12, 1968
- John W. Wells, Cornell University, George A. Miller Lecture Series: December 14-20:  
 "Castroceramics: a lost art"  
 "As others saw them"  
 "Variation in a Devonian rugose coral"  
 "Coral clocks: an approach to Earth's physical history"  
 "Amos Eaton and his circle: some kitchen sink mineralogy"
- Dennis E. Hayes, Lamont Geological Observatory, "The structure of the north Brazilian continental margin." January 6, 1969
- Peter J. Melz, Harvard University, "The effect of temperature and pressure on the electrical properties of impure materials." March 10, 1969
- Robert A. Phinney, Princeton University, "Surveyor 7 -- mascons and the interior of the moon." March 20, 1969
- Trevor Ford, University of Leicester, "The Derbyshire mineral field in relation to the history of geologic thought." March 27, 1969



- George deVries Klein, University of Pennsylvania, "Depositional dynamics of intertidal sand bars." April 18, 1969
- Wolfgang Krebs, Geologisch-Paläontologisches Institut, Germany, "The palaeogeographical evolution of the mid-European Variscan geosyncline." April 25, 1969
- Jan Silar, Charles University, Czechoslovakia, "Evolution of tower karst in Southeast Asia," and "Groundwater in karst regions and problems of its development." April 28, 1969
- Charles B. Archambeau, California Institute of Technology, Pasadena, California, "Geophysical study of continental structure." May 1, 1969
- Peter P. Timofeyev, Academy of Sciences, Moscow, U.S.S.R., "Lithological and formational analysis of coal-bearing deposits." May 12, 1969
- James B. Combs, Massachusetts Institute of Technology, "Heat flow determinations in the north-central United States." May 20, 1969



## GEOLOGY ALUMNI ASSOCIATION

The Geology Alumni Association continues to support the Department in a number of ways. It honors the outstanding graduating senior by awarding him a Brunton compass each spring. In 1968, two seniors were honored with this award--Leo P. Plas, Jr. and Alan James. Mr. Plas is doing graduate work at the University of California and Mr. James is just finishing a MS degree at Illinois and will be attending Rice University next year. Allen R. Lappin received the outstanding senior award in 1969. Mr. Lappin transferred into geology after his sophomore year and had a straight "A" record in all courses as an undergraduate student. He is serving on the field camp staff this summer and will continue with graduate work at Illinois next year.

For the past two years the Geology Alumni Association and the Illinois Alumni Association has sponsored an informal party in the Wanless Room for students, staff, and local alumni at the time of the University's birthday celebration.

The G.A.A. met socially for cocktails at the Mexico City Geological Society of America meeting and at the Dallas American Association of Petroleum Geologists meeting.

Arrangements are pending at this time concerning the time of the traditional G.S.A. "social hour", to be held this fall in Atlantic City. You will be notified later of the time and place--so watch for this information and plan now to attend.

Current Officers of the Association are:

President -- Donald L. Ballmann (BS '55; MS '56; PhD '59)  
Vice-President -- Norman F. Sohl (BS '49; MS '51; PhD '54)  
Secretary-Treasurer -- W. Hilton Johnson (MS '61; PhD '62)

Lloyd A. Harris (AB '39) continues to serve on the Board of Directors of the Illinois Alumni Association.



## ALUMNI NOTES

- BRADLEY, WILLIAM F. '30AB William Bradley is the nominee for president of the Mineralogical Society of America for 1970. He will follow previous MSA presidents from the Department family including Dr. Clarence Ross, Ph.D. '20; Professor William Bayley; Adolph Pabst, AB'24; and Professor Ralph E. Grim.
- FAGIN, KYLE MARSHALL '30AB Kyle Marshall is serving his 19th year as manager of oil and gas investments for Southwestern Life Insurance Company. He and his wife, Frances have three sons, Richard, Donald and David. Richard is the president of University Computing Company, International; Donald is president of Integrated Computer Systems; and David is vice-president of Alamo Production Company.
- MC CLURE, PERRY S. '31BS After 32 years as a senior staff geologist with Shell Oil Company in the New York Office, Perry McClure is now living in Champaign enjoying the leisurely life with his wife.
- PARKER, THOMAS R. '33 MS Thomas Parker is the owner of Addison Drilling Company in Central Point, Oregon.
- LARRABEE, DAVID M. '36MA Mr. David Larrabee is employed by the United States Geological Survey, primarily in the field of non-metallics and industrial rocks. He has spent the past couple of years making detailed maps and studies. From 1956-62 he mapped bedrocks of a 2,500 mile area along the Maine-New Brunswick border, resulting in several published maps and short bulletins. For 2½ months recently he was in charge of the renovation of a World War I building for occupancy by the 60 economic geologists ousted from the Interior Building to make space for the new "dirty water" personnel.
- COHEE, GEORGE V. '37 Ph.D. George Cohee is chairman of the Geologic Names Committee and chief of the Geologic Names Review Staff of the U. S. Geological Survey. He will attend a meeting this September in Budapest which will consider stratigraphic principles, terminology, and procedures for principal geologic units on a world-wide scale.
- HUCK, EMILIE '37 After completing her last term of teaching in the Geography Department of Kaskaskia College in Centralia, Emilie Huck retired to her home there.
- DEUTH, MARTIN J. '38MS After 39 years as an exploration geologist (oil, gas, and minerals) with Shell Oil Company, Martin Deuth is now retired and is teaching geology at Stephen F. Austin State University at Nacogdoches.
- GRAVES, PERRY H., JR. '41BS Perry Graves is president of Graves Industries, Inc. in Robinson, Illinois.
- PRESCHER, WILLIAM F. '42BS William Prescher is currently engaged in exploration for uranium in Wyoming.





- WUELLNER, FRANK O. (REV.) '43BS Rev. Wuellner is completing his fourth year at Saint Patricks Church in Tolono, Illinois.
- UNFER, LOUIS, JR. '48BS Louis Unfer is associate professor of geology at Southeast Missouri State College in Cape Girardeau. He is also a lieutenant colonel in the Army Reserve and is the commanding officer of the Headquarters 5151 Engineer Group (construction) meeting at Sikeston, Missouri.
- BURGESS, JACK D. '49BS Jack Burgess is presently doing world-wide service work in polynology for Gulf Oil.
- HEROLD, JAMES D. '49BS James Herold is supervisor of production geologists for Gulf Oil Corporation. He and his wife and their 12 year old son have been in Nigeria for 3 1/2 years.
- WALLACE, LT. COL. WM. H. '49BS William Wallace is currently serving with the Air Force in Vietnam.
- BARDELL, PHILIP W. '50BS Philip Bardell, with his wife Kay, two teenage boys, and two younger children are still engaged in farming in Freeport, Illinois in spite of two floods, two droughts, and one hail storm within the past ten years.
- GORE, DOROTHY J. '52MS While employed as an associate professor at Southern Illinois University, Edwardsville campus, Dorothy Gore is at work on a study of some primary sedimentary structures in the Burlington limestone of the Jersey county area.
- MULLER, ERNEST H. '52 Ph.D. Ernest Muller and his family have enjoyed the past year abroad in Reykjavik, Iceland. In September they will be returning to Syracuse, by way of the VII INQUA (International Association of Quaternary Research) in Paris, where Dr. Muller will resume his role as professor of geology at Syracuse University.
- WELGE, EDWIN A. '52BS Mr. Welge is an assistant oil and gas engineer with the Division of Oil and Gas in the state of California. He has a daughter, 17, attending Bakersfield Junior College, and a son, 12.
- BROWNFIELD, ROBERT L. '55MS Robert Brownfield is a geologist for the Illinois Division of Highways with duties in soils and foundations and geotechnical surveys of new highways. His wife, Emily, is working in the Illinois State Library with Illinois documents. They have four children: Ann Marie, 16; Robert Paul, 14; David Lee, 11; Johnny, 10.
- MILLER, WILLIAM F. '55MS William Miller is working for Pan American Petroleum. He was married in 1960 and has four children.
- MC COLLUM, JAMES T. '56AB James McCollum is currently practicing law with the firm of Dutcher, Dutcher, Sidoti, and Considine in Rochester. Camping, squaredancing and skiing are the hobbies and principal activities he enjoys with his wife, Elizabeth, a psychiatric case worker at the Rochester Mental Health Center. They have a daughter, Elizabeth, born on November 9, 1968.



- WEEKS, WILFORD FRANK '56Ph.D. During the last year, Wilford Weeks has studied river ice in northern Canada; pressure ridges in the Arctic Ocean north of Barrow, Alaska; deformation on the Greenland ice sheet and the utilization of icebergs as a source of fresh water. He will also be part of the ice physics program off the tanker Manhattan when it attempts to traverse the Northwest Passage this year.
- GARINO, JOHN R. '57BS John Garino has recently been appointed industrial district manager for the Milwaukee District of Mobil Oil Corporation. He will be covering areas in the states of Wisconsin, Minnesota, Iowa, Illinois, and the upper peninsula of Michigan.
- SWETT, EARL RUDOLPH, JR. '57BS Earl Swett is a geologist with Highland Resources, Inc. in Houston.
- CROPP, FREDERICK W. III '58Ph.D. Fred Cropp, former assistant professor of geology and assistant dean of the College of Liberal Arts and Sciences at U. of I., is dean of the college and vice-president for academic affairs at the College of Wooster in Ohio.
- LYNCH, THOMAS WIMP '58MS Thomas Lynch is employed in the legal department of Amerada Hess Corporation in Tulsa. He spends most of his time in hearings before various state oil conservation agencies and working on the international problems of his company. He and his wife, Betty, have five children.
- DAVIS, CARL G. '59BS Since he completed his MS at Northern Illinois University in 1969, Carl Davis has been employed at Danville Junior College in Danville, Illinois, teaching earth science, geology, and general science. He enjoys amateur radio (call W9CR), and astronomy.
- DONAHUE, JACK DAVID '60BS Jack Donahue is presently an assistant professor of geology at Queens College of the City University of New York. He and his wife, Jessie, now have a son, Michael Steven, born on February 9, 1969.
- BORN, STEPHEN MICHAEL '61BS Stephen Born is finishing his Ph.D. dissertation at the University of Wisconsin. His topic is "Deltric Sedimentation at Pyramid Lake, Nevada." This past summer he has been working in Nevada with G. B. Maxey and the Center for Water Resource Research, Desert Research Institute. In September he will return to the University of Wisconsin Extension as director of the Wisconsin Lake Renewal Project.
- THOMAS, EVERETT RALPH '61BS After receiving his MS from Wisconsin in 1963, Everett entered the Army, and is presently a major serving in Vietnam.
- COOGAN, ALAN HALL '62Ph.D. Alan Coogan is associate professor of geology at Kent State University. He has been assistant dean of the Graduate School and Research since March, 1969. His research interests are in carbonate petrology-paleontology. He and his wife, Sylvia Smith Coogan, a 1961 UI commerce graduate and a former secretary in the Geology Department, have three sons.



- FENNER, PETER '63Ph.D. Peter Fenner is the executive director of the Council on Education in the Geological Sciences, National Science Foundation supported project of the American Geological Institute. Visitors are welcome anytime at his office on M Street (Phone: 202 296-7950). He and his wife, Marcy (Illinois '62) have a son, Anthony, 5, and a daughter, Beth, 3.
- TEXTORIS, DANIEL ANDREW '63Ph.D. Daniel Textoris was to chair a session and give a paper at the 23rd International Geological Congress in Prague, Czechoslovakia in 1968, but circumstances generally known prevented that. He is the coordinator of a "Center of Excellence" program at the University of North Carolina at Chapel Hill. The project, supported by a grant from the National Science Foundation, will enable the University to increase the size of the new faculty and to purchase equipment required to establish a center of excellence in the sciences. Daniel and his wife, Linda, have a one year-old daughter, Ann Elizabeth.
- ZARTMAN, WM. B. '63BS William Zartman is employed in the laboratory of Manley Sand Company, Rockton, Illinois, a division of Martin Marietta. He is primarily concerned with the X-ray analysis of sand samples.
- MC GEARY, DAVID F. R. '64MS David McGeary will be an assistant professor at Sacramento State in September 1969. He completed his Ph.D. at Scripps Institute last summer on "Sediments and Chemical Crust of Vema Fracture Zone."
- ORLOFF, DONALD EASTON '64Ph.D. Donald Orlopp is an exploration geologist with the Standard Oil Company of California and is presently assigned to a wide variety of duties in the Alaskan Arctic. He spent the summer of 1968 doing Arctic field geology. He and his wife and their three children and two dogs live in Anchorage.
- BUSCHE, FRED '65BS Fred Busche finished his MS at the University of Hawaii in August, 1968. He is presently working on his Ph.D. at the University of New Mexico under Dr. Klaus Keil. He will be using the electron-microprobe to look at minor elemental abundances in coexisting olivines and pyroxenes of chondritic meteorites. His wife, Diane, is teaching in Albuquerque while working on an MS in education.
- BAUMGARTNER, TIMOTHY R. '66BS For the past year Timothy Baumgartner has been a combat engineer company commander (A Company, 20th Engineer Battalion) providing engineer support in Kontum and Ben Het, Vietnam. He will begin graduate work in geological oceanography at Oregon State University in September, 1969. His wife is the former Patricia Nold (Illinois, '63).
- KIRBY, STEPHEN '67BS Stephen Kirby is working with the National Center for Earthquakes Research and Crustal Studies in Menlo Park, California. Mr. Kirby's work is in high temperature and pressure deformation of earth materials.
- WEDDERBURN, LESLIE ANSEL '67MS Leslie Wedderburn is employed by the Jamaican government in groundwater research and surveys in Kingston.



## ACTIVITIES OF FORMER STAFF AND FRIENDS OF THE DEPARTMENT

- DENNISON, JOHN M. Staff 1960-65 John Dennison joined the faculty at the University of North Carolina, Chapel Hill, in September, 1967, and on July 1, 1969, began a five-year term as chairman of the Geology Department there. His research interests are Devonian stratigraphy and Appalachian structural geology, along with geologic sampling statistics. In addition to teaching advanced courses in Geostatistics and Paleozoic Stratigraphy at Chapel Hill, he also wrote ANALYSIS OF GEOLOGIC STRUCTURES which was published in 1968.
- HOUGH, JACK L. Staff 1947-64 Jack Hough is continuing a joint appointment as professor in the Departments of Meteorology - Oceanography and Geology - Mineralogy at the University of Michigan. He has been busy compiling results of four years of research work about Lake Michigan. On April 19, 1969, he received an honorary Doctor of Science degree from Western Michigan University. His son, Richard, a biologist in the U. S. Navy Oceanographic Office, Washington, D. C., married Lynn DePrince, another Navoceanologist, on February 8, 1969. His daughter, Barbara, married John S. Locke, Ensign, U. S. N., on May 10, 1969, and moved to San Diego. Alice, his wife, continues as a social worker in the Michigan Children's Aid Society.
- MAXEY, GEORGE B. Staff 1955-62 George Maxey was on leave from the University of Nevada but is now back in his former capacity as director of the Center for Water Resources and professor of hydrology at the Mackay School of Mines. He, his wife, and their two youngest children spent a year in Helena, Montana, where Dr. Maxey was special consultant to the Water Resources Board and Department of the State of Montana. He also enjoyed a three-week trip to Poland in November, 1968, as a special consultant to the United Nations, as well as a week's trip to Alaska, for the Atomic Energy Commission. In August, 1969, he left for Holland for a meeting of the editors of the Journal of Hydrology, published in Amsterdam, of which he is one of three co-editors.
- NICKELL, ROSA M. Office 1941-67 As a young girl on a farm north of Brookfield, Missouri, Rosa M. Nickell used to make the beds with one hand and read a book held in the other. Now, after 26 years of gracing the Department of Geology as head secretary, Rosa is back near her childhood home with plenty of time to enjoy so many things of retirement life, including time to read. Making new friends through church work, renewing acquaintances with family and friends, and a bit of donated time to the Hospital Auxiliary fill up the remaining time. Last fall, Miss Nickell was busy making trips to Illinois, Arizona, and Kansas. Route 36 through Missouri is well marked on the highway maps and Rosa encourages all her friends to stop off in Brookfield, located in the Green Hills area. (Incidentally, the fish bite well there, too.)

Rosa thanks all who helped purchase the stereo, which adds much to her retirement home. She even won some new records on a radio contest shortly after moving to Brookfield. There is no room in her home in which she cannot see something that reminds her of the friends which she made while at Illinois. "In fact," she writes,





"I could have an international display of mementoes that would be the envy of many a secretary, for every continent, I believe, is represented, and many, many countries. So, you see, I shall not forget you."

SHEPARD, FRANCIS P. Staff 1922-45 Francis Shepard is finishing a book with Harold Wanless on "The Coasts of the United States and their Changes" to be published by McGraw Hill. He is also continuing studies on sea floor currents along the submarine canyon floors off La Jolla, California, while filling a position as Professor of submarine geology at Scripps Institute of Oceanography, in La Jolla.

Last January he made a trip to Columbia to continue work on the diapiric intrusions off the Magdalena River delta. The expedition netted him several thousand miles of reflection profiles showing the interesting sea floor structures of the area, including large faults and domes.

SHARP, ROBERT P. Staff 1938-44 After fifteen years as chairman of the Division of Geological Sciences at Caltech, Robert Sharp is now back to teaching elementary geology and various aspects of geomorphology and glaciology there. He has been doing research on desert geomorphology (mostly desert dunes), glacial geology in the Sierra Nevadas, and the surface features and processes of Mars, the last as a member of a Mariner VI and VII TV team.







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Geology

# TWENTIETH ANNUAL NEWSLETTER

DEPARTMENT of GEOLOGY  
University of Illinois  
Urbana

1969-70

TO THE ALUMNI AND FRIENDS OF THE DEPARTMENT

The year that has passed since the last Newsletter has been one filled with activity for the Department of Geology. The body of this Twentieth Newsletter summarizes many of the significant activities; I will simply highlight a few which, I believe, deserve special attention.

In last year's letter I anticipated the appointments of several new academic staff members: Donald L. Graf, Jon T. Holder, George deV. Klein, V. Victor Palciauskas, Daniel J. Stanley (visiting) and Rimas J. Vaisnys (visiting). In addition to these appointments, two other appointments were made during the year; all have strengthened our programs significantly.

Dr. Douglas E. Pride, one of our own graduates, joined us last September in statistics and mineral deposits. He is particularly interested in the geochemistry and origin of Precambrian iron formations. He also plays a major role in the teaching of LAS 142, a large enrollment, undergraduate physical science course that has just become the responsibility of the Department. Dr. Leon R. Follmer joined the staff on a part-time basis in February after completing his Ph.D. in Agronomy. His interests are in agricultural geology, Pleistocene geology and geomorphology. His teaching duties will be primarily in our agricultural geology course which continues to have significantly large enrollments.

Our basic undergraduate courses are currently undergoing extensive revision which will result in our offering distinct courses to science and to non-science majors. We are also using funds granted to us by the University to begin an autotutorial approach to the laboratory sessions for these courses. We hope to stimulate students by getting them involved in independent laboratory activities using slides, film strips, film loops, and recordings, as well as the more traditional laboratory materials.

In accord with the national interest in environmental issues that has developed so strongly in the past year, the Department will begin offering an environmentally oriented course for undergraduates who are not necessarily majoring in science in the spring of the 1970-71 academic year. Professors T. Anderson, Domenico and Palciauskas have been working together to integrate their particular viewpoints in this single course.

The year ended on a sad note with the death of Harold Wanless on June 3, of which most of you are already aware. We were all pleased that the Wanless Room was dedicated last November and that Dr. Wanless had been able to see it completed. I am sure you will read with interest the sections of this Newsletter devoted to Professor Wanless and the dedication of the Wanless Room.

We hope that this Newsletter contains items of interest to you, and that you will return the card from the back cover with news of your recent activities which might be of interest to your fellow alumni. Items received will be included in the next issue.

Sincerely yours,

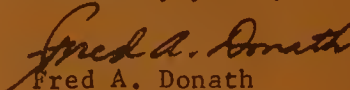
  
Fred A. Donath  
Professor and Head

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GUEST LECTURERS

During the past year we were fortunate to have had many outstanding lecturers visit the Department to speak on a broad range of interesting topics:

- STANLEY M. TOTTON  
Hanover College  
"Pleistocene entomology"  
September 29, 1969
- MASON L. HILL  
A.A.P.G. Lecturer  
"New global tectonics related to West Coast structure"  
November 16, 1969
- DANIEL J. STANLEY  
U. S. National Museum  
"Anatomy of the Wilmington Canyon; origin, structure and sedimentation"  
November 17, 1969
- A. R. CRAWFORD  
Australian National University and University of Toronto  
"The geochronology of India and Australia in relation to continental drift"  
December 15, 1969
- DONALD HATTIN  
University of Indiana  
"Sedimentology of the Greenhorn Limestone of the Western Interior"  
January 16, 1970
- ROBERT LIEBERMAN  
Lamont-Doherty Geological Observatory, Columbia University  
"Elastic properties of iron oxides"  
January 26, 1970
- BART OLINGER  
University of Chicago  
"A discussion on phase stability of materials under high pressure--iron"  
February 16, 1970
- S. S. GOLDICH  
Northern Illinois University  
"The age and origin of the Morton Gneiss, Minnesota"  
February 23, 1970
- DOUGLAS SHERMAN  
Imperial College of Science and Technology, London  
"Evaporites: a new approach to an old problem"  
February 24, 1970
- W. R. FARRAND  
University of Michigan  
"Late Quaternary history of Lake Superior"  
March 2, 1970
- MICHAEL E. HRISKEVICH  
A.A.P.G. Lecturer  
"Middle Devonian reef production, Rainbow Area, Alberta"  
March 3, 1970
- JAMES E. CONKIN  
University of Louisville  
"Middle Devonian bone beds of East Central U.S."  
March 9, 1970
- KENT C. CONDIE  
Washington University  
"The origin and early evolution of continents"  
March 16, 1970
- KENNETH E. CASTER  
University of Cincinnati  
"Precambrian trace fossils"  
April 20, 1970
- LORIN R. CONTESCU  
Northeastern Illinois State College and University of Bucharest, Rumania  
"Sources of detrital material for Carpathian flysch and molasse"  
April 24, 1970
- A. T. ANDERSON  
University of Chicago  
"Oxygen fugacity in the mantle"  
April 27, 1970
- JAMES H. DIETERICH  
U. S. Geological Survey  
"Mathematical modeling of fault zone tectonics and seismicity"  
May 6, 1970  
"Mechanics of large amplitude folding"  
May 7, 1970
- PETER J. LEGGO  
Florida State University  
"Rb/Sr isochron analysis of granitic clasts from tillites of the North Atlantic Calendonides"  
May 8, 1970
- JOHN C. JAMIESON  
University of Chicago  
"Studies of polymorphic transitions of elevated pressures using X-ray diffraction"  
May 25, 1970

## HAROLD ROLLIN WANLESS

Professor Harold R. Wanless died in Champaign on June 3, 1970 after a prolonged illness. Professor Wanless was born in Chicago on December 5, 1898, and attended LaSalle and Alcott public schools and Robert Waller High School in Chicago. He came to the Department of Geology in 1923 after completing undergraduate and doctoral studies at Princeton University.

Although his early work involved study of the younger rocks of the South Dakota Badlands, Professor Wanless began studies of coal-bearing formations in western Illinois for the Illinois State Geological Survey shortly after his arrival in Illinois. This work led to his lifelong study of late Paleozoic rocks about which he formulated theories that gained worldwide acceptance. He often was invited to national and international conferences to discuss his findings, and he reported his investigations in more than 100 journal articles and seven books, which have become basic reference works.

Professor Wanless was president of the Illinois Academy of Science in 1938; a Fulbright Senior Research Fellow in Australia in 1958-59; president of the UI chapter of Sigma Xi in 1964-65; a distinguished foreign guest and invited speaker at the British Association for the Advancement of Science meeting in Leeds, England in 1967; and a participant in the Sixth International Congress in Sheffield, England in 1967.

In his teaching career Professor Wanless touched the lives of thousands of students through classes and field trips. He was advisor to 128 graduate students who earned master's and doctoral degrees. Scores of his students now have important positions on this continent and overseas.

After his retirement from the university in 1967, the Geology Alumni Association furnished the Wanless Room. He was also honored in 1963, his 40th year with the university, with the presentation of a scroll and special observances by the Department.

Professor Wanless leaves his wife, Grace, at the family home, 704 South McCullough, Urbana; a son, Harold Rogers Wanless, a graduate student in Geology at John Hopkins University; and a seven-month old grandson, David.

Many friends and former students of Professor Wanless have responded to the news of his death with contributions in his memory to the University of Illinois Foundation. His family and friends have appreciated this demonstration of admiration and affection.

## WANLESS ROOM DEDICATED

On Saturday, November 8, 1969, the Wanless Room was dedicated in a ceremony attended by approximately 100 people. Unfortunately, Professor Wanless was unable to be present at the dedication. Mrs. Wanless was present, however, and conveyed to him the greetings of those present as well as a bound collection of letters from former students.

The dedication ceremony was the high point of a day that also included a special tour of the Krannert Center for the Performing Arts, an Illinois football game, an Open House in the Department, and dinner at the Holiday Inn for alumni and friends participating in these activities.

At the dedication, Dr. George W. White, former Head of the Department, highlighted professional aspects of Professor Wanless' life and Jack A. Simon, a former student now with the State Geological Survey, spoke about Professor Wanless' relationships with students and associates.

While enjoying the refreshments that were served following the ceremony, those present had the opportunity to admire the newly unveiled portrait of Dr. Wanless which is the main point of interest in the room.

A photograph of Mrs. Wanless and Professor Donath with the portrait is reproduced below.



## FALL PICNIC

The Democratic Picnic Grounds in Urbana proved to be an excellent place for the annual fall picnic which was held there on September 27. Over 100 people attended the gathering which was funded by the Geology Department for the purpose of introducing new staff and graduate students to each other and to the continuing staff and students.

The picnic began in the early afternoon with activities such as football, baseball, and Frisbee throwing. After an afternoon of vigorous but enjoyable exercise, everyone indulged in a "potluck" feast provided by the attending wives of staff members.

## NONACADEMIC STAFF

We don't often have opportunity to acknowledge the vital contributions which the nonacademic staff makes to the Department, but we all realize that few activities are pursued without clerical or technical assistance. Members of our full-time nonacademic staff for the past year were:

John F. Bauerle, machine  
shop supervisor

Nadine L. Brown, clerk-typist

Sara Brown, clerk-typist

Donald D. Dodson, instrument  
maker

Candace Jenisio, clerk-typist

Jane Kiser, clerk-typist

Leslie R. Lewis, cartographer

Janice C. Nicholson, clerk-typist

Jack O. Pullen, thin-section technician

Robert L. Roderick, laboratory  
assistant

Dorothy G. Smith, administrative  
secretary

Linda M. Zindars, clerk-stenographer

These full-time staff members were assisted part time by approximately 40 students during the last year.

## GIFTS TO THE DEPARTMENT

During the past year the University, and consequently the Department, entered a period of smaller budget increases than in previous years. This development has made us even more dependent upon, and appreciative of, gifts to the Department than in the past. Gifts by Adolph Buehler, Limited, the Pan American Petroleum Foundation, and the Shell Company Foundation enabled us to support activities which we consider to be essential but which would be impossible without their gifts.

These donations provided field support for graduate students, honoraria for guest lecturers, and new equipment for the thin-section laboratory.

The University of Illinois Foundation maintains a special fund for contributions from Geology Alumni and friends which we draw upon for additional support of field activities.

## FACILITIES AND EQUIPMENT

### Remodeling

The 1969-70 academic year was another one during which substantial changes to the Natural History Building were effected.

A previously unfinished court area in the basement was remodeled to provide Professor Graf with a mineral synthesis and solution geochemistry laboratory. A refrigerated corn storage facility (formerly occupied by another department), a storage room, and part of a hallway were remodeled for use by Professors Patton and Deere as an engineering geology laboratory and for graduate student offices. Additional equipment is still needed to make these areas fully operational, however.

Two large, poorly utilized rooms were partitioned into two rooms each to make the available space more usable. One now provides an office for Professor Johnson and laboratory space for graduate students and research in geomorphology. The other has been converted into a teaching laboratory and an area for Professor Chapman's graduate students and research in igneous petrology. Another room was partitioned to provide an office for Professor Holder, separate from his geophysics research laboratory.

A substantial amount of minor remodeling in a large number of rooms was also accomplished. Additional electrical outlets, air-conditioners, minor partitions, sinks, and lighting were installed; doors were rehung, rooms painted, and heavy equipment was shifted.

In addition, several major remodeling projects begun in previous years were completed this year. A large complex including offices (for Professors Collinson, Hay, and Sandberg), darkrooms, microscope cubicles, a live-specimen room, and two wet labs was completed for the paleontology group. An engineering geology teaching laboratory was also completed.

The remodeling summarized above has resulted in a significantly more effective and intensive utilization of assigned space. At this point, however, the Geology Department has reached a limit in utilizing its assigned space.

### Equipment

Professor T. Anderson's experimental work on the kinetics of oxygen isotope exchange was facilitated by the arrival and installation this year of an isotope-ratio mass spectrometer purchased with NSF and University Research Board funds. Professor Klein also used NSF and University Research Board funds to purchase equipment for luminescence petrography, for measuring water depth, salinity, and currents, and for time-lapse photography of submarine phenomena as part of his research on the migration of dunes and sand waves.

The Department also obtained electronic calculating equipment for six calculating stations with considerable flexibility and capacity.

## STAFF NEWS

DAVID E. ANDERSON. Professor Anderson spent the past academic year conducting research in diffusion of sodium and potassium in feldspar glasses. He also supervised and participated in field work on the metamorphic rocks of the upper peninsula of Michigan.

Professor Anderson attended the Birch Symposium at Harvard University in April, and then met graduate students from his metamorphic petrology class for a field trip to New England and New York State.

THOMAS F. ANDERSON. Substantial progress was made this year in setting up the isotope geochemistry laboratory. The establishment of this facility has been supported by the National Science Foundation and the University Research Board. Several glass vacuum systems were constructed last summer, and an isotope ratio mass spectrometer was installed last fall. Equipment is now available for determining the stable isotope composition of carbonate material. One PhD candidate under Professor Anderson's supervision is beginning an investigation of self-diffusion in carbonate minerals at elevated temperatures and pressures. In conjunction with Professor Sandberg and his graduate students, a systematic study of the isotope chemistry of cheilostome bryozoans has also been initiated.

Professor Anderson continued as an undergraduate advisor this year, while participating in undergraduate courses in geochemistry and oceanography and in graduate seminars in geochemistry and geophysics. He also taught the honors section of Physical Geology in the spring semester, and conducted field trips to Fithian, Illinois and to the Ozarks-southeastern Illinois region.

DANIEL B. BLAKE. Professor Blake was on leave this past year in Washington, D.C. at the United States National Museum, working on Acanthopores in rhomboporoid Bryozoa and the genera of rhomboporoid Bryozoa (for the Treatise on Invertebrate Paleontology).

Professor Blake will return to campus this fall to resume his teaching and research in the Department.

ALBERT V. CAROZZI. Professor Carozzi spent the fall semester of 1969-70 as an associate member of the Center for Advanced Study at the University of Illinois, beginning his translation of the Voyages dans les Alpes of H. B. de Saussure, an eight volume classic (1779-96). In November, he went to Geneva to consult the de Saussure's archives which contain the field booklets, correspondence and rock collection of the famous geologist. All these materials will contribute to the planned translation.

His annotated translation from the Latin of An Introduction to the Natural History of the Earth of R. E. Raspe (1763) with Mrs. A. N. Iverson (former Geology Librarian) was scheduled for publication in August. Meanwhile, Dr. Carozzi became involved with new historical data pertaining to the origin of the theory of continental drift between the 15th and 18th centuries. Related papers were published in the United States and in Europe which were aimed at eliminating some

fundamental errors ingrained in general textbooks for the past twenty years. He also contributed to a volume entitled Toward a History of Geology, published by the MIT Press.

Since the publication this summer of his translation of L. Cayeux's Limestones and Dolomites (1935), a classical volume long out of print, Dr. Carozzi is completing the translation of another volume of Cayeux, entitled Past and Present Causes in Geology (1941) which is a discussion of uniformitarianism and catastrophism as shown by sedimentary petrology.

In the field of carbonate rocks, Professor Carozzi and his graduate students are continuing the microfacies study of carbonates in the Middle West and in Nevada, concentrating in Ordovician and Mississippian rocks. In September 1969, he attended the International Conference on Carbonate Rock Cementation held in the Bermudas where recent developments in carbonate diagenesis were discussed.

He gave a series of lectures on carbonates in Rio de Janeiro, in July 1969 for Petrobras, the Brazilian National Petroleum Company. Professor Carozzi returned to Brazil in the fall, advising on the investigation of Cretaceous carbonates in the Barreirinhas Basin located along the Atlantic Coast, east of Belem. Two geologists from Petrobras spent eight months of training in microfacies in our department from January to August 1970. Professor Carozzi returned to Brazil in July 1970 to complete the supervision of the project, and to advise Petrobras on its two major forthcoming ventures: the exploration for oil of the Paleozoic carbonates of the entire Amazon Basin, the largest sedimentary basin of the world, and the exploration of the offshore Cenozoic carbonates of Brazil, particularly in the Amazon River delta.

Professors Carozzi and Grim returned to the Ivory Coast in the fall of 1969, to assist in the planning of a new five-year (1971-75) program of development of the mineral resources of that country. This program will emphasize airborne geophysics, photogeology, deep drilling and environmental geology related to the problems presented by a growing population, the creation of new towns and harbors, and agricultural development.

JOHN L. CARTER. Dr. Carter has several research projects in progress involving the studies of brachiopods. His research of new North American genera of Late Paleozoic spiriferid brachiopods and brachiopoda of the Banff Formation and Shunda Limestone of Alberta were partially supported by the Geological Society of Canada. Soon to be published will be his study "Bibliography and Index of North American Carboniferous Brachiopods" in Geological Society of America Memoir 128.

CARLETON A. CHAPMAN. The past year found Professor Chapman devoting his time to undergraduate and graduate teaching, and to research investigations involving the origin and formation of certain igneous rocks of New England. This research was carried on in conjunction with the thesis studies of five of Professor Chapman's graduate students.

In the spring, Professor Chapman was granted one of the University of Illinois Undergraduate Instructional Awards which enabled him to revise and update the laboratory work in Geology 101. This project was carried on during the summer school period with the assistance of William Size, graduate student. An attempt was made to prepare more interesting and meaningful laboratory exercises and to integrate the laboratory work more completely with lecture material.

After summer school, Dr. Chapman spent several days in the northeastern United States, collecting special material (rock and mineral) for the new Geology 101 lab set-ups. In Maine, he spent ten days at a geological field conference, and then devoted some time to making special field studies in his research areas.

CHARLES W. COLLINSON. Professor Collinson had a very active 1969-70 academic year. He chaired and edited a symposium on "Phosphate in Fossils" at the North American Paleontological Convention in September. He also led a preconvention field trip for which he prepared a twenty-six page guidebook, "Devonian-Mississippian biostratigraphy of northeastern Missouri and western Illinois." The symposium will be published as part of a convention series.

His personal research projects during the year included studies of new conodont zonation of the Mississippi Valley Burlington Formation (Mississippian), of paleoenvironments and paleogeographic interpretation of the Silurian Edgewood Formation in western Illinois, and of conodont zonation of the North American Mississippian.

In late June, Professor Collinson was part of the scientific crew of the U. S. Fish and Wildlife Service research vessel, R. V. Cisco, on a scientific cruise on Lake Michigan. Numerous bottom sediment dredges were taken as part of a newly instituted University-Geological Survey program of geologic research on Lake Michigan.

DON U. DEERE. As usual, Professor Deere was very actively engaged in many consulting and research projects this past year, in conjunction with the Geology and the Civil Engineering Departments. The sliding friction of rock was a project Professor Deere undertook with the U. S. Army Corps of Engineers in the Missouri River Division. He also worked on some design considerations in the selection of underground support systems with the Department of Transportation here at the University.

In September, Professor Deere attended a conference on Permanent Large Underground Openings in Norway, and gave a discussion there on rock quality determinations. He was present at the Chicago winter meeting of the American Society of Civil Engineers and was program arranger for the session on tunnels. He attended the annual meeting of the National Academy of Engineering in April, the Sixth Canadian Rock Mechanics Symposium in May, and the International Congress on Large Dams in June.



Professor Deere was selected as one of the official delegates of the United States State Department to the Advisory Conference on Tunneling of the Organization of Economic Co-Operation and Development which was held in Washington, D.C.

PATRICK A. DOMENICO. Professor Domenico had a hand in formulating an environmental program in geology during the past year. Aside from this undertaking, he devoted a great deal of time to his research projects: (1) digital simulation of integrated water resource systems, and (2) information theory in hydrogeologic research.

In November, Professor Domenico attended the annual meeting of the Geological Society of America. Early this year, he conducted a three-day lecture series on hydrogeology at the University of Arizona at Tucson and a five-day lecture series at Pennsylvania State University.

In June, Professor Domenico went to the Desert Research Institute at the University of Southern Nevada in Las Vegas, Nevada, where he spent the summer working on his research projects.

FRED A. DONATH. In addition to his involvement with administrative duties in the Department, Professor Donath also found time to teach, pursue his research programs, and present several invited lectures and papers at other institutions and professional meetings.

With the completed programming of the PDP-8/S Computer and incorporation of a Vidar 5206 data acquisition system in the High Pressure Laboratory, 1969-70 saw considerable progress made on his experimental programs in rock deformation. Aspects of several of these programs were discussed in the January-February 1970 issue of the American Scientist in an article entitled "Some information squeezed out of rocks."

Professor Donath continues to find time to respond to requests for guest lectures. During the past year he gave lectures at the University of Wisconsin-Milwaukee, Knox and Monmouth Colleges (sponsored by the American Geophysical Union), University of Missouri, Rutgers University, and Winona State College (sponsored by the American Geological Institute). In addition to the stimulation of discussing new ideas with different individuals and the prospect of finding promising graduate students, these visits provide an additional pleasure in the opportunity to get a few more hours of cross-country time in his log book. Professor Donath has been a licensed pilot for 23 years, and rents University aircraft for the trips. He reports the flight to Missouri as "pleasant" and the return flight from Minnesota as "interesting" (on the latter both navigational radios became in-operative as he encountered thunderstorms, and he had to navigate the "old way"!)). During the year Professor Donath also presented two scientific papers at the South-Central GSA meeting, and attended the annual GSA meeting, the eastern and western AGU meetings, and the Birch Symposium at Harvard.

During the spring semester Professor Donath gave a course in advanced structural geology, and saw his first two Ph.D. students at

Illinois successfully defend their theses. One concerned a field study of deformation in the slate belt of Vermont, which extended work begun by two other Ph.D. students who studied with him at Columbia University; the other dealt with interpretation of the microscopic fabric in experimentally compacted carbonate sediments, also an extension of work initiated at Columbia on certain aspects of diagenesis. He spent the summer of 1970 writing several papers and supervising the undergraduate summer trainee from Indiana University who was working on a project in his laboratory.

JAMES L. EADES. In addition to being coordinator for the machine shop and a consultant to an Agency for International Development project for the Study of Methods of Stabilizing Soils of Equatorial Africa, Professor Eades devoted time to a study of the relationship of surface area and the distribution of pores to reactivity of calcium oxide. This research project was supported by the National Lime Association.

Dr. Eades gave lectures at the University of Puerto Rico, the Highway Research Board in Washington, D.C., and at the Southwest Airport Authority and Consulting Engineers in Arlington, Texas. His topics, respectively, were "Stabilization of Clay Minerals with  $Ca(OH)_2$ "; "Controlling the Swell of Clay Minerals with  $NH_4(OH)$  and  $Ca(OH)_2$ "; and "Basic Reactions with Clay Minerals and  $Ca(OH)_2$  as related to soil stabilization".

Among Professor Eades' publications during the 1969-70 school term were "Characterization of the Properties of Commercial Lime by Surface Area Measurements and Scanning Electron Microscopy," with P. A. Sandberg published in Special Technical Publication 472; "Scanning Electron Microscope Study of the Textural Evolution of Limestone Calcites," with G. H. McClellan also published in Special Technical Publication 472; and "An Evaluation of the Quick Test Procedure for Determining Lime Requirements for Soil Stabilization," with M. R. Thompson published in the American Society for Civil Engineers Journal of Soil Mechanics, March, 1970.

LEON FOLLMER. 1969-70 was an important year to Dr. Follmer who completed his Ph.D. thesis in Agronomy during that time. His subject was "Soil Distribution and Stratigraphy in the Mollic Albaqualf Region of Illinois."

During the fall semester he assisted Professor White in Geology 105 (Agricultural Geology). During the spring semester, Dr. Follmer was appointed instructor in Geology 105 while also holding a half-time appointment at the Illinois State Geological Survey. He will be assistant professor in Geology with primary responsibility for Geology 105 next year while continuing his appointment with the Geological Survey.

LESTER S. FRUTH. Dr. Fruth spent the past year engaged in research in the high pressure laboratory, primarily working with carbonate sediments. He examined compaction, change in porosity and depth-pressure relationships through laboratory compaction to 2000 bars hydrostatic pressure, pressure induced fabric and structural features,

and the possible occurrence and effect of dilatancy under hydrostatic pressure. He also investigated with Professor Donath the effects of type of apparatus and laboratory technique on data obtained in experimental rock deformation.

JOHN C. FRYE. Dr. Frye continues his position as Chief of the State Geological Survey. During the past year he attended the GSA meetings in Atlantic City in November, Association of American State Geologists in Rolla, Missouri in April, and the National Research Council Annual Meeting in Washington in March. He also attended numerous meetings of national and international committees of which he is a member. These include the Geophysics Research Board of NAS-NAE-NRC; the International Commissions on Stratigraphy and on Loess of INQUA; the Executive Committee and Committee on National Science of the U. S. National Commission for UNESCO; the Committee on Radioactive Waste Management, NAS-NAE-NRC Advisory to the AEC (chairman); the Earth Sciences Division of NRC; the Executive Advisory Committee on Future Oil Provinces of the U.S. of the National Petroleum Council; the Committee on Remote Sensing of Environment, Advisory to U.S.G.S. of NRC; the Committee on Health Physics, Advisory to Director, Oak Ridge National Laboratory; the Illinois Science Advisory Council; and the Governor's Environmental Quality Council. Dr. Frye is also Associate Editor of GSA. His personal research in the past year has concentrated on Pleistocene Geology in Illinois.

DONALD L. GRAF. Professor Graf joined the Geology Department in September 1969 and dedicated much of his time during the past academic year to setting up a mineral synthesis laboratory which was ready for use in September 1970. Joseph Hatch utilized temporary laboratory quarters to carry out a thesis project under Professor Graf's supervision on the stability relations of the alkaline-lake carbonates: shortite, gaylussite, and pirssonite.

Professor Graf received an NSF grant beginning September 1970 to carry on an experimental study of the membrane properties of shales. It is expected to take a year to design and construct the needed apparatus.

During the past academic year, Professor Graf spent much time organizing a semester-length graduate course in sedimentary geochemistry, and shared the teaching of an undergraduate course in the chemistry of the earth with Dr. Thomas Anderson.

This fall, Dr. Graf and Dr. David Anderson will offer a new graduate-level course in irreversible thermodynamics.

NECIP GÜVEN. Dr. Güven attended the Annual Clay Conference which was held in Arlington, Texas last October. At the conference, he presented a paper entitled "The Structural Relationship between Phengite and Illites." He also attended the American Geophysical Union national fall meeting in December at which he presented another paper, "The Nature of the M2 Coordination Polyhedra in Pigeonite."

Professor Güven spent the summer months at his family home in Istanbul, Turkey, and was married in August. He and his bride will return to Urbana in September.

ARTHUR F. HAGNER. Professor Hagner, with Robert Reinking (PhD '67), presented a paper "Source of the Ore-Forming Materials at Iron Mountain, Wyoming" at the Geological Society of America meeting in Atlantic City last November. Their work in the Iron Mountain area includes the geochemistry of the titaniferous magnetite deposit.

Professor Hagner again spent the summer school term in Sheridan, Wyoming on the staff of the University of Illinois Geology Summer Field Camp.

WILLIAM W. HAY. Professor Hay began his "globe-trotting" early in the year by attending the North American Paleontological Convention in Chicago and the Gulf Coast Association of Geological Societies meeting in Miami Beach. He was an invited participant to the XI European Micropaleontology Colloquium in London, and gave a lecture at the University of Bern, Switzerland.

His research on calcareous nannoplankton, and calcification in foraminifera, has been supported by the National Science Foundation.

He served on the JOIDES (Joint Oceanographic Institutions Deep Earth Studies) Planning Committee, the Paleontology Biostratigraphy Panel, the Atlantic Site Selection Panel, and the Gulf of Mexico Site Selection Panel.

Professor Hay was on leave during the second semester at the Institute of Marine Sciences in Miami.

DONALD M. HENDERSON. Professor Henderson reported that he was not too badly damaged by rising temperatures and decibels, by falling bricks, mortar, and epithets during the year. (Partly stemming from the remodeling of his lab and office area.)

One of the highlights of the year for Professor Henderson, undoubtedly, was the dedication of the "Henderson Memorial Rest Room" (see full story, complete with picture, elsewhere in Newsletter).

JON T. HOLDER. During his first semester in the Geology Department, Professor Holder taught a graduate level course on aspects of solid state physics which are useful in geological research. The course covered crystal structure and bonding, elasticity, and thermal properties of solids. The second semester was a continuation of the first, but was primarily concerned with the properties of imperfections in solids.

A seminar on current topics in geophysics was the joint responsibility of Professors Palciauskas and Holder. The seminar was held second semester, and enrolled four graduate students who studied temperature and pressure distribution in the earth, rheology of the crust and mantle, earthquake mechanisms, phase transformations and kinetics in the mantle, and equations of state.

In the area of research, Dr. Holder reports that he has begun work on the thermal and mechanical properties of ice.

Aside from teaching and research, Dr. Holder wrote "Improvements on pulse superposition velocity measurements," an article published in the Review of Scientific Instruments.

W. HILTON JOHNSON. One of Professor Johnson's chief responsibilities this year as Educational Coordinator was to serve both graduate and undergraduate students in their advising needs. He was also a member of an LAS committee on proficiency examinations.

Professor Johnson attended the Geological Society of America meeting in Atlantic City in November; the Earth Science Curriculum Project in Boulder on "New Directions in Pre-Service Courses for Teachers of Earth Science" in December; and the meeting of the Illinois Association of Colleges and Universities for the Improvement of Earth Science Teaching at Northern Illinois University in April.

During the coming academic year, Professor Johnson will be on sabbatical leave. He will be associated with the Illinois State Geological Survey and will continue his studies of the Pleistocene stratigraphy in the eastern part of the state. In addition to stratigraphic analyses of the drift, Vermilion County will be mapped as part of a county report.

GEORGE deV. KLEIN. Professor Klein, who joined the faculty in February 1970 as an associate professor, spent the fall semester (on leave from the University of Pennsylvania) at Oxford University where he was Visiting Fellow of Wolfson College, and a Visiting Scientist in the Department of Geology and Mineralogy. While in Britain, Dr. Klein devoted time to field work on fossil tidal sandstones and modern tidal sediments, to writing, and to giving some invited lectures. Field work centered on the Precambrian Lower Fine-grained Quartzite of Island Scotland, Cambrian Eriboll Sandstone of Northwest Scotland, and recent sediments of the Wash, Lincolnshire. He attended the Facies Conference of the British Sedimentology Research Group, the International Trace Fossils Conference, the annual meeting of the British Sedimentology Research Group, and a meeting of the Geological Society of London.

Dr. Klein also spent a week examining recent tidal sediments at the Forschung fur Meeresgeologie und Meeresbiologie at Wilhelmshaven, West Germany.

Dr. Klein came to Urbana in February and, with Visiting Professor Dr. Daniel Stanley, taught Sedimentary Petrology as a concentrated short course. Between early April and mid-June, Professor Klein was a Visiting Faculty Member in the Department of Geology and Geophysics at the University of California at Berkeley. There he taught a course on "Petrology of the non-volcanic sedimentary rocks." He also undertook a field study of the Sterling Quartzite, Wood Canyon Formation, Harkless Formation, Zabriskie Formation, and Eureka Quartzite of eastern California and Nevada, as part of a long-range program on paleotidal sedimentation. In addition, he tested a sedimentological method for determining paleotidal range in some of these units. This field research was partially supported by a small grant from the American Philosophical Society.

Here at the University of Illinois, Dr. Klein has three students undertaking research with him. One student is studying the sedimentology of the Perry Formation (Devonian) of the northern Appalachians; a second student is researching sand transport in Lake Michigan; while a third is studying sand dispersal in the Minas Basin of the Bay of Fundy.

During the summer of 1970, Dr. Klein returned to the Minas Basin of the Bay of Fundy to complete an underwater time-lapse photo study of bedform migration. This research is sponsored by a grant from the National Science Foundation.

RALPH L. LANGENHEIM, JR. Professor Langenheim made his 16th trip into the Arrow Canyon Range in Nevada (65 miles northeast of Las Vegas) in January of this year. Two undergraduates, three graduate students and two postdoctoral students accompanied him on the trip. One undergraduate, Robert Karlin, was studying the area for an honors thesis and two graduate students, Thomas Chamberlin and Richard Smosna, were researching for their masters' degrees, all working under Professor Langenheim's supervision. Professor Langenheim is still doing field work in the Pioche area in Lincoln County, Nevada, usually spending a month there in late summer.

As Director of the 1970 Geology Summer Field Camp in Sheridan, Wyoming, Professor Langenheim spent a large part of his time performing the numerous duties that are involved in organizing the course.

He is now serving his final term as Secretary of the Paleontological Society.

C. JOHN MANN. Professor Mann had several publications in 1970. These included an article entitled "Randomness in Nature," published in the Geological Society of America Bulletin (v. 81, p. 95-104); and an article called "Computer Reduction and Plotting of Marine Sediment Data" published in the Marine Technological Society Journal (v. 4, p. 53-57).

Outside of writing and research, Professor Mann attended the Geological Society of America meeting in November and the Colloquium on Computer Applications in the Earth Sciences at Lawrence, Kansas, in December and in June.

Professor Mann is Associate Director of the University Coordinating Committee for the Illinois Junior Academy of Science for 1970.

V. VICTOR PALCIAUSKAS. In June 1969 Dr. Palciauskas completed his Ph.D. here at the University of Illinois under the direction of Professor Kadanoff in the Physics Department. In September he joined the geology staff as assistant professor and during the academic year taught a graduate course in mathematical methods and a new geophysics course. His work as a solid state physicist has been on the theory of phase transformations, and he is interested in applying techniques of mathematical physics to geological problems. For the summer term 1970, Dr. Palciauskas was awarded a U of I Faculty Summer Fellowship.

FRANKLIN D. PATTON. For Professor Patton, one of the highlights of this past year was a trip to the Anchicaya Hydro Project near Cali, Columbia. The project was located in a tropical rain forest situated over a zone of contact metamorphism. With Professor Deere, Dr. Patton investigated slope stability problems for a new highway in Puerto Rico in an area of deep residual soils. In March, Professor Patton lectured at a rock mechanics seminar in Niagara Falls, Ontario with Professor Deere and with Professors Cording and Hendron of the Civil Engineering Department. Following the seminar, he made a visit to the Churchill Falls Hydroelectric Project in Labrador where a tour was given by the project engineering geologist, Dr. Andrew Merritt, a 1968 graduate of the department.

Professor Patton also gave two lectures to geologists and civil engineers at the University of Massachusetts in Amherst. In keeping with his interest in landslides, Dr. Patton has been associated with a study of several landslides in the western states. One study involved the construction of a dam in California, and others involved a tunnel and ski resort in Colorado.

Some of Professor Patton's time this past year has been spent preparing laboratory materials of case histories obtained from field records.

DOUGLAS E. PRIDE. Professor Pride's research work during the past year centered on the geochemistry of Precambrian iron formation deposits, Atlantic City, Wyoming, and a theoretical-statistical approach to determination of kurtosis, skewness, and normality in geologic populations.

The coming year will be spent in developing an introductory statistics course for geology majors, and also in helping Professors Hagner and Johnson to organize a summer field trip to Wyoming for earth science teachers. He also plans to present a paper at the National Geological Society of America meeting in Milwaukee in November.

Undoubtedly, the most exciting event for Professor and Mrs. Pride during the past year was the birth of their first child, Eric Thomas, on March 6, 1970.

PHILIP A. SANDBERG. Dr. Sandberg spent the past year continuing his studies on anatomy and distribution of post-Oligocene Ostracoda from estuarine and coastal waters of the Americas. Utilizing the scanning electron microscope, he added to his projects a study of skeletal ultrastructure and its relationship to mineralogy in cheilostome Bryozoa.

In the fall semester, Dr. Sandberg taught Invertebrate Paleontology, and the combined course, Stratigraphy and Paleontology (Geology 222). During the spring semester he held a visiting appointment in the Department of Geology and Geophysics at the University of Minnesota, where he taught courses in stratigraphy and micropaleontology. During this period, he also continued work on his various research interests.

This summer, Dr. Sandberg was back at the University of Illinois supervising the activities of undergraduate summer trainees in the Geology Department's newly instituted research participation program.

GEORGE W. WHITE. George W. White received the distinguished Scientific Achievement Award from his alma mater, Otterbein College, on the occasion of the dedication of the new Science Center at the College on April 24. Professor White received his AB from Otterbein in 1921, and was awarded the honorary degree of Sc.D. in 1949.

Early this year two of Dr. White's former graduate students, Dr. Stanley Totten (UI Ph.D. '62) and Dr. David Gross (UI Ph.D. '69) co-authored the Pennsylvania Geological Survey Bulletin G 55 on Pleistocene stratigraphy of northwest Pennsylvania. It contains about forty longitudinal sections and deals in large part with Early Wisconsinan and earlier drifts. A number of papers on glacial and historical subjects have appeared during the past year, as well.

At the G.S.A. Milwaukee meeting in November, Dr. White will give the introductory paper, "History of the Investigation and Classification of Wisconsinan Drifts," at the "Symposium on Wisconsinan State."

This fall, Dr. White plans to continue serving as Chairman of the Executive Committee of the Illinois Water Resources Center, and Chairman of the University Committee on Archives and Manuscripts.

Dr. White is continuing his work with the International Committee for the History of Geological Sciences as Vice-President for North America.

DENNIS S. WOOD. Dr. Wood devoted his research time to strain analysis of slates from the New York-Vermont slate belt; and to the structural evolution of Africa. During the year, he completed papers on both of these subjects as well as preparing previous work for publication.

Professor Wood traveled to several other universities to lecture last year. In January he lectured at the University of California at Los Angeles and at Berkeley. In February he traveled to Seattle, Washington where he gave two lectures at the University of Washington. In March, he lectured at the University of Indiana at Bloomington. Professor Wood is a member of the Committee for African Studies, and lectured at the First Annual Symposium of African Studies here at the University this year.

During the summer Professor Wood served as a member of the field camp staff at Sheridan, Wyoming. Following the field course, he returned to his home in Wales, United Kingdom, to be married. He and his bride will return to Urbana this fall.



## HENDERSON ROOM DEDICATED

A bit of levity was added to the events of November 8, 1969 by the dedication of the Henderson Memorial Rest Room. Part of an anonymous memorandum, circulated to announce the ceremonies, is reproduced below.

"It is with great pride and pleasure that the Department of Geology announces the long-awaited official ceremony of dedication of the Henderson Room. It is likely that most of the male staff and students are already aware of the plaque placed last year on the door of 137 Natural History Building. It was originally intended that unveiling of the plaque and dedication of the room in its remodeled state would take place simultaneously. However, certain matters of policy concerning dedication of facilities not yet approved by physical plant inspectors unavoidably delayed the ceremony.

"The many alumni and former staff returning for the dedication will be thrilled to see the return to the marble-paneled grandeur which made this room such a focal point in years gone by. Many of you are perhaps not aware that the room had been a gathering point for faculty men before it was converted into badly needed office space and allotted to Professor Henderson. Through the years many absent-minded emeritus professors have returned and been surprised to find Professor Henderson and his desk, tinkertoys, and paper tetrahedra in this historic room, developing the science of reciprocal mineralogy (as a mental construct).

"Because of University regulations it will not be possible for female students and staff to participate in the dedication ceremonies in the Henderson Room, but a radio connection to the Wanless Room will be installed. The FCC has denied requests for a closed-circuit television hookup."

The room was returned to its former use as part of the remodeling program of recent years.



## FIELD ACTIVITIES

### Course Trips

Field work remains an essential part of the Geology Department's program at both the undergraduate and graduate levels. Last year a total of 785 students participated in 36 formal field trips which covered a ten-state area.

<u>Course</u>	<u>Place(s) Visited</u>
Agricultural Geology	Fairmount, Illinois
Physical Geology	Starved Rock, Illinois
Physical Geology (Honors); Engineering Geology	Fithian, Ill.; Fredrickstown, Mo.; Baraboo, Wisconsin
Historical Geology	Cagles Mill, Indiana
Regional Field Study (Undergraduate)	Cherokee, North Carolina
Minerals and Rocks; Mineralogy and Petrology	Marquette, Michigan
Geology for Engineers; Geomorphology	Danville, Illinois
Structural Geology	Tennessee and North Carolina
Invertebrate Paleontology	Louisville, Kentucky
Principles of Stratigraphy	Wabash, Indiana
Glacial and Pleistocene Geology	Danville and Charleston, Ill.; Northern Illinois
Metamorphic Petrology	Portland, Maine
Sedimentary Petrology	North Atlantic Cruise
Practice of Engineering Geology	Chattanooga, Tennessee
Regional Field Geology (Graduate)	Canton, Ill.; Baraboo, Wisc.; Marion, Ky.; Wabash, Ind.; Hannibal and Fredrickstown, Mo.

### 1970 Summer Field Camp

Forty-nine students and eight staff members left the University of Illinois campus on June 22 for the 21st annual Geology Summer Field Camp at Sheriden, Wyoming. The group spent five days traveling to the camp site, taking time to study geological features at Baraboo Range, Wisconsin, The Badlands, South Dakota, the Black Hills, and Devil's Tower.

Techniques of measuring and describing formations, and various methods of mapping, including aerial photography, were among the topics stressed at the Field Camp, which made its headquarters at Northern Wyoming Community College, formerly Sheridan College. Field work also included a short flight over the mapping area.

Professor Ralph L. Langenheim, Jr. served as camp director and was assisted by U of I staff members Professor Arthur F. Hagner, Professor Dennis S. Wood, and Hermann Pfefferkorn, a visiting geologist from Germany. With them were Professor Robert Pierce of the University of Florida, Professor Frank L. Koucky of the University of Cincinnati, and U of I graduate assistants Thomas Chamberlin and Suzanne Mahlburg.

In addition to those from the U of I, students from nine other colleges and universities were included in the field camp program. The schools represented were: The University of Cincinnati, the University of Florida, the State University of New York, Illinois State University, the University of Maryland, Harvard University, Oberlin College, Albion College and Knox College.

By the time they returned on August 15, the students had traveled more than 6,500 miles and had, hopefully, broadened their geological experience considerably.

### European Field Course

Thirty geology students will have the opportunity to study the Caledonian Fold Belt of northwestern Britain in its varied aspects, the Tertiary Volcanism of Scotland, the Mississippian-Pennsylvanian stratigraphy of British Coal field area, the Mesozoic stratigraphy of Southwestern England, and the granites and associated mineralization of Cornwall at a summer field class to be held in Britain in the summer of 1971 under the direction of Professor Dennis Wood.

The course will be available for graduate credits (two units) and for undergraduate credit (8 hours). The excursion to Europe will extend from mid-June until early September, a total of twelve weeks. Of this time, eight weeks will be devoted to the course, and the four remaining will be free for individual travel and sight-seeing, with costs for travel and subsistence estimated at \$420.00.

Undergraduate students who wish to register for this course are expected to have previously attended the Sheridan Field Camp or to have had equivalent field experience, and to have completed at least two 300-level courses in Geology.

### Mix-up?

We hope that the following, which appeared in a Wyoming Newspaper last spring, was simply due to a mix-up and doesn't indicate the opinion of the editor about geology.

## **Geology Camp Set**

LARAMIE — 1970 Dog Tags will go on sale in the Laramie City Treasurer's office at City Hall beginning this week, according to Josephine Fay, city treasurer.

The 1970 tags will cost \$3 each and must be purchased before Jan. 31. A rabies inoculation receipt must be presented for purchase.

## **Dog Tags for Sale**

SHERIDAN — The University of Illinois geology field camp will again be held with Sheridan college as headquarters during the coming summer.

The college board of trustees approved the contract with the Illinois institution during their regular meeting this week.

## GEOLOGY LIBRARY

Since the Geology Library took over supervision of the geologic map collection last year, the collection has grown to include maps covering all of North and South America, the British Isles, and most of the countries of Western Europe.

The library added 2,726 volumes and 139 periodicals to its collection this year, bringing the totals to 58,127 volumes and 2,082 periodicals as of June 1, 1970.

The appearance of the library has been noticeably changed as a result of substantial remodeling. A part of the hall area was incorporated into the library to serve as a circulation area. One newly remodeled area will provide for the storing of older, more valuable book materials and another area will house the microform readers plus a newly purchased microfilm reader-printer that produces an 8½ x 11 inch bond paper copy of any page on the microfilm. The tables in the reading room were covered with formica to provide smooth surfaces, and carrel dividers were installed on two of the reading room tables. New office furniture added to the decor.

Mrs. Harriet W. Smith, Geology Librarian, continued her activities in other professional areas. Her article, "Guide to Geological Literature," appeared in the Journal of Geological Education, and her review of geological reference books will appear in Winchell's Guide to Reference Works. She also continued as Membership Chairman for the International Relations Round Table of the American Library Association.

The Library Staff includes Mrs. Suzanne Guy, Technical Assistant; Miss Sally Logue, Library Clerk; and Mrs. Encarnita Garcia-Martinez, Library Clerk.

## GEOLOGY CLUB ACTIVITIES

This year "Cyclothem," the Geology Club, presented a program to introduce the undergraduate geology majors and interested non-majors to research programs encountered in geology. Under the leadership of Mark Nelson, president, Ted Labotka, vice-president, and Sue Glowacz, secretary, the club presented speakers at the bi-monthly meetings. The topics of the discussions ranged from "The Oslo Rift System" by Dr. Dennis Wood, club moderator, through "Tertiary Volcanism North of Yellowstone" by graduate student Bill Size, to "Early American Geology" by Dr. George White.

The geology club also provided coffee and doughnuts in the Wanless Room daily and at the weekly colloquiums.

Two field trips were taken by the club this year. One was a trip in the fall to the St. Francois Mountains in Missouri, and the other was a week-long trip in the spring to Big Bend National Park, Texas. This trip to Texas was the highlight of the year, as a group of about thirty camped in the snow in Missouri, got stuck in the mud near Spanish Peaks, Colorado, camped in the snow near Taos, New Mexico, and finally arrived to find beautiful weather in Texas. The varying geology and scenery made the trip a great success.

## UNDERGRADUATE PROGRAM

The number of undergraduate majors in geology has increased in the past two years from less than fifty to more than seventy. Advising and advance enrollment for these majors was the responsibility of Professors D. Anderson, T. Anderson, Domenico, Henderson, Mann, Patton, Pride, Sandberg, and Wood. Each advisor was responsible for counseling six to eight geology majors.

Professor Hilton Johnson, Educational Coordinator, coordinated this advising effort. He also provided counsel and guidance to other students to insure that each would obtain the most effective program considering his individual background, ability, and interests.

Several undergraduate majors are employed in the Department on a part-time basis in various research activities. We feel that this work provides them with the opportunity to obtain ideas for work in specific fields of geology through personal experience and direct observation.

## NEW UNDERGRADUATE SUMMER PROGRAM

During the summer of 1970 the Geology Department initiated an undergraduate research participation program on a trial basis. Four undergraduates came to the campus from the University of South Florida, Duke University and Indiana University and worked with Professors T. Anderson, D. Anderson, Donath and Sandberg on research projects in their laboratories. The students received academic credit for the work and were paid a stipend of \$60 per week for their eight weeks on campus.

The program was a great success in the opinions of both the students and participating staff members. Current plans call for expansion of the program beginning next summer, hopefully with support from the National Science Foundation. This is one way in which the Department's excellence can be publicized while contributing to the development of outstanding students.

## GRADUATE PROGRAM

Over the past three years the Department has been involved in developing a new schedule of graduate standing and examinations that would enable us to assess more accurately the individual student's ability and potential for successful completion of a doctoral program, and which would ensure that our graduate students make the best possible progress toward obtaining the Ph.D. degree. A flexible schedule of required course work has been included in the program to encourage breadth in geologic training. In addition, a Qualifying Examination to be given before the start of the second year of graduate work was introduced during the past year to replace the previous Master's oral examination. The emphasis in this examination is on critical evaluation of published work in the geological sciences, rather than on memorization of facts and geologic relationships. Students who fail the examination twice automatically become "terminal" students who may continue to work for a Master's degree, or can leave the University without a degree; they would be disqualified for further work toward a Ph.D. in this department.

The graduate group in geology last year consisted of 80 students who held degrees from 80 different colleges and universities. Included were students from Australia, Brazil, Canada, Chile, England, Germany, Ghana, India, Israel, Nationalist China, and Syria. Most of our graduate students on campus were supported by fellowships, assistantships, grants, or part-time employment at the State Geological Survey.

A list of graduate students enrolled during the 1969-70 academic year follows.

### FELLOWS:

#### University of Illinois Fellowships

Glenn R. Buckley	BS '67, MS '68	Wayne State University
Margaret Ann Kasowski	BS '64 MS '68	University of Ottawa University of Illinois
Franklin W. Schwartz	BS '68 MS '69	Univ. of Western Ontario Univ. of Manitoba
Ian M. Steele	BS '66	Rensselaer Polytechnic I

#### NDEA IV Fellowships

James W. Mercer	BS '69	Florida State University
Richard P. Sanders	BS '65, MS '67	Northern Illinois Univ.

National Science Foundation Traineeships

Alan R. Lappin	BS '69	University of Illinois
Neil H. Whitehead III	BA '69	University of Louisville

Pan American Fellowships

Thomas Worsley	BS '65	City College of New York
	MS '67	Univ. of Tennessee
	Ph.D. '70	Univ. of Illinois

TEACHING ASSISTANTS:

Matthew J. Avcin	BA '65	Lafayette College
	MS '69	Univ. of Illinois
Julia C. Badal	BA '67	Bryn Mawr College
	MS '69	University of Pennsylvania
Rodney J. Balazs	BA '70	Queens College
Richard W. Ely	AB '62	Cornell University
	MS '69	Univ. of Illinois
Gayla M. Fletcher	BS '69	Morehead State Univ.
Richard M. Forester	BS '69	Syracuse University
Rufus T. Getzen	BA '65	Wake Forest University
	MS '69	Univ. of South Carolina
Michael Hansen	BS '65	Idaho State University
	MS '69	Univ. of North Carolina
Joseph R. Hatch	BS '66	Idaho State University
	MS '68	Univ. of Illinois
Warren L. King	BA '64	State Univ. of Iowa
Alan K. Kuhn	BS '63	Duke University
	MS '68	Colorado State Univ.
Chang-Lu Lin	BS '64	National Taiwan Univ.
	MS '67	Washington State Univ.
	Ph.D. '70	Univ. of Illinois
James W. Mahar	BS '67	Idaho State University
	MS '69	Colorado State Univ.
Alexander J. Maltman	BS '67	Univ. of Liverpool

Robert M. Mason	BS '67 MS '69	Univ. of Notre Dame University of Kansas
Patrick T. McCullough	BS '64 MS '68	Univ. of British Columbia Univ. of Illinois
David W. Moore	AB '61 MS '70	College of Wooster Univ. of North Carolina
Alberto Nieto-Pescetto	BA '61 MS '64	San Marcos University Washington University
Frank J. Nowak	BS '67	Notre Dame University
Gary K. Olson	BS '69	Univ. of Illinois
C. Prasada Rao	BS '60, MS '61 Ph.D. '70	Central Coll. Bangalore Univ. of Illinois
Michael L. Sargent	BS '64 MS '70	Univ. of Wisconsin Univ. of Illinois
Paul R. Schluger	BA '68 MS '69	Temple University Univ. of Pennsylvania
Nahum Schneidermann	BS '67, MS '69	Hebrew University
Charles H. Simonds	BS '67 MS '69	Stanford University Univ. of Illinois
William Size	BS '65, MS '67	Northern Illinois Univ.
Alan F. Skrzyniecki	BS '66 MS '70	Univ. of Toledo Univ. of Illinois
Richard A. Smosna	BS '67	Univ. of Michigan
Gary D. Stricker	BS '63, MS '65	Wayne State Univ.
Sherwood W. Wise	BS '63 MS '65 Ph.D. '70	Washington & Lee Univ. Univ. of Illinois
RESEARCH ASSISTANTS:		
R. James Kirkpatrick	BA '68	Cornell University
Chao-li Liu	BS '64 MS '68	National Taiwan Univ. Memorial Univ., Newfoundland



OTHER GRADUATE STUDENTS:

Ramakant P. Agaste	BS '55, MS '57	University of Poona, India
Donald B. Allen	AB '61 MS '66	Fresno State College Univ. of Illinois
George J. Allgaier	BS '64	S.U.N.Y. at Buffalo
Raymond E. Aufmuth	BS '63 MS '66	Univ. of Dayton Miami University
Susan B. Avcin	BA '67	College of Wooster
Nathan J. Ayer	AB '62, MS '65	San Diego State College
Frederick H. Beaudry	BS '64	U.S. Naval Academy
Kwasi Boateng	BS MS '67	Moscow State University
Ross D. Brower	BS '63 MS '69	Purdue University Univ. of Illinois
Keros Cartwright	AB '59 MS '61	Univ. of California Univ. of Nevada
Thomas L. Chamberlin	BS '68	Michigan State Univ.
William E. Cote	BA '62 MS '67	Univ. of Massachusetts Univ. of Illinois
Sergio N. A. DeBrito	BA '63 MS '70	Escola de Minas de Ouro Preto, Brazil Univ. of Illinois
Thomas P. L. Dowell, Jr.	BS '49	Emory University
Carlos B. Emparan	BS '66	University of Chile
Gordon S. Fraser	BS '68	Univ. of Illinois
James C. Gamble	AB '62 MS '67	Earlham College Univ. of Illinois
Abdul-latif Hamdan	BS '64	Damascus University
Joyce S. Hanson	BA '67 MS '70	Marquette University Univ. of Illinois
Randall E. Hughes	BS '66	Univ. of Illinois
Donald O. Johnson	BS '65, MS '66	Northern Illinois Univ.

Milton A. Kanji	Geologo '60 MS '70	Univ. de Sao Paulo, Brazil Univ. of Illinois
John D. Kiefer	BA '61 MS '65	St. Joseph's College Univ. of Illinois
Thomas F. Lawry	BS '32 BS '35	Allegheny College Univ. of Pittsburgh
Richard L. Leary	BS '58 MS '61	Virginia Polytechnic Inst. Univ. of Michigan
Bruce A. Masters	BS '59 MS '62 Ph.D. '70	Valparaiso University Univ. of California Univ. of Illinois
Sahar A. McCullough	BS '64	Damascus University
Michael Moore	BS '65 MS '70	Indiana University Univ. of Illinois
William A. Olsson	BA '66, MS '68	Southern Illinois Univ.
James E. Rogers	BS '67 MS '70	Western Illinois Univ. Univ. of Illinois
Frank B. Sherman, Jr.	BA '57 MS '68	Dartmouth University Colorado State
Brian J. Sinclair	BS '64	McGill University
Michael Stephens	BS '68	Univ. of Texas
Ronald D. Stieglitz	BS '63 MS '67	Univ. of Wisconsin Univ. of Illinois
Heribert Stindl	BS '63 MS '65	Justus Liebig Univ. Kansas State Univ.
Peter J. Tarkoy	BS '64 MS '67	City College of New York Univ. of Tennessee
James G. Ward	BS '61	College of Wooster
Owen L. White	BS '58 MS '61 Ph.D. '70	Univ. of Melbourne University of Toronto Univ. of Illinois
William H. Wright III	BA '65 MA '67 Ph.D. '70	Middlebury College Indiana University Univ. of Illinois

DEGREES GRANTED SINCE AUGUST 1969

B.S.

James Carl Engstrom  
Susan Gail Glowacz  
James Edward Humphrey  
Robert Ellis Karlin  
Allan Thomas Schmidt

Stephen Arnold Smith  
Dennis Laine Zalusky  
Terry Lee Carius (Teaching  
of Earth Science )

M.S.

- MATTHEW J. AVCIN, JR., August 1969  
Stratigraphic and environmental study of the Sumnum (No. 4)  
and the Springfield (No.5) coals, and the intervening strata  
in south central Illinois.  
Supervisor: Harold R. Wanless
- WILLIAM J. BYRD, February 1970  
Geology of the Ely Springs Range, Lincoln County, Nevada.  
Supervisor: Ralph L. Langenheim
- SERGIO N. A. DE BRITO, June 1970  
The influence of geology in the construction of four tunnels.  
Supervisor: Don U. Deere
- ALAN T. JAMES, August 1969  
Clay mineral distribution and electron microscopy of the  
Excello Shale (Des Moinesian) of the Illinois Basin and  
Mid-Continent.  
Supervisor: Charles W. Collinson
- MILTON A. KANJI, June 1970  
Shear strength of soil-rock interfaces.  
Supervisor: Franklin D. Patton
- DONALD G. MILLER, October 1969  
Investigation of a carbonate sediment core from Exuma  
Sound, Bahamas.  
Supervisor: Adrian F. Richards
- MICHAEL C. MOORE, February 1970  
Age and depositional environment of the earliest Mississippian  
(Kinderhookian) rocks in western Illinois.  
Supervisor: Charles W. Collinson
- JAMES E. ROGERS, June 1970  
Upper Silurian and Lower Devonian stratigraphy of the  
Illinois Basin, central United States.  
Supervisor: C. John Mann

MICHAEL L. SARGENT, June 1970

Relationships of iron-titanium oxides and other accessory minerals to the development of the Laramie Range anorthosite complex, Wyoming.

Supervisor: Arthur F. Hagner

ALAN F. SKRZYNIECKI, June 1970

Geology of the sheep rock mineralized norite, Albany County, Wyoming.

Supervisor: Arthur F. Hagner

Ph.D.

LOUIS W. BUTLER, October 1969

Structure of the continental margin, southern Brazil and Uruguay.

Supervisor: Adrian F. Richards

Employment: Environmental Sciences Service Administration, Miami, Florida

DAVID L. GROSS, October 1969

Glacial geology of Kane County, Illinois.

Supervisor: George W. White

Employment: Illinois State Geological Survey, Champaign, Illinois

CHANG-LU LIN, June 1970

Digital simulation of a stream-aquifer system.

Supervisor: Patrick A. Domenico

Employment: Nova Scotia Bureau of Mines, Halifax, Nova Scotia

DONALD S. MARSZALEK, October 1969

Aspects of chamber formation by Archias Angulatus, a foraminifer.

Supervisor: William W. Hay

Employment: Institute of Marine Sciences, Miami, Florida

BRUCE A. MASTERS, June 1970

Stratigraphy and planktonic foraminifera of the upper Cretaceous Selma group, Alabama.

Supervisor: William W. Hay

Employment: Hartwich College, Department of Biology, Oneonta, New York

ROBERT W. PIERCE, October 1969

Ultrastructure and biostratigraphy of the conodonts of the Monte Cristo group, Arrow Canyon Range, Clark County, Nevada.

Supervisor: Ralph L. Langenheim

Employment: Department of Geology, University of Florida, Gainesville

DOUGLAS E. PRIDE, October 1969

Geochemical and petrologic investigation of the Seminoe, Atlantic City and Copper Mountain iron formation deposits, Wyoming.

Supervisor: Arthur F. Hagner

Employment: Department of Geology, University of Illinois, Urbana

C. PRASADA RAO, June 1970

Application of computer techniques to the petrographic study of oolitic environments, Ste. Genevieve limestone (Mississippian), southern Illinois and eastern Missouri.

Supervisor: Albert V. Carozzi

Employment: Illinois State Geological Survey, Champaign, Illinois

JAMES E. ROCHE, October 1969

Petrography and environmental study of Middle Devonian reefs, Michigan.

Supervisor: Albert V. Carozzi

Employment: Department of Geology, College of Wooster, Wooster, Ohio

OWEN L. WHITE, June 1970

Pleistocene geology of the Bolton area, Ontario.

Supervisor: Don U. Deere

Employment: Department of Civil Engineering, University of Waterloo, Ontario, Canada

SHERWOOD W. WISE, February 1970

Scanning electron microscope study of molluscan shell ultrastructures.

Supervisor: William W. Hay

Employment: Postdoctoral Fellow, Ecole Polytechnique Federale, Institut de Geologie, Zurich, Switzerland

THOMAS R. WORSLEY, June 1970

The nature of the terminal Cretaceous event as evidenced by calcareous nanno-plankton extinctions in Alabama and other areas.

Supervisor: William W. Hay

Employment: Department of Oceanography, University of Washington, Seattle

WILLIAM H. WRIGHT III, June 1970

Rock deformation in the slate belt of west-central Vermont.

Supervisor: Fred A. Donath

Employment: Department of Geology, Sonoma State College, Rohnert Park, California

#### Ph.D CANDIDATES

Ph.D. candidates who have passed their preliminary examinations, and are now actively engaged in research are listed below with their tentative thesis proposals, supervisors, and examination dates.

MATTHEW J. AVCIN, December 9, 1969

Proposal: Paleoenvironments and paleographic interpretations of the Edgewood Formation (Silurian) of western Illinois.

Supervisor: Charles W. Collinson

GLENN R. BUCKLEY, June 23, 1970

Proposal: Calcium and magnesium diffusion in grossular garnet.

Supervisor: David E. Anderson

RUFUS T. GETZEN, April 10, 1970

Proposal: The Frontier Formation: a study of anisotropic and non-homogeneous flow in a complex aquifer.

Supervisor: Patrick A. Domenico

MICHAEL W. HANSEN, May 14, 1970

Proposal: Microfacies in Mississippian carbonates, Arrow Range, Nevada.

Supervisor: Albert V. Carozzi

JOSEPH R. HATCH, November 25, 1970

Proposal: Phase relationships in part of the system  $\text{Na}_2\text{CO}_3\text{-CaCO}_3\text{-H}_2\text{O}$

Supervisor: Donald L. Graf

DONALD O. JOHNSON, November 3, 1969

Proposal: Stratigraphic analysis of the interval between the Number Six coal and the Prasa limestone.

Supervisor: Ralph L. Langenheim

MARGARET A. KASOWSKI, September 30, 1969

Proposal: The geochemistry of the reaction of clays stabilized with lime.

Supervisor: James L. Eades

PATRICK T. MC CULLOUGH, March 16, 1970

Proposal: Geochemistry of the ragged top metasomatic gneisses, Laramie Range, Wyoming.

Supervisor: Arthur F. Hagner

ALBERTO NIETO-PESCETTO, April 16, 1970

Proposal: Shear failure mechanism along rock-soil interfaces.

Supervisor: Don U. Deere

RICHARD P. SANDERS, May 27, 1970

Proposal: The petrology of the Pleasant Mountain intrusion, Maine.

Supervisor: Carleton A. Chapman

CHARLES H. SIMONDS, May 28, 1970

Proposal: Structure of contact metamorphism of calc-silicate rocks, Inyo Mountains, California

Supervisor: David E. Anderson

WILLIAM B. SIZE, December 3, 1969

Proposal: Petrology of the Red Hill igneous complex, New Hampshire.

Supervisor: Carleton A. Chapman

GARY D. STRICKER, January 13, 1970

Proposal: Microfacies of middle-upper Pogonip Group, Arrow Canyon, Nevada.

Supervisor: Albert V. Carozzi

ANNUAL P.H.T. BANQUET

The annual P.H.T. (Putting Hubby Through) Banquet was held on Saturday, May 16 at the Holiday Inn in Champaign. About fifty people attended the buffet dinner and programs which followed. After the dinner, the new co-chairmen of the graduate wives group for the academic year 1970-71, were introduced by one of the outgoing chairmen, Claudia Gross. The new officers are Marjorie Semple (Mrs. Robert) and Sue Kirkpatrick (Mrs. Alan).

Co-chairman for 1969-70, Beverly Getzen, presented a gift to Professor Donath, a game called FAD.\* The presentation was made in the form of a poem dedicated to Fred A. Donath.

Dear Dr. Donath, our leader so true,  
We worry an awful lot about you.  
We know you have problems and worries galore  
Like: militant students barring your door,  
And agencies shouting "We'll fund you no more."  
The faculty all seem terribly bent  
On begging and pleading for more equipment.  
The assistants are crying "You work us too much!"  
All you must handle with your gentle touch.  
We fear that this burden will soon wear you down--  
Uneasy rest Heads which must wear a crown.  
This little gift we hope you will use  
To scare away ulcers and banish your blues.  
And think when you use it, our dear old FAD,  
That all of us call you our academic DAD.

After receiving the gift, Professor Donath presented the P.H.T. awards. Recipients were:

Janet Algaier (Mrs. George)	Sahar McCullough (Mrs. Patrick)
Susan Avcin (Mrs. Matthew)	Kalyani Rao (Mrs. Prasada)
Lou Ann Gamble (Mrs. James)	Carol Sanders (Mrs. Richard)
Beverly Getzen (Mrs. Rufus)	Linda Size (Mrs. William)
Judy Hansen (Mrs. Michael)	Barbara Steele (Mrs. Ian)
Sandy Hatch (Mrs. Joseph)	Elizabeth White (Mrs. Owen)
Patricia Hughes (Mrs. Randall)	Cindy Wise (Mrs. Sherwood)
Judy Lin (Mrs. Chang-lu)	Helen Worsley (Mrs. Thomas)
Wally Kasowski (Ann)-----	Note switch! A club first!

Following the award presentations, an excellent environmental film was shown.

\*COLLECTOR'S ITEM--NOT AVAILABLE COMMERCIALY

## ALUMNI ASSOCIATION NEWS

### U. of I. Birthday Celebration

One of the many 102nd birthday celebrations of the University, sponsored by the University Alumni Association throughout the campus, was held in the Wanless Room on March 2, 1970. Free coffee and cake seemed to "hit the spot" for all the students and staff who participated.

### Outstanding Senior Award

Stephen A. Smith was named the outstanding senior in geology this year and received the fourth annual Geology Alumni award. Mr. Smith received a Brunton compass which was presented to him by Professor Donath at a meeting of the U of I Geology Club.

He received his degree "with distinction" at the June graduation ceremony and will continue graduate study this fall at the University of Wisconsin at Madison as an NSF Graduate Fellow. His bachelor's thesis, carried out under Dr. Hilton Johnson's supervision, involved a field study of the fabric of glacial tills in the Danville area.

This past summer he worked for the Peoples Gas, Light and Coke Company at Mahomet in an area study of subsurface stratigraphy and its suitability for underground storage of natural gas.

### Alumni Social Hour

HAVE YOU BEEN ATTENDING THE ALUMNI "SOCIAL HOUR" AT THE ANNUAL GSA MEETING AND SEPM-AAPG MEETINGS?

The U. of I. alumni party at the SEPM-AAPG convention in Calgary was attended by at least 70 alumni who took advantage of the location and time of the year to combine their professional activities and vacations in the Canadian Rockies. Over 4,000 participants made this the largest convention ever for SEPM-AAPG.

The traditional GSA "social hour" will be held this fall in Milwaukee, Wisconsin in the Empire Room of the Sheraton-Schroeder Hotel on Thursday, November 12 from 5:30-7:30 PM.

See you in Milwaukee!



ALUMNI NEWS

- POOR, RUSSELL S. (Ph.D. '27), retired from the U.S. Atomic Energy Commission in early 1970. He is now catching up on his fishing, and is working occasionally as a private consultant.
- NEWTON, WILLIAM A. (MS '37), attended the AAPG-IP convention in Brighton, England in 1969, and then, with his wife and daughter, took a one-month tour of the British Isles and Switzerland.
- DECKER, WILLIS M. (BS '39), has been a geological representative in Anchorage, Alaska for Cities Service Oil Company since July 1969.
- BUSHMAN, EDWIN F. (BS '39), is Technical Director for General American Transportation Company in Laguna Beach, California. Son Bruce, 22 is now a graduate teaching assistant in Physics here at the University. Other children are Gary, 21, also in Physics, at Seattle University; Joan, 18, freshman in Home Economics at Seattle University; and at home; Karen, 12; Mary, 7; and Paul, 5.
- OTTON, EDMOND G. (MS '47), is District Geologist, U.S. Geological Survey, Baltimore, Maryland. Mrs. Otton (Lucille Fredicke, BS '40) is a science teacher at Woodbourne Junior High in Baltimore. The Ottons have two children, James and Janet.
- EVELAND, HARMON E. (Ph.D. '50), and wife, Doris, have four sons: Ken, student at Ft. Sill, Okla.; Tom, (geology major) at Lamar State College, Lamar, Texas; Richard, freshman at Lamar, and Jack, a senior in high school.
- MALAN, ROGER C. (AB '51), is a project geologist, Geologic Branch of the Resource Division, U.S. Atomic Energy Commission in Grand Junction, Colorado. He has been directing a study of the distribution of uranium and thorium in the Precambrian throughout the western United States.
- BAUER, MRS. ROBERT (Coline Rae Woodmency BS '51), has been a housewife and mother since 1956 after working five years in the Water Resources Division at the U.S. Geological Survey.
- THREET, JACK C. (AB '51), has recently been assigned General Manager, Exploration and Production Division, Shell Company of Australia, Ltd.
- QUIRKE, TERENCE T., JR. (BS '51), was appointed Assistant Regional Manager of the Western Region Exploration Department of the International Nickel Company of Canada in June, 1969. In addition to his new position, he is presently serving as chairman of the Town of Thompson Advisory Planning Commission. Thompson is a rapidly growing city in Manitoba, Canada.

- MOTTS, WARD S. (Ph.D. '57), is now teaching a new course in Environmental Geology which includes conservation and water resources in regional planning at the University of Massachusetts.
- CROPP, FREDERICK W. III (Ph.D. '58), has been well occupied as a Dean at the College of Wooster, where a recent switch from the semester to the quarter system required a revamping of the whole system. The Cropps welcomed a son, Thomas Wilson, born December 5, 1969.
- SEARIGHT, THOMAS K. (Ph.D. '59), was employed by the Illinois Geological Survey for the summer of 1969 and continued his work in southern Illinois. In the fall, he returned to his position on the staff at Illinois State University, Normal, Illinois. The Searights really enjoy camping and have recently purchased a van camper.
- KECK, BRUCE L. (BS '60), spent four years on active duty with the Navy, after which he taught seventh grade science at Granby Elementary School in Norfolk, Virginia. From there he entered the Graduate School of Oceanography at the University of Rhode Island. He completed his MS in June, 1969. His thesis title was "Studies on the Extraction of Amino Acids from Sea Water by Ligand Exchange."
- PERNICHELE, ALBERT D. (BS '60), is now employed by Kennecott Copper Corporation as Geological Engineer, in Salt Lake City, Utah.
- SCOTT, JOHN S. (Ph.D. '60), has returned to Ottawa, Ontario from Niagara Falls, Canada, where John had been working as a consulting geologist. He has rejoined the Geological Survey of Canada in Ottawa.
- SEABER, PAUL R. (Ph.D. '62), has accepted a two-year assignment as Chief of a USGS Project in Lahore, Pakistan. He will work with the U.S. AID MISSION there in the Water Resources Division to build an organization and write a summary of the geology and hydrology of the Indus River basin.
- SIMS, JOHN D. (BS '63), moved to Denver, Colorado in July, 1970 to begin a project with the USGS, Regional Geochemistry Branch.
- TEXTORIS, DANIEL A. (Ph.D. '63), assumed a new position as Assistant Dean of Research Administration at the University of North Carolina, Chapel Hill, in 1969.
- CORDON, MRS. SUE WILBORN (BS '65), has been teaching seventh grade science while her husband is in school working on his master's degree.
- GOODFIELD, ALAN G. (Ph.D. '65), has been employed by the Illinois Division of Highways in Springfield, Illinois since September, 1969.

KIEFER, JOHN D. (MS '65) and wife (Martha Morse, BS '65), are proud parents of William Frederick, born October 22, 1969.

MORAN STEPHEN R. (Ph.D. '69), is employed at the North Dakota Geological Survey in Grand Forks. His wife, Pat, is a secretary with the School of Law at the University of North Dakota.

#### FORMER STAFF NEWS

DENNISON, JOHN M. (Staff '60-65), has accepted a five-year appointment as Chairman of the Department of Geology, University of North Carolina at Chapel Hill. In addition to giving lectures in many different states and supervising field trips in such areas as Appalachia, John is deeply immersed in political and church activities.

GRIM, RALPH E. (Emeritus '48-67), continued his investigation of bentonites during the past academic year and is in the process of preparing a detailed report covering accumulation of field information and analytical data on the composition and properties of a very large number of bentonite samples from all over the world. He also is engaged in the investigation of the origin and occurrence of bauxite deposits.

In September of last year, he and Mrs. Grim attended the International Clay Conference in Tokyo, Japan, after which they visited former students in Taiwan, Hong Kong, and the Philippines. Dr. Grim visited South Africa in November, to investigate some kaolin and attapulgite deposits as well as a bentonite deposit in Mozambique. He returned to South Africa again in March for a further investigation of these deposits.

Along with Professor Carozzi, Dr. Grim visited the Ivory Coast in December, at the invitation of the Ivory Coast Government, to assist in the preparation of a five-year program for geologic and mineral exploration in this country.

Dr. Grim was elected an honorary member of the Mineralogical Society of Great Britain, in January.

HARRINGTON, HILARY J. (Visiting Professor '64-65), and family spent part of 1969 in New Zealand, where Professor Harrington left for his fourth visit to Antarctica, as an Australian Exchange Scientist with the United States Antarctic Research Program for the National Science Foundation.

HOLTEDAHL, HANS (Visiting Professor '63-64), is continuing on the staff of the Geologisk Institutt in Bergen, Norway. He served as the Bergen delegate to the INQUA congress in Paris, and was invited by the Science Faculty students to serve as the staff representative of the University on the committee.

SCOTT, HAROLD W. (Staff '37-67), and wife, Joann, are now at Apt. 406, 2900 Northwind Drive, East Lansing, Michigan 48823, where Dr. Scott is continuing his position as Chairman of the Department of Geology at Michigan State University.

#### Mrs. DeWolf Leaves Urbana

Mrs. Frank W. DeWolf (Fanny), wife of the late Professor Frank DeWolf and longtime friend of the Department, has passed a new milestone. She celebrated her 90th birthday on August 13 in her new home at 3928 Trask Avenue, Erie, Pennsylvania 16508.

Professor and Mrs. DeWolf came to the area in 1909 when he was appointed Director of the Illinois State Geological Survey. In 1931, Professor DeWolf was named Head of the Geology Department, a position he held until he retired in 1946.

Mrs. DeWolf left the Americana Nursing Center in Urbana during the early part of August to make her home with her son, Frank, in Pennsylvania. Shortly before leaving town, the many friends Mrs. DeWolf made during her years of association with the Department and with the Geological Survey combined efforts to arrange an early birthday celebration for her which was held on July 30 at the Americana Hotel. The many notes and cards she received made this an extra special day for Mrs. DeWolf.

#### Death of Mrs. Quirke

Mrs. Terence T. Quirke, wife of Professor Terence T. Quirke who was Chairman of the Department of Geology from 1919 to 1928, died April 1, 1970 at the home of her daughter, Frances Quirke Washburn, in Madison, Georgia. Mrs. Quirke had been a resident of Urbana for approximately fifty years. She was preceded in death by her husband in 1947. She leaves two daughters, Frances (Mrs. Walter Washburn) and Dorothy (Mrs. John Reedy) and one son, Terence, Jr. All three children are graduates of the University of Illinois, Dorothy and Terence being Geology alumni.

\* \* \* \* \*

We hope that you find this 20th Annual Newsletter both informative and enjoyable. To enable you to keep in touch with former classmates and instructors, we are assembling a list of alumni with up-to-date addresses, phone numbers, and occupations. If you have changed your employment, or moved recently, please fill in the information card on the back cover and indicate if you would like to have a copy of the Alumni Directory.

We, here in the department, enjoy visits and news from former students and faculty. So remember, if you are in Champaign-Urbana, stop in: it's great to see a familiar face.

PLEASE PLACE MY NAME IN THE NEXT DIRECTORY WITH THE FOLLOWING DATA:

NAME \_\_\_\_\_ CLASS YEAR \_\_\_\_\_

HOME ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_ TELEPHONE \_\_\_\_\_

CURRENT POSITION \_\_\_\_\_ FIRM \_\_\_\_\_

BUSINESS ADDRESS \_\_\_\_\_ CITY \_\_\_\_\_

STATE \_\_\_\_\_ ZIP \_\_\_\_\_ TELEPHONE \_\_\_\_\_

PLEASE SEND ME A COPY OF THE CURRENT DIRECTORY

Place news for next year's NEWSLETTER on back of this page.

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GEOLOGY DEPARTMENT  
249 NATURAL HISTORY BLDG.  
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# TWENTY-FIRST ANNUAL NEWSLETTER

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UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

DEPARTMENT of GEOLOGY

University of Illinois

Urbana

1970-71

## TO THE ALUMNI AND FRIENDS OF THE DEPARTMENT

The past year has been characterized by several changes within the Department. This Twenty-first Newsletter summarizes the past events of the year; a few of the more significant items are discussed below.

The most noticeable changes in the Department for the coming year will be the absence of three faculty members: J. L. Eades, F. D. Patton, and G. W. White. Dr. White, former Department Head, is retiring as of September 1, 1971. On June 15, 1971, Dr. White completed 25 years of service at the University of Illinois, from 1947 to 1965 as Department Head and 1965 to 1971 as Research Professor. He has been appointed Research Professor Emeritus. Although officially retiring from our staff, I am certain retirement will not be a period of inactivity for Dr. White; as he has indicated that his activities will remain "the same as usual".

Dr. Patton is resigning his position with the University as of August 31, 1971. (Dr. Patton came to the Department in 1967.) He is moving to Vancouver, British Columbia, where he will work as an independent consulting geologist. Professor Eades resigned from the University of Illinois as of October 31, 1970, in order to join Dr. Wahl (PhD of 1958, on the staff from September 1958 to August 1969) at the University of Florida in Gainesville. Professor Eades has been on the staff since 1962.

The critical budgetary situation prevents our filling the vacancies created by the departure of Professors White and Patton. Professor Eades' position was supported by the National Lime Association, and funds are no longer available to fill that position. The tightness of our budget makes the Department even more appreciative of gifts for the normal operation of the Department, as well as for programs not authorized with state funds.

Both our graduate and undergraduate programs are continuing to undergo changes. The graduate program underwent a major revision in the changing of the "specific minor" requirement for doctoral candidates. This change will give more flexibility to the student in planning his program, by allowing him to take any two graduate courses of his choice outside the Department of Geology. The addition of new courses and the change of emphasis of our beginning courses were the major revisions in our undergraduate program for the past year. The primary purpose in the addition of the new courses is to develop a smoother transition from the undergraduate to the graduate programs.

Because field work is an essential aspect of geology at both graduate and undergraduate levels, the Department has continued its expansion of the field program by adding the European field course. D. S. Wood and D. E. Anderson directed the course which had an enrollment of 22 this past summer. The course acquainted the students with the many classical geologic areas of Britain, as well as giving them training in advanced mapping techniques.

We hope you will find this Newsletter of interest, and that you will help to keep us informed of your activities by returning the card from the back cover with news of your recent activities. I would like to remind you that information concerning your fellow alumni is available simply by writing to the Department.

Sincerely yours,

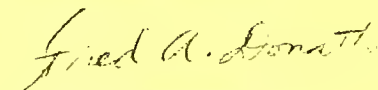
  
Fred A. Donath  
Professor and Head



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## GUEST LECTURERS

During the year we were fortunate to have had many outstanding lecturers visit the Department to speak on a broad range of interesting topics:

KEENE SWEET

University of Iowa  
"Cambro-Ordovician shelf sedimentation  
in the North Atlantic and its bearing  
on continental drift"  
September 28, 1970

ANTHONY HALLAM

Oxford University  
"Mesozoic palaeogeography and the  
opening of the North Atlantic"  
October 19, 1970

REUBEN J. ROSS, JR.

U. S. Geological Survey, Denver  
"Middle Ordovician fossils and  
continental margins"  
November 2, 1970

VINCENT J. MURPHY

Western Geophysical Engineers, Inc.  
"Shallow seismic exploration applied  
to engineering projects"  
November 3, 1970

DANIEL F. WEILL

University of Oregon  
"Petrology of lunar samples from  
the Apollo 11 and Apollo 12 missions"  
November 9, 1970

DAVID T. SNOW

Colorado School of Mines  
"Openings and spacings of fractures  
in hard rock"  
November 23, 1970

CHRISTOPHER G. St. C. KENDALL

Ohio State University  
"Recent carbonates and evaporites  
of the southwest Persian Gulf"  
December 7, 1970

DANIEL J. STANLEY

Smithsonian Institution  
"Marine geology of some Mediterranean  
basins: modern flysch?"

C. C. PATTERSON

California Institute of Technology  
"Lead in oceanic waters"  
January 7, 1971

PETER J. WYLLIE

University of Chicago  
"Some recent results in experimental  
igneous petrology"  
January 11, 1971

E. M. SPIEKER

Ohio State University  
"America's first geology--the mystery  
of a lost cause"  
January 11, 1971

A. T. S. RAMSAY

University of East Anglia, Norwich  
"Investigation of Lower Tertiary  
sediments in the North Atlantic"  
February 15, 1971

W. JAMES KENNEDY

Oxford University  
"Recent advances in paleoecology"  
February 22, 1971

JOHN C. FERM

University of South Carolina  
"Carboniferous paleogeography  
and continental drift"  
February 25, 1971

RICHARD L. THOMAS

Canadian Centre for Inland Waters  
"The sediments of Lake Ontario"  
March 1, 1971

WAYNE A. PRYOR

University of Cincinnati  
"Permian dune sands of Western Europe"  
March 8, 1971

JOHN RODGERS

Yale University  
"Gravity slides in the Mediterranean"  
March 15, 1971

BRIAN F. WINDLEY

University of Leicester, United Kingdom  
"Early Archean crustal evolution"  
March 17, 1971

WALLACE S. BROECKER  
Lamont-Doherty Geological Observatory  
"Possible causes of Pleistocene  
climatic cycles"  
March 26, 1971

MERVYN PATERSON  
Australian National University  
"Volume Changes in rocks during  
deformation at high pressures"  
April 19, 1971

JAMES D. LOWELL  
Esso Production Research Co., Inc.  
"Sea-floor spreading and the  
structural evolution of the Southern  
Red Sea"  
April 22, 1971

W. A. READ  
Institute of Geological Sciences, Edinburgh  
"Quantitative sedimentological problems  
in the Scottish Carboniferous"

ROBERT E. STEVENSON  
Naval Research Office, University  
of California, San Diego  
"Gross transport of suspended  
sediments over continental shelves  
as analyzed from Gemini and Apollo  
space photography  
May 4, 1971

CARL R. ANHAEUSSER  
University of the Witwatersrand,  
Johannesburg, South Africa  
"The Barbertown Mountain land,  
South Africa--a model of the elements  
and evolution of an early Precambrian  
Greenstone Belt"  
May 19, 1971

## GEORGE W. WHITE RETIRES

At a Departmental luncheon on May 26, the Geology Department academic staff honored Professor George W. White, who will retire effective September 1, 1971, and presented him with a gift. Professor White came to Illinois as professor of geology and department head in 1947 and since 1965 has been research professor here.

Professor White is a native of Ohio and earned his bachelor of arts degree at Otterbein College in 1921. He received a master of arts (1925) and his doctor of philosophy (1933) from Ohio State University. He also holds honorary degrees of doctor of science from the University of New Hampshire and Otterbein College.

After fifteen years at the University of New Hampshire, where he was head of the department of geology, Professor White was appointed professor of geology at Ohio State University in 1941 and was State Geologist of Ohio in 1946-47 until he came to Illinois.

Professor White's research has been primarily in the fields of economic geology and glacial geology. Much of his work has been concerned with Ohio mineral resources and glacial deposits. Results of his studies have been published in bulletins and reports of the Geological Survey of Ohio, the Ohio Division of Water, the U.S. Geological Survey, and in many articles in professional journals. In addition to his studies in various parts of the United States and Canada, Professor White has done field work in Russia, Great Britain and Scandinavia. Professor White's other main research interest is the history of geology. He is editor for a series entitled "Contributions to the History of Geology," which is published by the Hafner Publishing Company.

Professor White intends to continue his research activities when he retires.

## STAFF NEWS

DAVID E. ANDERSON. Dr. Anderson cooperated with Dr. Graf in teaching a new course in irreversible thermodynamics and transport processes during the fall semester of this year. His personal research on the diffusion and isothermal diffusion in multi-component systems, and metamorphism of basic rocks in Marquette County, Michigan, continued with the assistance of five graduate and several undergraduate thesis students. His field work this year included leading trips to Nova Scotia and the Adirondacks and assisting Dr. Wood with the advanced field course in Great Britain, which was offered this past summer.

THOMAS F. ANDERSON. Dr. Anderson collaborated with Professors Domenico and Palciauskas in developing and teaching a new undergraduate course in environmental physical science oriented toward non-science students. The course, which studied the stability and modification of man's environment, had an enrollment of over 700 students in the second semester.

His research continued on the self-diffusion of carbon and oxygen in carbonate minerals, the isotope chemistry of cheilostome bryozoans, and the diagenetic alteration of the isotope composition of carbonate sediments. Professor Anderson's laboratory became more versatile with the completion of a high-vacuum reaction line for the quantitative extraction of oxygen from silicates and oxides.

DANIEL B. BLAKE. Dr. Blake's research was concentrated on the ultrastructure of rhabdomesid Bryozoa and on Eastern Pacific Cenozoic asteroids. He continued revising the rhabdomesid and acanthostylid Bryozoa for the Treatise on Invertebrate Paleontology.

Dr. Blake was awarded a Certificate of Academic Achievement by the Smithsonian Institution following his year's work with them during 1969-70.

GLENN R. BUCKLEY. Mr. Buckley, a graduate student in the Department, was appointed to the Academic Staff as Instructor second semester, and assisted Dr. Hagner in Geology 112, Honors Physical Geology, and Geology 233, Minerals and Rocks.

Mr. Buckley's research in diffusion in garnet structure silicate minerals will be sponsored by the Geological Society of America for the coming year.

ALBERT V. CAROZZI. Professor Carozzi was one of four faculty members on leave this year. He spent most of his sabbatical leave second semester at the SNPA (Société Nationale Des Petroles D'Aquitaine) in Pau, France, where he had unlimited use of all the facilities to help him research a 500-page microfacies volume soon to be published. While there, he was invited to give several lectures on carbonates and the History of Geology. After much hard but rewarding work, the Carozzis are "beginning to feel happy with the thought of coming home".

Four graduate students will soon be finishing PhD degrees on microfacies study of paleozoic carbonate rocks in Illinois and Nevada, under the direction of Dr. Carozzi. Two of them will finish with October degrees and have already taken teaching positions.

JOHN L. CARTER. Dr. and Mrs. Carter completed a bibliography and index listing 2000 publications about shellfish which lived in North America 250 million years ago. The 382-page book has been cited as one of the past year's most significant publications in the study of fossils. "Bibliography and Index of North American Carboniferous Brachiopods" contains a critical listing and reference to all publications on the subject anywhere in the world since 1898. It was published by the Geological Society of America.

CARLETON A. CHAPMAN. Dr. Chapman received an Undergraduate Instructional Award from the University which permitted him to spend the summer of 1970 preparing new laboratory exercises for the Physical Geology course.

During the second semester, Dr. Chapman was on leave and he and Mrs. Chapman took the opportunity to travel to Europe.

He is preparing manuscripts on the petrology and structure of Mount Desert Island, Maine, and on the significance of grain size near contacts of granite plutons.

CHARLES W. COLLINSON. This year Dr. Collinson was appointed Chairman of the American Geologic Institute Committee on Publications and Secretary of the Joint Committee on Paleontologic Information.

His research on the Great Lakes region continues; he attended the International Association Great Lakes Research in Toronto and is a member of the President's steering committee for Lake Michigan Research at DePauw University.

Other research interests are the paleolimnology of lacustrine sediments from southern Lake Michigan and Mississippian conodonts in midcontinent United States.

DON U. DEERE. Professor Deere was the 22nd University of Illinois faculty member honored as a foremost scientist in his field by election to the National Academy of Sciences.

Much of Professor Deere's research is now taking place in Washington, D.C., for the Department of Transportation. His particular interest is the application of engineering geology and rock mechanics to the design and construction of tunnels and other large underground activities and to the stabilization of landslides.

Among several trips he made outside the United States was a technical exchange tour of tunnels in Russia sponsored by the State Department and Department of Transportation.

PATRICK A. DOMENICO. During the past year Dr. Domenico completed his textbook on groundwater hydrology. Expected publication date is spring 1972.

At the Rocky Mountain Groundwater Conference in Denver he was a panel member on a discussion of the consequences of groundwater mining. He was also made Associate Editor of the Water Resources Research, a publication of the Journal of Geophysical Research.

His teaching activities included collaboration with Professors Thomas Anderson and Palciauskas in the Environmental Physical Science course.

FRED A. DONATH. Dr. Donath continued his research on the effects of planar anisotropy on the deformational behavior of rock and, with Dr. Fruth, on the dependence of deformation mechanisms on rock type and environmental conditions.

Dr. Donath recently arranged to have a rock deformation apparatus of his design produced commercially. The apparatus was described in the January 1970 Journal of Geological Education, and the response to this led to his decision to have the apparatus available commercially. There appears to be a growing need for such an apparatus in geology programs in both large and small colleges and universities throughout the country.

In addition to his duties as Head of the Department and professor, Dr. Donath served as editor in various capacities for several geological journals and was named Editor for the new Annual Review of Earth and Planetary Sciences. He is a member of the Educational Testing Service (Princeton, N. J.) Committee, charged with the responsibility of completely revising the G.R.E. Geology Examinations, and served on several other scientific committees. In addition, he was an invited lecturer at several other universities, and his extra-curricular activity as a pilot has come in handy professionally, since he was able to fly himself to many of his professional engagements across the country.

LEON R. FOLLMER. In addition to teaching Agricultural Geology both semesters, Dr. Follmer began research on the distribution of lacustrine deposits of a middle Illinoian glacial lake found in nearby counties in Illinois. This research is supported by the Illinois State Geological Survey. He has also been mapping the distribution of surficial glacial deposits of Sangamon County, Illinois.

LESTER S. FRUTH. Dr. Fruth continued to maintain, improve and operate the High Pressure Laboratory with Professor Donath. During the summer he helped direct the activities of an undergraduate student in the summer research program. His research activities included finishing a paper jointly with Professor Donath on strain rate effects on deformation mechanisms and rock type. Dr. Fruth continues his research on the effects of compaction of carbonate sediments, involving a thin section study of the processes and mechanism by which these effects take place. He is also carrying out, with Professor Donath, an effects of apparatus, testing procedure, and values of calibration constants on rock deformation results.

Dr. Fruth continues to supervise the activities of two machinists and an electrical technician for the Department.

DONALD L. GRAF. Dr. Graf has been outfitting a mineral synthesis laboratory in the Department and studying clay membrane properties. Michael Stephens, a graduate student, is starting a PhD thesis on clay membrane properties under the direction Dr. Graf with support from a National Science Foundation grant.

During the first semester Dr. Graf and Dr. David Anderson conducted a new course entitled "Irreversible Thermodynamics and Transport Processes". Students enrolled in the course were drawn from the areas of sedimentary geochemistry, metamorphic petrology, and groundwater geology.



NECIP GUVEN. Dr. Guven has completed the classification and compilation of the bentonites that were collected over the years, making it the largest collection of bentonites in the world. X-rays have investigated over 180 bentonites. The results of the investigations will be published as an advanced textbook on smectite mineralogy which Professor R. E. Grim will co-author.

ARTHUR F. HAGNER. Dr. Hagner's commitment to improving the quality of teaching in the Earth Sciences is reflected in the activities of the past year--as a member of the Executive Council of the Illinois Earth Science Association, and as advisor of students who specialize in Earth Science Teaching.

He again served on the staff of the Summer Field Camp in Sheridan, Wyoming, this past summer.

WILLIAM W. HAY. 1970-71 proved to be a very busy year for Professor Hay as he taught Oceanography (Geology 370) first semester and led a departmental field trip (Geology 315) second semester. He also participated in Marine Geology (Geology 471), an experimental research course taught by Dr. A. T. S. Ramsay, visiting lecturer from East Anglia, England.

Professor Hay was a participant again in the Deep Sea Drilling Project, Leg 15 (in the Caribbean Sea) starting in San Juan, Puerto Rico on December 1, 1970 and ending in Cristobal, Panama on February 2, 1971. He is now a member of JOIDES (Joint Oceanographic Institutions Deep Earth Studies) Paleontology Panel, JOIDES Atlantic Ocean Site Selection Panel and JOIDES Gulf of Mexico Site Selection Panel. He prepared the scientific narrative renewal proposal for JOIDES for August 1972 to August 1975, to be submitted to National Science Foundation through Scripps Institution of Oceanography.

Although Professor Hay was on leave during the second semester at the Institute of Marine Sciences in Miami, he made frequent trips to Urbana to make preparations for the Bimini field trip.

DONALD M. HENDERSON. In addition to his teaching activities, summer advising for the IAS College, and thesis supervision, Dr. Henderson has also been continuing his research on mineralogy and petrology of the White Mountain magma series and has done some petrographic calculations.

At the annual meeting of GSA, Dr. Henderson was informed that he had been appointed by the Mineralogical Society of America to the Board of Editors of American Mineralogist for 1971-73.

JON T. HOLDER. In connection with his research on the thermal and mechanical properties of solids, Dr. Holder has been working with ice crystals in the Materials Research Laboratory. This project basically is an interdisciplinary program with the Physics Department, and of primary concern to Dr. Holder is the electrical charge density associated with dislocations in ice.

Dr. Holder and his research team will attempt to take a look at dislocations in ice through the use of ultrasonic high frequency sound waves. Dislocations in ice seem to be charged, and when the dislocation is moved or oscillated, the charge will move with it. Detailed motions of dislocations can be seen through the measurement of sound wave properties. Ultimately, Dr. Holder hopes to find out the detail, magnitude, and mechanism of charge distribution and how these affect dislocations in ice.

Barring an unscheduled "thaw", Dr. Holder's research will move into full gear soon and should provide a deeper understanding of the mechanical and thermal properties of solids.

W. HILTON JOHNSON. Dr. Johnson was on sabbatical leave during the 1970-71 academic year. He spent his time at the Illinois State Geological Survey carrying out extensive research work in surficial mapping, glacial geomorphology, and Pleistocene stratigraphy of Vermilion County, Illinois and the Woodfordian stratigraphy of the Decatur Sublobe of the Lake Erie Lobe.

He will return to campus this fall to resume his teaching and research in the Department and to serve as Education Coordinator.

GEORGE deV. KLEIN. Professor Klein taught or was involved in teaching five courses this year: Geology 437 (Sedimentary Processes), Geology 112 (Honors Historical Geology) and a special undergraduate course in Sedimentology. He also team-taught Geology 336 (Petrography) with Dave Anderson and Don Henderson, covering sedimentary petrography, and Geology 471 (Submarine Geology) with Drs. Hay, Stanley and Ramsay, covering coastal marine problems.

Dr. Klein spent part of the summer of 1970 in the Minas Basin of the Bay of Fundy completing some NSF-sponsored research on tidal sand bodies, and part of August 1970 in Brazil as a Consulting Advisor to Petroleo Brasileiro, South America. Between semesters, Dr. Klein spent some time in eastern California and western Nevada doing field work on Precambrian and Cambrian tidal sand-body analogs.

Dr. Klein attended the GSA meeting in Milwaukee (and presented a paper entitled "Paleotidal Sedimentation") in November, a special conference honoring Dr. Francis J. Pettijohn in Baltimore in January, the AAPG-SEPM meeting in Houston (where he presented a paper entitled "An environmental model for some sedimentary quartzites") in March, and the Lake Superior Institute of Geology in Duluth in May. During 1970, he published two papers in the Journal of Sedimentary Petrology entitled "Tidal origin of a Precambrian Quartzite" and "Depositional and dispersal dynamics of intertidal sand bars". The latter paper was designated by the SEPM Council for the 1970 Outstanding Paper Award, Journal of Sedimentary Petrology. The award will be made at the SEPM meeting in Denver in April, 1972.

During the year Dr. Klein served as Chairman of the Colloquium Committee for the Department and as advisor to the Cyclothem Geology Club.

RALPH L. LANGENHEIM, JR. In addition to teaching several undergraduate and graduate level courses, Dr. Langenheim continued his studies of the stratigraphy, geology and paleontology of the Arrow Canyon Quadrangle in Clark County, Nevada. He is placing particular emphasis on Devonian and carboniferous problems and on the Las Vegas Range fault-fold belt. He has also been devoting his attention to Devonian stratigraphy of the Pioche region, Nevada and thrust faulting and gravity tectonics in the Pioche region. In connection with this research, he and several co-authors presented a paper at the Cordilleran Section meeting of GSA on "Sevy, Simonson and Guilmette Formations in the Pioche Region, Nevada".

Again this year Dr. Langenheim was Director for the Geology Summer Field Camp in Sheridan, Wyoming. This year's Camp consisted of 44 students from various colleges and universities throughout the country.

C. JOHN MANN. In addition to teaching the Historical Geology course during the first semester, supervising the Historical Geology labs both semesters, and teaching an advanced undergraduate course, Principles of Stratigraphy, Dr. Mann continued his personal research in geologic data enhancement and functional relationships in geology.

Dr. Mann is the American representative to the Education Committee of the International Association of Mathematical Geologists. He is also the Associate University Coordinator for the Illinois Junior Academy of Science.

V. VICTOR PALCIAUSKAS. As one of the newer staff members in the recently instituted program in solid state geophysics, Dr. Palciauskas has been carrying out theoretical investigations into the equation of state of solids at high temperatures and pressure, essential to the interpretation of the interior structure and composition of the earth, and solid state phase transformations and their relation to certain geophysical problems. He presented a paper, "Bulk modulus--volume relationships for oxide compounds", at the annual meeting to the American Geophysical Union in Washington, D.C. He also participated in a series of seminars on "Energy Resources" conducted here by the Physics Department and assisted in publishing summaries of the seminars for University distribution.

During the spring semester, along with Dr. Thomas Anderson and Dr. Pat Domenico, he taught LAS 142, Environmental Physical Science. Next year this course will be cross-listed as Geology 142.

Dr. Palciauskas was one of two staff members to receive a UI Summer Faculty Fellowship.

FRANKLIN D. PATTON. Dr. Patton's last year at the University of Illinois was spent on the stability of rock slopes. In the past year he was elected to the joint ASCE-GSA Committee on Engineering Geology as a "control member" of ASCE.

Dr. Patton resigned his position at the University at the end of this year. He and his family have moved to Vancouver, where he will work as an independent consulting geologist.

DOUGLAS E. PRIDE. Dr. Pride spent the summer of 1970 and 1971 doing mineral exploration for Cominco American Incorporated in Wisconsin, Minnesota and Iowa.

During the fall semester he taught LAS 142, a physical science course for non-science majors. He presented a paper on the geochemistry and origin of the Atlantic City, Wyoming iron formation deposit at the GSA meeting in Milwaukee in November. He also attended the Earth Science Teacher Preparation Project meeting in Boulder, Colorado in November.

During the spring semester Dr. Pride taught three undergraduate geology courses. One of these courses involved a field trip to the Great Smoky Mountains during the spring break. From what we hear, it was a trip enjoyed by all.

PHILIP A. SANDBERG. During the spring break, Dr. Sandberg assisted Dr. William Hay as a staff member on the Geology 315 field trip to the Bahamas. The trip served a two-fold purpose--to give the students field trip experience in geology in a marine environment and to collect biological specimens for teaching and research in the Department.

Dr. Sandberg has been active in research on the anatomy, distribution, and shell structure in post-Oligocene (Cytheracea) from the Americas; stable oxygen and carbon isotope in Cheilostome bryozoan skeletons; and the ultra-structure, ontogeny and mineralogy in cheilostome byrozoan skeletons. In connection with his research, he presented a paper at the November GSA meeting in Milwaukee entitled "Skeletal ultrastructure and development in cheilostome Bryozoa."

This summer he is again engaged in the summer trainee program with a student from the University of Rochester working on diagenetic alteration of ultrastructure in Pleistocene invertebrates from Florida.

HERBERT G. SETO. Mr. Seto assisted Dr. Pride in teaching the Environmental Physical Science course in the fall. His research interest is in the rearrangement mechanisms of 2-Pyrones and he is a member of the American Chemical Society. A paper entitled "Skeletal Rearrangements of 2-Pyrones Involving 1,5-Sigmatropic Hydrogen Shifts" was published by the Journal of the American Chemical Society.

DANIEL J. STANLEY. Among Dr. Stanley's many activities of the past year were trips to the Trace Fossil Conference in Liverpool and Bordeaux where he gave a paper entitled "Lower Continental rise off East-Central United States: downslope or contour current sedimentation?"

Dr. Stanley's research on sediment dispersal in the Western Mediterranean Sea is supported by a grant from the National Geographic Society. He is also studying submarine geology and sedimentation in canyons and outer margin off the Middle United States, supported by the Smithsonian Research Foundation.

Dr. Stanley is a member of the Smithsonian Institution Education Committee. As a visiting professor to the Department, he returned to the U of I to give a series of lectures to the students in Submarine Geology.

GEORGE W. WHITE. Professor White continued to work during the year on a compilation of field and lab data on glacial deposits of the Allegheny Plateau. These will lead to a colored map which will be the eighth in a series of county and areal maps, and to a summary report on northeastern Ohio. He also continued his work on a bibliography and history of early American geology and gave papers in part of this subject at Columbus, Ohio; Holland, Michigan; and at the Milwaukee GSA "Symposium on Wisconsinan Stage".

During the year, a colored map and several papers appeared, including one in Russian. Volumes 5 and 6 of the series, Contributions to the History of Geology, of which Dr. White is editor, appeared. Volume 7 will go to press during the summer and Volume 8 is now in preparation.

Dr. White continued to serve during the year as Chairman of the University Archives and Manuscript Committee and Chairman of the Executive Committee of the Water Resources Center.

Dr. White was elected an Honorary Life Member of the Ohio Academy of Science. He was cited for "his contributions to fundamental theory and the application of theory to economic and environmental problems" at the Academy's Annual Meeting on April 23 in Akron.

At the last departmental luncheon of the year, Professor Donath presented to Dr. White, on behalf of the Trustees of the University, a certificate of appreciation in honor of his retirement, and on behalf of the Department, an electric grass shears, a sterling silver pen and pencil set, and a key to Room 419 with his name engraved upon it (419 is his present office and work-room). These furnish a tool and a place to continue his writing and editing. For relaxing, he can go home and trim the 700 feet of borders around walks and flower beds. When asked, "What will you do now?" his reply is, "The same as usual!"

DENNIS S. WOOD. As lecturer for Physical Geology (Geology 101) first semester, Dr. Wood and his assistants revised the content and approach of the course to make it more relevant and meaningful to the student not enrolled in the course) and the favorable feedback from the students, the revised course was well-received.

Dr. Wood was also responsible for organizing the first summer field course abroad. This summer's group of twenty-two students undertook field work in Great Britain. Dr. Wood was assisted by Dr. David Anderson and Dr. Wood's graduate assistant, Alex Maltman. Both Dr. Wood and Mr. Maltman are British citizens and are exceptionally qualified to lead the trip.

Dr. Wood's personal research has centered on studies of natural strain in relation to common geological structures and the geology of the Welsh geosyncline and its bordering zones.

## FACILITIES AND EQUIPMENT

This year the Department of Geology completed remodeling jobs begun last year and effected some minor space reassignments. Funds for several new remodeling jobs were requested but not received during the year. By the end of the year, the Geology Department was making use of its assigned space as efficiently as possible for the current staff, without additional remodeling.

The Department expended \$10,000 to purchase a portion of the basic equipment greatly needed for engineering geology teaching and research. This equipment includes core drying equipment, and earth resistivity system, a slake durability apparatus, a laboratory shear box, and an electronically amplified photometer. Requests for additional equipment needed for engineering geology did not receive funding during this year and will be requested again in the near future.

## GIFTS TO THE DEPARTMENT

The 1970-71 academic year witnessed a significant reduction in the availability of funds from private firms. A few major research grants were awarded to some of the faculty from the National Science Foundation. The Shell Company Foundation continued their support of graduate research activities, and this year saw five of our students conducting field research thanks to Shell's generous gift.

A three-year, \$6,000 unrestricted grant was made to the University of Illinois by Paul Plusquellec (PhD '68), who is presently employed by the Texaco Company as a geologist in New Orleans. It was received by Professor Fred Donath, who indicated the money will be used to support programs for which state funds are not available. These include aid to such projects as graduate student research, summer programs for outstanding undergraduates and field trips.

## GEOLOGY LIBRARY

The Geology Library has been reorganizing and adjusting to the new space created by remodeling completed late in 1970. Acquisitions this year include 2,935 volumes and 88 periodicals. The Geology Library currently contains 58,146 volumes and receives 2,138 periodicals. The transfer of the geological map collection from the main library was completed by the addition of 3,966 maps, bringing the total to 42,391 maps now in the Geology Library. In addition, the card catalog for the map collection more than doubled in size.

One valuable acquisition for the history of geology collection was a two-volume Swedish work published in 1773-1774. No copy of this work in the original language was known to exist in any library in the U.S. until now.

## FIELD ACTIVITIES

### 1971 Summer Field Camp

For the seventeenth successive year, headquarters for the summer field camp (Geology 215) were at Sheridan, Wyoming. There were 44 students enrolled in this year's summer field camp representing 15 different colleges and universities. The Camp was directed by Dr. Ralph L. Langenheim. Included on the staff were Frank L. Koucky of the University of Cincinnati, F. W. Cambray of Wayne State, and Arthur F. Hagner and Glenn R. Buckley of the University of Illinois. Graduate assistants Jim Granath and Dennis Kolata also served on the staff.

From the Sheridan College headquarters, studies were made of the Bighorn Mountains, where geologic structures range from very simple to complex. In addition, a week-long trip was made to Yellowstone and the Grand Teton National Parks for the purpose of performing geological studies in those areas.

### European Field Course

This summer the Department offered, for the first time, a summer field course held in the British Isles. This course was open to both advanced undergraduate and graduate students. The course acquainted students with the many classical geologic areas of Britain, as well as giving them training in advanced geological mapping techniques. The field courses were under the direction of Professors Dennis S. Wood and David E. Anderson, with graduate student Alex Maltman as an assistant. A total of seventeen students from the University of Illinois, Knox College, Drexel, Harvard and Wayne State Universities registered in the course.

The purpose of the trip was to examine the sedimentary, structural and metamorphic histories of the Caledonian geosyncline of northwestern Europe. Included in the examination was the Permian igneous/volcanic complex associated with the Oslo Rift Valley of Norway and the eugeosynclinal sequences of the classic Cambro-Silurian areas in Britain. Additional field assistance in Wales and Southwestern England was provided by the Department of Geology at the University of Wales.

We believe this field course offers an unusual opportunity to our students and hope that it will be possible to conduct a similar field course in future years.

## Course Trips

Field work remains an essential aspect of geology at both the undergraduate and graduate levels. During the past year 49 formal field trips were taken in 21 courses.

<u>Course</u>	<u>Place(s) Visited</u>
Physical Geology	Kankakee, Ottawa, Starved Rock and Fithian, Ill. Baraboo, Wisconsin
Historical Geology	Chester and Fithian, Ill.; Cagles Mill and So. Indiana
Agricultural Geology	Fairmount, Illinois
Honors Physical	Baraboo, Wisconsin; Fredrickstown, Mo.; Fithian, Ill.; and So. Illinois and Missouri
Honors Historical	Madison, Indiana
Regional Field Study (Undergraduate)	Smoky Mountains
Physical Science	Brownfield Woods
Minerals and Rocks	Eastern Tennessee
Geomorphology	Danville, Illinois
Structural Geology	Smoky Mountains
Advanced Field Methods	No. Kentucky and So. Illinois
Invertebrate Paleontology and Paleontology and Stratigraphy	Madison, Indiana
Principles of Stratigraphy	Wabash, Indiana and Fithian, Illinois
Mineralogy-Petrology	Marquette, Michigan
Regional Field Geology (Graduate)	Canton, Cave-In-Rock and Starved Rock, Illinois; Wabash, Indiana; Hannibal, Missouri
Sedimentary Processes	Grayville, Illinois
Engineering Geology	Baraboo, Wisconsin
Practice of Engineering Geology	E. Tennessee
Submarine Geology	Norfolk, Virginia

## GEOLOGY CLUB

The "Cyclothem" geology club met biweekly and heard lectures from many of the faculty--Professors Donath, Klein (faculty advisor for the Club), Sandberg, Wood, White, Buckley, and Club President Ted Labotka. Ken Anderson of Massachusetts Institute of Technology gave a lecture on lunar seismicity.

The highlight of the year's activities was the Club's 10 day trip to the Grand Canyon which included visits to Red Rock State Park, Oklahoma; White Sands National Monument, New Mexico; Saguara National Monument and Sunset Crater, Arizona; Batatikin National Monument, Utah; Monument Valley, Arizona and Utah; Shiprock, New Mexico; and Mesa Verde, Colorado. The majority of the funds to finance this trip were raised by the selling of coffee and tea in the Wanless Room.



## UNDERGRADUATE PROGRAM

The undergraduate curricula and course offerings of the Department are undergoing critical examination in consideration of the needs of students facing a modern graduate curriculum or professional work in the geological sciences today. Particular emphasis is being placed on integrating traditional training with more modern approaches. Certain intermediate courses have been developed to provide a smoother transition from elementary courses of the undergraduate program to the more advanced work of the graduate program.

Geology majors with high academic achievement are encouraged to take the honors program. There they are able to pursue various aspects of geology in detail, and hence gain greater insight into the methods of geological reasoning and investigation. Senior staff members, other than the honors instructor, meet with the honors sections and discuss subject matter in which they are particularly expert. During the past year special material presented in honors sections included discussions of basin analysis, sediment transport, and recent developments in paleoecology. A well-equipped laboratory for honors work enables the students to gain practical experience essential to a complete understanding of fundamentals. Laboratory exercises in the honors sections are innovative and place emphasis on individual observation and interpretation.

Extended field trips are an essential part of the honors program. The Geology 111 class took a four-day trip each semester to the St. Francois Mountains of Missouri and to the Fluorite district of southern Illinois. Also in each semester, the Geology 111 class made a one-day trip to observe the field relationships and to collect samples from rock units of Pennsylvanian age. In the fall semester, the Geology 112 class took a weekend field trip to southern Indiana and northern Kentucky; in the spring, there was a four-day field trip to southern Indiana and southern Illinois. The students examined recent point bar sediments and Silurian, Mississippian, and Pennsylvanian sandstones and limestones.

## UNDERGRADUATE SUMMER PROGRAM

During the summer of 1970 the Department of Geology implemented its Undergraduate Summer Traineeship Program on an experimental basis. This program allowed four undergraduates from other universities to spend the summer session working in laboratories in direct contact with professors conducting basic research in the geological sciences. During this period the trainees received a stipend from funds made available to the Department by private donors and were registered for credit in Geology 290, Research and Thesis. The opportunity to participate in a program of this sort is not usually available to undergraduates, and the program was instituted in the hope that it would help make superior graduate students and academic scientists of these superior undergraduates. Because of its unqualified success in 1970, the program was continued in 1971, and four undergraduates from Knox, Beloit, and Augustana Colleges and the University of Rochester spent this summer working in departmental laboratories.

## THE GRADUATE PROGRAM

The graduate group in Geology this year consisted of 85 students who held degrees from 55 different colleges and universities representing a wide geographic distribution, including 11 foreign countries. The graduate enrollment of 85 is an increase of 7.6% over the 1966-71 five year average of 79.

Eight students received PhD degrees this year. Reflection of the current problems in employment can be witnessed by the fact that, for the first time in over five years, one of our PhD graduates does not have a firm commitment for any position.

Most of the graduate students in geology received financial aid during the academic year from fellowships, traineeships, assistantships or employment in geological work. This year only 26% of the graduate students in geology were supported entirely by family or other private sources. In addition to this academic year support, the Department has been able to provide some support for summer field work and laboratory research activities for graduate students through grants and gifts given to the Department by industrial organizations and other agencies. Eighteen graduate students in 1970 and sixteen in 1971 were supported in this manner during the summer.

During the spring semester, the Geology faculty approved a change in the minor requirement for doctoral candidates. Now a student need not designate a particular minor but must take two graduate courses outside the Department of Geology for a total of no less than 1½ units of graduate credit.

A list of graduate students enrolled during the 1970-71 academic year follows.

### FELLOWS:

#### University of Illinois Fellowships

John J. Barnes	BS '67	Michigan State University
R. James Kirkpatrick	BS '68	Cornell University
Alberto Nieto-Pescetto	BS '61 MS '63	San Marcos Univ. of Lima Washington University
Frank Schwartz	BS '68 MS '69	Univ. of Western Ontario Univ. of Manitoba

#### NDEA IV Fellowship

James W. Mercer	BS '69	Florida State University
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#### National Science Foundation Traineeships

Roscoe G. Jackson	BS '70	University of Kansas
Allen R. Lappin	BS '69 MS '71	University of Illinois University of Illinois

Regina L. Link	BA '70	University of Oregon
Charles H. Norris	BS '69 MS '70	University of Illinois University of Washington
<u>Pan American Fellowship</u>		
Joseph R. Hatch	BS '66 MS '68	Idaho State University University of Illinois
TEACHING ASSISTANTS:		
William F. Bawden	Bsc '70	Queens University of Kingston
Glenn R. Buckley	BS '67 MS '68	Wayne State University Wayne State University
Herbert A. Elliott	BA '64 MS '69	University of Virginia Louisiana State University
Richard W. Ely	BA '62 MS '69	Cornell University University of Illinois
Richard M. Forester	BS '69	Syracuse University
Harold C. Ganow	BS '67 MS '69	Colorado State University Colorado State University
Andrew M. Gombos	BS '70	Washington & Lee University
James W. Granath	BA '71	University of Illinois
Michael W. Hansen	BS '65 MS '70	Idaho State College University of North Carolina
James E. Hooten	BS '69	St. Joseph College
Warren L. King	BS '67	State University of Iowa
Dennis R. Kolata	BS '68 MS '70	Northern Illinois University Northern Illinois University
Alan K. Kuhn	BS '63 MS '68	Duke University Colorado State University
James W. Mahar	BS '67 MS '69	Idaho State University Colorado State University
Suzanne E. Mahlburg	BS '69	University of Illinois
Alexander Maltman	BS '67 MS '71	University of Liverpool University of Illinois
Michael D. Martin	BA '70	Albion College

Robert M. Mason	BS '67 MS '71	University of Notre Dame University of Kansas
Patrick T. McCullough	BS '64 MS '68	Univ. of British Columbia University of Illinois
James A. Miller	BS '70	Colorado School of Mines
David W. Moore	BA '61 MS '70	College of Wooster University of North Carolina
Rodney D. Norby	BS '67 MS '70	University of North Dakota Arizona State University
Frank J. Nowak	BS '67 MS '70	University of Notre Dame University of Illinois
Gary Olson	BS '69	University of Illinois
William A. Olsson	BA '66 MS '68	Southern Illinois University Southern Illinois University
Robert A. Robinson	BS '69	Univ. of Calif. Los Angeles
John F. Ryan	BA '70	University of Southern Florida
Gayla M. Sargent	BA '69 MS '71	Morehead State University University of Illinois
Paul R. Schluger	BA '68 MS '69	Temple University University of Pennsylvania
Nahum Schneidermann	BS '67 MS '69	Hebrew University Hebrew University
John M. Sharp, Jr.	BS '67 MS '71	University of Minnesota Midwestern University
Charles H. Simonds	BS '67 MS '69	Stanford University University of Illinois
Richard A. Smosna	BS '67	Michigan State University
Ian M. Steele	BS '66	Rensselaer Polytechnic Inst.
Michael P. Stephens	BS '68	University of Texas
Gary D. Stricker	BA '63 MS '65	Wayne State University Wayne State University
James A. Wexler	BA '70	Queens College

## RESEARCH ASSISTANTS:

Rodney J. Balazs	BA '70 MS '71	Queens College University of Illinois
James C. Gamble	AB '62 MS '67	Earlham College University of Illinois
Rikki L. Welsh	BS '71	University of Illinois

## OTHER GRADUATE STUDENTS:

Ramakant P. Agaste	BS '55 MS '57	University of Poona University of Poona
Donald B. Allen	AB '61 MS '66	Fresno State College University of Illinois
George J. Allgaier	BS '64	S.U.N.Y. at Buffalo
Raymond E. Aufmuth	BS '63 MS '66	University of Dayton Miami University
Matthew J. Avcin	BA '65 MS '69	Lafayette College University of Illinois
Susan B. Avcin	BA '67	College of Wooster
Nathan J. Ayer	AB '62 MS '65	San Diego State College San Diego State College
Julia C. Badal	BA '67	Bryn Mawr College
Frederick M. Beaudry	BS '64	U. S. Naval Academy
Kwasi Boateng	MSc '67	Moscow State University
Koss D. Brower	BS '63 MS '69	Purdue University University of Illinois
Keros Cartwright	BA '59 MS '61	University of California University of Nevada
Thomas L. Chamberlin	BS '68	Michigan State University
William E. Cote	BA '62 MS '67	University of Massachusetts University of Illinois
Thomas P. L. Dowell, Jr.	BS '49	Georgia Institute of Technology
Carlos B. Emparan	BS '66 MS '71	University of Chile University of Illinois
Gordon S. Fraser	BS '68	University of Illinois
Rufus T. Getzen	BA '65 MS '67	Wake Forest College South Carolina University

Randall E. Hughes	BS '66	University of Illinois
Abdul-latif Hamdan	BS '64 MS '70	Damascus University University of Illinois
Donald O. Johnson	BS '65 MS '66	Northern Illinois University Northern Illinois University
Margaret A. Kasowski	BS '64 MS '68	University of Ottawa University of Illinois
Mohamad R. Khawlie	BS '71	American University of Beirut
Thomas F. Lawry	BS '32 BS '35	Allegheny College University of Pittsburgh
Richard L. Leary	BS '58 MS '61	Virginia Polytechnic Institute University of Michigan
Chao-li Liu	BS '64 MS '68	National Taiwan University Memorial University, Newfound- land
Sahar A. McCullough	BS '64 MS '71	Damascus University University of Illinois
Jean E. Peterson	BS '69	Augustana College
James B. Risatti	BS '66 MS '70	University of Illinois Mississippi State University
James E. Rogers	BS '67 MS '70	Western Illinois University University of Illinois
Richard P. Sanders	BS '65 MS '67	Northern Illinois University Northern Illinois University
Frank B. Sherman, Jr.	BA '57 MS '68	Dartmouth University Colorado State University
Brian J. Sinclair	BS '64	McGill University
William Size	BS '65 MS '67	Northern Illinois University Northern Illinois University
Alan F. Skrzyniecki	BS '66 MS '70	University of Toledo University of Illinois
Heribert Stindl	BS '63 MS '65	Justus Liebig University Kansas State University
Hayashi Sugahara	BS '61	Tohoku University
Peter J. Tarkoy	BS '64 MS '67	City College of New York University of Tennessee
Roy J. Van Ryswyk	BS '64	University of British Columbia
James G. Ward	BS '61	College of Wooster

DEGREES GRANTED SINCE AUGUST 1970

BS and BA

Steven Dills  
James Granath  
Mark Nelson  
Robert Raidl  
Richard Blank  
James Cobb  
Suzanne Emery  
Nancy Savula  
Bruce Scapecchi  
Billy Wren

Steven Jamrisko  
David Johnston  
Theodore Labotka  
Steven Leavitt  
Stephen Lee  
Gordon Luster  
Diane Moore  
Catherine Morin  
Harold Wilber

MS

RICHARD A. SMOSNA, August 1970  
Tungsten gap chert member, BSC formation, Bird Spring Group,  
Clark County, Nevada.  
Supervisor: R. L. Langenheim

GORDON S. FRASER, October 1970  
Petrology of the Hall and Pontiac Limestone Members (Upper  
Pennsylvanian) in Livingston County, Illinois.  
Supervisor: R. L. Langenheim

ABDUL-LATIF HAMDAN, October 1970  
Ground-water hydrology of Iroquois County.  
Supervisor: Patrick Domenico

FRANK J. NOWAK, October 1970  
Geology of the Baldy Mt. Norite, Albany County, Wyoming.  
Supervisor: A. F. Hagner

GILBERT D. TAYLOR, Jr., February 1971  
Conodonts from the Mansfield and Brazil formations (Morrowan)  
of the Illinois Basin  
Supervisor: Charles W. Collinson

CARLOS B. EMPARAN, June 1971  
No thesis.

ALEXANDER J. MALTMAN, June 1971  
Structural geology of an area around Lake Bomoseen, west-central  
Vermont.  
Supervisor: Dennis S. Wood

SAHAR A. MC CULLOUGH, June 1971  
Significance of textures in granites, Somesville pluton,  
Mount Desert Island, Maine.  
Supervisor: Carleton A. Chapman

PhD

JOHN D. KIEFER, October 1970

Pre-Chattanooga Devonian stratigraphy of Alabama and northwest Georgia

Supervisor: R. L. Langenheim

Employment: Department of Geology, Eastern Kentucky University

RONALD D. STIEGLITZ, October 1970

Scanning electron microscopy of the fine fraction of recent carbonate sediments from Bimini, Bahamas.

Supervisor: William W. Hay

Employment: Military Service

RANDALL E. HUGHES, February 1971

Mineral matter associated with Illinois coals.

Supervisor: R. L. Langenheim

Employment: Georgia Kaolin Company, Sandersville, Georgia

HERIBERT STINDL, February 1971

Electron microprobe study of diabase-granite contact zones in composite dikes, Mount Desert Island, Maine

Supervisor: D. M. Henderson

Employment: teaching at a university in Germany

RICHARD P. SANDERS, June 1971

Petrology of the Pleasant Mountain Intrusion, Maine.

Supervisor: Carleton A. Chapman

Employment: Wisconsin State University at Stephens Point, Wisconsin

CHARLES H. SIMONDS, June 1971

Recrystallization and grain growth of quartz and hematite in a metamorphic gradient, Negaunee Iron Formation, Upper Peninsula, Michigan.

Supervisor: D. E. Anderson

Employment: NASA, Houston, Texas

WILLIAM B. SIZE, June 1971

Petrology of the Red Hill syenitic complex, Moultonboro, New Hampshire.

Supervisor: Carleton A. Chapman

Employment: Eastern Illinois University

IAN M. STEELE, June 1971

Electron microprobe and x-ray diffraction study of natural idocrase.

Supervisor: D. M. Henderson and N. Güven

Employment: Department of Geophysical Sciences, University of Chicago



## DEPARTMENTAL ACTIVITIES

The annual fall picnic was held again at the Democratic Picnic Grounds in Urbana in early October. Over 50 people attended the gathering which was funded by the Geology Department for the purpose of introducing new staff and graduate students to each other and to the continuing staff and students.

On Sunday, June 20, the Department of Geology hosted a reception at the Urbana Country Club for Dr. Kingsley C. Dunham, Director of the Institute of Geological Sciences of Great Britain. Dr. Dunham was awarded an honorary Doctor of Science degree at the June Commencement of the University. Dr. Dunham was the George A. Miller Visiting Professor of Geology during Semester I, 1956-57. Fifty-three persons representing the University Administration, the Department of Civil Engineering, the State Geological Survey, and the Department of Geology attended the reception.

This year an Architecture student utilized the Department of Geology as the subject for his senior thesis project. He designed a new Geology building, taking into consideration the present and projected needs of the Department. He based his design on research into the Department's activities and interviews he conducted with the staff. His project served to underscore in the minds of the staff the critical need for such a building in the near future. A model of the building is now displayed in the Wanless Room.

## ALUMNI ASSOCIATION NEWS

This year's Outstanding Senior Award of the Brunton Compass was presented to Miss Diane Moore by Professor Donath on May 26 at a meeting of the Cyclothem Geology Club. Miss Moore maintained a 4.973 average throughout her undergraduate work at the University of Illinois. This summer she participated in the Great Britain field course.

Diane has a fellowship for graduate work at Stanford University beginning in the fall.

\* \* \*

The following Geology Department alumni attended the April meeting of the American Association of Petroleum Geologists:

Peter Fenner	Park Forest, Illinois
Stephen Born	Madison, Wisconsin
Raymond Gutschich	Notre Dame, Indiana
Gordon Fraser	Urbana
Paul F. Karrow	Waterloo, Ontario
Murray McComas	Kent, Ohio
Lyle McGinnis	DeKalb, Illinois
Stephen Moran	Grand Forks, North Dakota
David Stephenson	Madison, Wisconsin
Earl Christiansen	Saskatchewan

## Alumnus Elected to National Academy of Sciences

Kenneth O. Emery (BS '37, MS '39, PhD '41) was elected to membership in the National Academy of Sciences in April 1971. Dr. Emery's distinguished career as a marine geologist began under the guidance of Professor F. P. Shepard, then with this Department, and his thesis entitled "Lithology of the sea-floor off Southern California" was only the beginning of numerous marine studies.

Following his graduation, K. O., as he is known to all of his many friends and colleagues, became an associate geologist with the Illinois Geological Survey during the period 1941 to 1943. He was a member of the staff of the Department of Geology at the University of Southern California and was also associated with the Allan Hancock Foundation until 1962. It was during this period that his many papers on marine geology of the California borderland and other Pacific regions were published, and that his well-known book, "The Sea off Southern California", appeared.

He joined the staff of the Woods Hole Oceanographic Institution, and in his capacity as Senior Scientist, helped initiate the first concerted team effort to examine the Atlantic continental margin from Maine to Florida. Numerous joint studies dealing with the morphology, sediments, structure and general geological history of this region have been published as a result of Dr. Emery's leadership. In recent years, he has once again turned his attention to oceanographic problems in regions of southeast Asia.

Dr. Emery has received many professional honors and he has served on numerous distinguished national and international committees. His influence on the field of Marine geology has been remarkable, not only for his more than 200 individual and joint papers, but also for the numerous scientists he has helped prepare for careers in oceanography and who today hold responsible positions in government, industry and universities. The Department joins his many friends throughout the world in sending him hearty congratulations and best wishes for continued success in his oceanographic endeavors.

D. J. Stanley  
May 21, 1971

## ALUMNI NEWS

- CLARENCE S. ROSS (PhD '20), has retired from the USGS in Washington, D.C., and is living with his daughter in Bethesda, Maryland.
- SIMEON L. OSTERMEIER (BS '28), has retired from Geology and the Navy, but he is not idle. He is involved in art and California history and is working part time as a tour guide at the Hearst Castle at San Simeon. He welcomes any UI geology alumni traveling in the area to look him up at his home in Cambria.
- RALPH E. KNIPE (MS '29), has retired at 753 West 21st Street in Casper, Wyoming.
- DAVID M. LARRABEE (AM '35), retired in May 1970 after ten years as a mining and economic geologist with industry and twenty-three years with the USGS in Washington, D.C.; His productive career included fifty professional publications. In 1971 he received a citation for meritorious service signed by the former Secretary of the Interior, Walter J. Hickel, "in recognition of his valuable contributions to the program of the Geological Survey in the field of nonmetallic mineral resources."
- GEORGE G. CONEE (PhD '37), was awarded a citation for distinguished service by Rogers B. Morton, Secretary of the Interior "in recognition of his outstanding contributions to the science of geology and for the exceptional leadership and direction that he has given to the field of stratigraphy." The Distinguished Service Award is the highest honor given by the Department of the Interior.
- JAMES SCHOPF (PhD '37), has been principally concerned the past several years with Antarctic fossil floras and with some geotectonics. He is still a geologist with the USGS, with nominal appointments in the Department of Geology and Botany at Ohio State University.
- WILLIS M. DECKER (MS '39), remains a Geological Representative with Cities Service Oil Company in Anchorage, Alaska.
- WILLARD C. LACY (MS '40), head of the Department of Mining and Geological Engineering at the University of Arizona, participated in the 100th Annual Meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers held in New York in March, 1971. He presented a paper entitled "Attracting Engineering Students to the Mining Industry" in which he discussed the most effective parts of the highly successful program at his own University.
- ROBERT S. DIETZ (PhD '41), was awarded the Walter H. Bucher Medal of the American Geophysical Union for original contributions to the basic knowledge of the earth's crust.
- WILLIAM F. PRESCHER (BS '42), is now a Consulting Geologist in Casper, Wyoming.
- MARVIN P. MEYER (MS '46), is Supervisor of Research Civil Engineers at the Waterways Experimental Station in Vicksburg, Mississippi.

- ALLEN F. AGNEW (MS '47), is continuing as the Director of the State of Washington Water Research Center and as a Professor of Geology at Washington State University in Pullman, Washington.
- WILLIAM E. MC COMMONS (BS '47), is President of McCommons Oil Company. His wife is the former Mary L. Widener (BS '47).
- JOHN B. VERCELLINO (BS '47), is now District Production Geologist for Humble Oil and Refining Company of Lafayette, Louisiana.
- LAWRENCE J. FINROCK (MS '48), is working for the Sun Oil Company as an offshore Gulf of Mexico geologist following the recent merger of Sunray DX into Sun Oil. This work in regional geology covering in extensive area is one of his most rewarding experiences.
- RICHARD M. GOLDEN (MS '48), and his wife Kay have three children. Richard has been located in Denver for the past seven years with Brown and Bigelow. He is presently National Account Executive of the Denver District Sales Office.
- REV. JAMES E. GRANT (BS '48), would be happy to renew friendships with any Illini who may pass through Davenport, Washington on Highway 2 (Wenatchee-Coulee Dam road) along which the Immaculate Conception Parish is located. He has recently been appointed pastor there.
- WILLIAM C. IRVIN (MS '48), is a Professor of Physical Science at Sacramento State College in Sacramento, California.
- DAVID J. KULL (MS '48), is continuing with Farmers Union Central Exchange of Laurel, Montana as Manager of the Production and Exploration Department.
- WARREN L. TAYLOR (MS '49), is now a Petroleum Consultant in Englewood, Colorado.
- THOMAS J. NOLAN, JR. (BS '48), transferred to Cork, Ireland in December 1970, where he is doing offshore drilling in the Celtic Sea for Marathon Petroleum (Ireland) Ltd. Prior to his transfer he was stationed at the Marathon Company headquarters in Findlay, Ohio where his area of interest was Central and South America.
- RICHARD L. THREET (MS '49), is continuing as professor of geology at San Diego State College.
- JAMES C. BANDY (MA '50), is a geologist with South Texas Development Company. He has been appointed Denver Manager.
- HOWARD R. CRAMER (MS '50), is Associate Professor of Geology at Emory University
- RICHARD T. HERCHER (BS '50), remains as a consultant geologist in Littleton, Colorado.
- ROBERT E. MURPHY (BS '50), remains in Houston but is now working for Chevron Oil Company.

JACK R. CENTURY (MS '52), is Senior Staff Geologist with Amoco Canada. He is living in Calgary, Alberta, Canada.

H. M. GROVES (MS '52), is still with the Missouri Geological Survey in Rolla, Missouri. He has nearly completed a report on a sub-surface study of the St. Peter Sandstone in Missouri after a two-year study. His oldest son Chris received a Masters degree in soil mechanics and is now employed by CREEL in New Hampshire. Henry's son Jeff is on the nuclear sub Will Rogers as a reactor man.

EDWIN W. TOOKER (PhD '52), is continuing his research project, "Economic Geology of the Bingham Mining District, Utah." He is employed by the USGS in Menlo Park, California as a Research Geologist.

JOHN J. CHAPMAN (PhD '53), is presently Professor and Head of the Department of Earth Science at Western Carolina University in Cullowhee, North Carolina.

EUGENE G. WILLIAMS (MS '52), was recently awarded the Matthew J. and Anne C. Willson Outstanding Teaching Award for 1970 at Pennsylvania State University where he is a professor.

PAUL J. REGORZ (BS '53), recently became Program Coordinator of Southern Region Jobs in the California Department of Human Resources Development.

WILFORD F. WEEKS (BS '53), is continuing his work on the geophysics of sea ice. He is currently studying the mechanics and morphology of pressure ridges. He participated in both arctic cruises of the S.S. Manhattan and operated a program on strain rates and associated structural features in the Arctic Ocean during the winter of 1971. He was recently elected vice-president of the Glaciological Society.

ROBERT K. FAHNESTOCK (BS '54), is an Associate Professor of Geology at Southern University of New York in Fredonia, New York.

JOHN E. MUELLER (BS '54), is employed by Litton Industries in Van Nuys, California where he is manager of communications in the Systems Design Department.

FRANK ANDREWS (BS '55), has recently taken a position as Environmental Planner (Groundwater) with the State Department of Air and Water Pollution Control in Tallahassee, Florida.

EUGENE W. BORDEN (BS '56), is employed by Esso Production and Refining Company in Houston.

LESLIE G. ANDERSON (BS '57), continues as an attorney with Ibold, Hustedt, and Anderson in Los Angeles, California.

ALLEN S. BRAUMILLER (BS '57), is Chief Geologist with Helmerich and Payne, Inc., of Tulsa.

DONALD W. HUTCHESON (MS '57), resigned as editor of the Virginia Division of Mineral Resources in July 1970 and accepted a position with the Kentucky Geological Survey as Editor and Head of the Publications Section. He is also working part time on a doctorate in geology at the University of Kentucky.

PAUL F. KARROW (PhD '57), is presently participating in the development of the new Msc program in the Department of Earth Sciences in Environmental Geology at the University of Waterloo. Dr. Karrow spent sabbatical leave from January to June 1970 at Scripps and worked the summer of 1970 for the Geological Survey of Canada in Saskatchewan. The Karrows have three children: Douglas 7, Niel 5, and Sheila 2.

ELDON L. WHITESIDE (BS '57), is employed by U.S. Gypsum Company.

JOHN D. WINSLOW (PhD '57), has been appointed head of the hydrogeology section of the USGS in New York.

PAUL A WITHERSPOON (PhD '57), received the Robert Horton Award at AGU's Fifty-first Annual Meeting for the best hydrology paper to appear in Water Resources Research during 1969. The paper was entitled "Theory of Flow in a Confined Two-Aquifer System".

FRANK LARRY DOYLE (PhD '58), has been rather mobile the past few years. After winding up his groundwater exploration and research program in Panama in 1968, he experienced a new type of Pleistocene geology. In Nicaragua he was handling hydrology and surface geology chores on a geothermal resources project among the modern (and sometimes active) volcanoes there. As a research hydrologist, he is currently in North Africa trying to solve water problems on an agricultural project with the International Center for Arid and Semi-Arid Land Studies, Texas Technical University.

JAMES E. HACKETT (PhD '58), left the Illinois State Geological Survey in Naperville in November to become professor in the Department of Geological Sciences at Virginia Polytechnical Institute, Richmond.

CHARLES HARDIE (MS '58), is working for Citicorp Systems, Incorporated as a Senior Systems Analyst.

JOHN DAVID JOHNSON (MS '59), is currently Staff Editor with Laidlaw Publishers of Riverforest, Illinois.

DONALD O. RIMSNIDER (MS '59), continues as a geologist at the New Orleans branch of the Chevron Oil Company.

ALBERT D. PERNICHELE (BS '60), a mine planning engineer for Kennecott Copper's Bingham Mine of Bingham Canyon, participated in the 100th Annual Meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers held in New York City in March 1971. Mr. Pernicbele delivered a paper entitled "Water-Induced Stability Problems in Waste Dumps at Kennecott's Bingham Canyon Mine" which considers the "blowout" type of slope failure and how to prevent this dangerous type of slope explosion. Mr. Pernicbele is also completing his PhD degree at the University of Utah.

- CHARLES E. PFLUM (BS '60), continues with Esso Production Research Company In Houston.
- RICHARD E. SMITH (MS '60), is continuing to work at the U.S. Naval Oceanographic Office in Washington, D.C.
- CHARLES J. CHANTELL (BS '61), has been promoted to Associate Professor in the Department of Biology at the University of Dayton.
- FRANCIS PAUL DOHM (BS '61), is a petroleum exploration geologist with Pan American Petroleum Corporation in Denver.
- ERIC C. ORKILD (BS '61), received a MBA in finance at the University of Chicago June 1970. He is currently employed as an accountant with Greyhound Corporation in Chicago.
- WILLIAM F. ELDRIDGE (MS '61), is now with Gulf Mineral Resources Company in Denver.
- GROVER EMRICH (PhD '62), has joined the Consulting Engineering Firm of A. W. Martin Associates, Inc., in King of Prussia, Pennsylvania as Manager of the Environmental Resources Department.
- KARL R. KRAUSS (BS '62), is now an intravenous solution specialist for Baxter-Travenol Labs, Inc. of Deerfield Illinois. He makes his home in Broomfield, Colorado.
- ELLIOTT A. RIGGS (PhD '62), set up an independent exploration office in 1966 after being employed by Texaco for a number of years. He now specializes in the Paradox, Black Mesa, and San Juan Basins, and the Four Corners Platform.
- RONALD R. SCHNIDT (BS '62), completed requirements for the PhD degree from the Department of Geology, UCLA in November 1970. He has accepted a two-year appointment as scientific cooperator with the Department of Micropaleontology, University of Utrecht, Netherlands, where his duties will be to teach and supervise graduate student research in the specialty of Micropaleontology.
- PAUL R. SEABER (PhD '62), his wife Gerda and four children have successfully completed one year in Lahore, Pakistan. Paul's two-year involvement with a USGS project in Lahore as Chief Technical Advisor to the Water and Soil Investigation Division of West Pakistan has provided an opportunity for the whole family to travel extensively to such places as Afghanistan, Thailand, Singapore, Java and Bali.
- R. T. SIMMONDS (PhD '62), enjoys working with about 70 graduate and undergraduate majors in the Department of Earth Sciences at the State College of Oneonta, New York where he is a professor.
- DANIEL TEXTORIS (PhD '63), spent an exciting 32 days in the fall of 1970 in Czechoslovakia as a guest of the U.S. Academy of Sciences and The Czechoslovakian Academy. The past winter his work as Associate Professor of Geology and Assistant Dean at the University of North Carolina - Chapel Hill was highlighted by leading a week-long carbonate field trip to the Florida Bay-Keys Reef Track region.

- RONALD E. HEUER (MS '65), is working with consulting engineers of A. A. Mathews, Inc., where he is engaged in all phases of underground construction.
- WILLIAM J. LANG (PhD '65), a research mineralogist in the Industrial Products Division of International Minerals and Chemical Corporation located in Libertyville, Illinois, presented a paper entitled "Bentonite: the Demand and Markets of the Future" at the Society of Mining Engineers' centennial meeting held February 26-March 4 in New York City.
- LEE BERT SOMERS (MS '65), spent the winter in Thule, Greenland doing a reconnaissance for a summer program for the University of Michigan-Ann Arbor, which includes ecology, geology, equipment evaluation (diving), and human performance studies.
- DARREL E. DUNN (PhD '67), continues as Assistant Professor of Geology at Montana State University.
- ROBERT L. REINKING (PhD '67), has been named Assistant Professor of Geology at Hope College in Holland, Michigan.
- DETMAR F. SCHNITKER (PhD '67), his wife Julie and son Bernard returned to the U.S. after two very enjoyable years in SW France. He is presently employed as Assistant Professor of Oceanography at the University of Maine with a joint appointment in the Department of Geological Sciences. His research at the University includes work with foraminifera cultures, a study of the Holocene history of a nearby coastal bay and the ecology of foraminifera in the Damariscotta River. Professor Schnitker is also teaching a course in micropaleontology in the Geology Department in Orono, Maine.
- DAVID W. ALLMAN (MS '68), has taken a position as hydrogeologist in the Idaho Bureau of Mines and is living in Moscow, Idaho.
- GERALD V. HENDERSON (PhD '69), has taken a position in the Department of Physics and Earth Science at California State Polytechnic College in Pomona, California. In addition, he is consulting in the California area.
- BRUCE L. KECK (MS '69), completed his MS in June 1969 in Oceanography at the University of Rhode Island. He then went to Seattle with the National Ocean Survey, National Oceanic and Atmospheric Agency. Next, he spent a year aboard NOAA Fairweather doing hydrographic survey work in Alaskan waters. He is presently aboard NOAA Ship Oceanographer in the North Pacific.



\* \* \* \* \*

We hope that you have enjoyed our 21st Annual Newsletter. We would like to keep up with you and your activities, so if you change your address or job or have some news you want to share, fill out the card on the back cover and mail it to us. You can also use this card to request addresses for fellow alumni and staff.

Don't forget that we, here in the department, like to hear from you, even if it's only just a postcard. And if you are in Champaign-Urbana, drop in and see us in old NHB!

\* \* \* \* \*



## DISCONTINUATION OF THE NEWSLETTER

It now appears that the Department's financial situation may prevent the publication of further editions of the Newsletter. We regret announcing this possibility, but recent reductions in state funds have caused us to discontinue certain non-essential activities. The Department would be interested in hearing your opinion of the Newsletter. If you have enjoyed receiving the Newsletter and would like to see this annual publication continued, please indicate this to us by marking and returning the statement below.

We will attempt to seek other funds for the continuation of the Newsletter. In the meantime, your contributions or suggestions may help to insure its continuation. Please address all correspondence to the Geology Department, 249 Natural History Building, University of Illinois, Urbana, Illinois 61801.

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YES, I DO ENJOY RECEIVING MY COPY OF THE NEWSLETTER AND  
WOULD LIKE TO SEE ITS PUBLICATION CONTINUED.



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PLEASE SEND ME THE CURRENT ADDRESS(ES) FOR THE FOLLOWING ALUMNI AND/OR  
STAFF MEMBERS:

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# TWENTY-SECOND ANNUAL NEWSLETTER

DEPARTMENT of GEOLOGY  
University of Illinois  
Urbana

MAY 24 1973

1971-72

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GEOLOGY





## TO THE ALUMNI AND FRIENDS OF THE DEPARTMENT

We were delighted by the very positive response from so many of you regarding continuation of the NEWSLETTER. Obviously, the NEWSLETTER is valued and appreciated much more than we ever suspected, and we thank you for letting us know this and for the many helpful comments you have offered. With such expressed interest, we certainly intend to continue the publication and to maintain this form of contact with our many alumni and friends!

The past year has been an active, and challenging, one for us as individuals and as a department, as you will note in reading through this issue of the NEWSLETTER. Although we have had to tighten our belts in response to cutbacks in both state and federal support, our programs continue to evolve and our enrollments continue to grow. We are understandably pleased that our undergraduate majors have been very successful in being admitted to the best graduate schools and that our advanced-degree graduates have been among those most highly sought for the better positions available. The Department has an enviable placement record among departments in the University, and this reflects both the quality of our students and the yeoman efforts of Professor George Klein, who serves as Placement Coordinator for the Department. Both George and I appreciate the many leads for positions that we have received from our alumni and friends.

We are sorry to report the loss to our programs of Professor Don Deere, who resigned in September so that he could devote full time to his consulting practice. Dr. Deere had been on the staff since 1955, and held a joint appointment between Civil Engineering and Geology. We have appointed one of his former Ph.D. students, Alberto Nieto-Pescetto, to provide continuity in the engineering geology program. Also departed from our staff this year is our Curator of the Paleontological Collections, Dr. John Carter, who resigned to accept appointment as Curator at the Carnegie Museum in Pittsburgh. Dr. Carter had been on our staff since 1966. Assistant Professor Necip Güven, who joined our staff in 1967 as crystallographer and mineralogist, has resigned to accept a position as Associate Professor of Geology at Texas Technological University.

Last spring semester we had with us as Visiting Professor, Dr. Jose J. Fripiat, who is Professor and Head of the Laboratory of Mineral Physical Chemistry at the University of Louvain, Belgium. Professor Fripiat, who is well known to workers in clay mineralogy, will join us next spring to help us develop graduate and research programs in mineral physical chemistry at Illinois. Professor Fripiat has been very active in the application of modern instrumental analysis to the study of kinetics and mechanism of reactions between water and hydrated solids, such as clay minerals. He is joined on our staff by Dr. Maribel Cruz-Cumplido who will assist in the development of the program. Other new appointments include: James Risatti, a Ph.D. candidate in paleontology, who is instructing in our honors and physical science programs; David Foster, departmental electronics technician; and David Phillips, departmental cartographer. I am pleased to announce, also, the recent promotions of three of our academic staff: G. deV. Klein to full professor, and D. E. Anderson and D. B. Blake to Associate Professor, respectively.

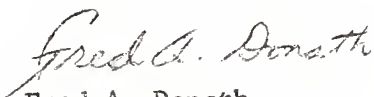
Largely through the efforts of Professors Graf and Klein, the Department continued to benefit from an outstanding Guest Lecture series during the past year. The success of activities such as our Guest Lecturer series and certain graduate research programs are very much dependent upon the continued support of our alumni and friends. This past summer, the generous support from Shell



Oil and Texaco Foundation was responsible for the research and field activities of 24 of our graduate students.

We hope that you will find this twenty-second edition of the NEWSLETTER of interest, and that you will help keep us informed of your activities by returning the last page of this issue with news of your recent activities. I would like to remind you that information concerning your fellow alumni is available simply by writing to Jan Nicholson, Geology Alumni Affairs, 232 Natural History Building, Urbana, Illinois 61801.

Sincerely yours,



Fred A. Donath  
Professor and Head

P.S. For those of you planning to attend the GSA Meetings in Minneapolis, the University of Illinois cocktail party at the GSA Meeting is scheduled for Monday evening, November 13, 1972 in the Solarium Room at the Curtis Hotel, 1730 to 1930 hours. There will be a cash bar. We hope to see you there!



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GUEST LECTURERS

Many outstanding lecturers came to the Department to speak on a broad range of interesting topics during the past year.

A. M. ZIEGLER  
University of Chicago  
"The Proto Atlantic Ocean"  
September 28, 1971

MIRIAM KASTNER  
University of Chicago  
"Geochemistry of authigenic feldspars"  
December 14, 1971

JOHANNES WEERTMAN  
Northwestern University  
"A theory of surging glaciers"  
October 26, 1971

ROBERT F. ROY  
Purdue University  
"Regional structure and thermal history in the western United States"  
February 7, 1972

J. WYATT DURHAM  
University of California  
"The paleontology of the pre-cambrian-paleozoic transition"  
November 5, 1971

ROBERT V. RUHE  
University of Indiana  
"Pedimentation in humid climates"  
February 14, 1972

JOHN T. WHETTEN  
University of Washington  
"Modern graywackes from the Columbia River"  
November 8, 1971

CHIH TED YANG  
Illinois State Water Survey  
"The formation of riffles and pools"  
February 21, 1972

LEE J. SUTTNER  
Indiana University  
"Petrographic and geochemical comparison of recent fluvial sands derived from igneous and metamorphic source rocks"  
November 16, 1971

DAVID M. RAUP  
University of Rochester  
"Optimization in evolution"  
February 28, 1972

MILES O. HAYES  
University of Massachusetts  
"Suzanne's Lament"  
March 2, 3, 1972

ZEEV REISS  
The Hebrew University of Jerusalem  
"Concepts and applications of microfacies"  
November 19, 1971

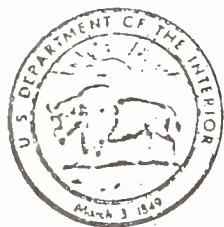
ROBERT E. BERG  
Texas A&M University  
"Identification of sedimentary environments in reservoir sandstones"  
March 9, 1972

THOMAS H. NELSON  
Esso Production Research Company  
Houston, Texas  
"Global tectonics and crustal expressions of mantle flow"  
December 2, 1971

MICHAEL LLOYD  
Shell Development Company  
Houston, Texas  
"Application of stable carbon and oxygen isotopic techniques to diagenetic studies"  
March 20, 1972

ROGER BURNS  
Department of Earth and Planetary Sciences M.I.T.  
"Applications of the Mossbauer effect in mineralogy"  
December 7, 1971

CHARLES A. EVANS  
Materials Research Laboratory, U of I  
"The ion probe and mass spectrometry"  
December 10, 1971



THE SECRETARY OF THE INTERIOR  
WASHINGTON

CITATION

PUBLIC SERVICE AWARD

JOHN C. FRYE

In recognition of his outstanding contributions to the mineral resources programs of the Department of the Interior.

Dr. John C. Frye, throughout his career of public service, has distinguished himself both as a scientist and an administrator. He has been Chief of the Illinois State Geological Survey since 1954, after having previously served as State Geologist and Executive Director of the Kansas Geological Survey. He is also Professor of Geology at the University of Illinois. He has generously contributed both time and talent to committees and activities dealing with problems of national and international scope and with strengthening the working relationship between agencies of national and state level. During 1953 and 1954 he was a member of the Secretary's Committee on the Geological Survey, and from 1960 to 1965 a member of the Advisory Committee on the Geological Survey. From 1966 to 1969 he served as chairman of the National Academy of Sciences/National Research Council Committee on Space Programs for Earth Observation and as a member of the Committee on Mineral Science and Technology, advisory to the Secretary of the Interior and the Bureau of Mines. From 1968 to 1970 he was a member of the Executive Advisory Committee and Coordinating Committee on Future Petroleum Provinces in the United States of the National Petroleum Council, advisory to the Secretary of the Interior. He currently is a member of the Panel on Geology and Mineral Resources of the Committee on Remote Sensing Programs for Earth Resource Surveys of the National Academy of Sciences/National Research Council, advisory to the Secretary of the Interior. For his many contributions, Dr. Frye is granted the Public Service Award of the Department of the Interior.

*Raymond M. Stewart*  
Secretary of the Interior



## PROFESSOR RALPH GRIM RECEIVES HONORS

Dr. and Mrs. Ralph E. Grim attended the International Clay Conference this past July in Madrid where Dr. Grim, research professor emeritus was awarded the first honorary membership of the International Association for the Study of Clays. He received a gold medal commemorating his role in initiating the Association in 1948.

Also in attendance at the Conference was Jose Fripiat, Visiting Professor with the University of Illinois Department of Geology.

## PROFESSOR JOSE J. FRIPIAT IS A VISITING PROFESSOR IN 1971-72

Professor J. J. Fripiat from the l'Universite de Louvain was Visiting Professor during the spring semester. He taught a graduate course (Geology 493 A) on surface and colloidal chemistry of naturally occurring material. This course was also offered as Chemistry 449.

In addition to his teaching duties, Dr. Fripiat established several research programs in collaboration with Maria Isabel Cruz, Visiting Lecturer, also from the l'Universite de Louvain. Other staff members of the Geology Department and Illinois State Geological Survey contributed to the research projects undertaken by Professor Fripiat. Among those who lent their assistance in the studies were: Herbert Seto of the Geology Department with "A Study on Clay Organic Interaction"; Maria Cruz with a study entitled, "Absorption of HCN on Montmorillonite"; Maria Cruz and S. Saymour with "Motions of Deuterated Methonal in Silica fel"; and Bruce Bohor and J. Thomas of the State Geological Survey with "CO<sub>2</sub> - Montmorillonite interaction".

During the semester, Professor Fripiat was invited to lecture at Northwestern University in the Department of Chemical Engineering, McGill University in the Departments of Civil Engineering and Agronomy, Michigan State University in the Soil Science Department, and the University of California at Stanford in the Chemical Engineering Department.

## STAFF NEWS

DAVID E. ANDERSON. In addition to teaching mineralogy, metamorphic petrology and theoretical petrology, Dr. Anderson has been working on applications of multi-component diffusion theory to cation transport in feldspar glass, olivine and garnet systems. To date, all such diffusion studies have been made using the electron microprobe to measure concentration profiles. A recent university grant supporting construction of equipment necessary for the measurement of tracer diffusion coefficients will enable Dr. Anderson's lab to study both the microscopic and macroscopic properties of diffusion in silicates.

Field work has continued in the vicinity of Marquette, Michigan. Dr. Anderson and his students are now trying to determine if unambiguous evidence of diffusion exchange can be found in the rocks of this area.

In addition to his teaching and field work, Professor Anderson served on the staff of the 1972 Summer Field Camp in Sheridan, Wyoming.

THOMAS F. ANDERSON. During the past year, Professor Anderson initiated a study of lithified deep sea carbonates from the central Caribbean. The results of this investigation were presented at the 1972 annual meeting of the American Geophysical Union in April. The deep sea drilling project has provided more samples for further isotope studies of carbonate diagenesis in the deep sea environment.

Professor Anderson continued as an undergraduate advisor this year while participating in the recently initiated course for non-science majors, Environmental Physical Science (LAS - Geology 143). He also served as Chairman of the Graduate Admission Committee. An undergraduate research project in the Summer of 1971 was supervised by Professor Anderson in which an isotopic study of carbonate diagenesis in Pleistocene carbonates was conducted. The results of this study will be incorporated in a forthcoming publication.

DANIEL B. BLAKE. Dr. Blake spent a busy year supervising the research projects of graduate students and also serving as chairman of the Departmental Undergraduate Committee.

He was a participant in the Symposium on Colony at the Geological Society of America meetings in Washington, visited and lectured at the University of Cincinnati in the fall, and continued his research in the study of starfish and Bryozoa.

His summer was spent in Sheridan, Wyoming as a member of the 1972 Summer Field Camp staff.

ALBERT V. CAROZZI. In September 1971, Hafner Publishing Company (New York) published Professor Carozzi's latest French translation, annotated, of Lucien Cayeux's Past and Present Causes in Geology, a controversial discussion on the principle of uniformitarianism in geology. Professor Carozzi supervised two postdoctoral students from Petrobras, the Brazilian National Petroleum Company, for a one-year training period in the petrography and environmental interpretation of Pennsylvanian carbonates of the Amazon Basin.

During October 1971, while on tour with Georges Kulbicki through Brazil and Bolivia, Professor Carozzi gave a series of lectures on the application of geochemistry and microfacies techniques.

Professor Carozzi visited the Philippines over Thanksgiving vacation to conduct a short course on the environmental interpretation of carbonate rocks by microfacies techniques. Philippine Oil Development Company, for which Dr. Carozzi is a consultant, sponsored the course. While in Manila, he delivered a paper entitled, "Ancient Oolitic Environments and Petroleum Exploration" at the Third Symposium on Mineral Resources Development and Eighteenth Mine Safety Conference. While at this conference, Professor Carozzi had lunch with four former alumni: Dr. Louis Santos (1939), Elpidio C. Vera (1952-54), Juan E. Pilac (1956-57) and Sisenando Samaniego (1955-56). All are engaged in geological work in Manila.

Professor Carozzi returned to the Ivory Coast during winter semester break to supervise the activities of the Geological Survey (SODEMI). He also visited exploration teams and lectured in the field on applying new concepts dealing with stratabound metallic deposits in the Precambrian.

Dr. Carozzi's textbook on microscopic sedimentary petrography (1960) is being reprinted. And in collaboration with several geologists and geochemists of the SNPA Research Center, Professor Carozzi published in May 1972 a 600-page volume entitled Microfacies of the Jurassic of Aquitaine, Petrography, Diagenesis, Geochemistry and Petrophysics. This bilingual (French-English) text encompasses more than 15 years of successful exploration for oil in the Aquitaine Basin.

Professor Carozzi spent summer of 1972 in the Philippines, Brazil, Venezuela, Spain and Morocco; and in careful planning of a new fall course for the undergraduate curriculum, Geology 338, An Introduction to Sedimentary Petrography.

JOHN L. CARTER. Dr. Carter attended the Seventh International Carboniferous Conference in August 1971.

Dr. Carter is leaving the Department September 1, at which time he and Mrs. Carter will settle into their home at 20 Pikemont Drive, Wexford, Pennsylvania. Dr. Carter has accepted a position in Pittsburgh as Curator of invertebrate fossils in the Section of Invertebrate Fossils at Carnegie Museum.

CARLETON A. CHAPMAN. Professor Chapman devoted this past year to undergraduate teaching of elementary physical geology (Geology 101) and petrography (Geology 336), and to updating and revising laboratory exercises for Geology 101.

In summer of 1972, Dr. Chapman worked on completion of a technical manuscript on the petrology and structure of Mount Desert Island and vicinity in Maine. He also spent part of June in Maine working with Ronald Kern, graduate student, who investigated the granite pluton on Vinalhaven Island in the Penobscot Bay region for his masters degree in the Department.

CHARLES W. COLLINSON. Professor Collinson was absent from the Department much of the past year because of a heavy schedule as Head of the Stratigraphy and Aerial Geology section at the Geological Survey. He did, however, find time to take a group of students to the (G.S.A.) meetings in Washington, D.C. With graduate students Matt Avcin and Rod Norby, Professor Collinson conducted a two-day seminar on conodont nomenclature and biostratigraphy in connection with the 1972 North-Central Section meetings of G.S.A. All three presented papers.

Following this seminar, Professor Collinson and his students conducted a field trip to classic conodont localities in La Salle County. Scientists from five foreign countries and fifteen states participated. A guidebook, "Pennsylvanian Conodont Assemblages from La Salle County, Northern Illinois," was prepared for the trip and published by the Survey.

In September, Professor Collinson was a guest lecturer and moderator at Phillips University as part of an international symposium on whole species conodont nomenclature.

A paper entitled "Surficial Sediments in Southern Lake Michigan" was presented by Professor Collinson and Julia Badal last April to the fifteenth conference of the International Association for Great Lakes Research held in Madison, Wisconsin.

During the past year, Professor Collinson continued to serve as chairman of the American Geological Institute Committee on Publications--the main effort of which was spent on the publication of a 33,000 word "Glossary of Geology." Professor Collinson was Secretary of the Joint Committee on Paleontologic Information for 1971-72. In February he was nominated as a candidate for the Presidency of S.E.P.M.

In March, Professor Collinson was appointed to the Committee on Scientific Guidance for the Quad-Cities Nuclear Generation Station at Cordova, Illinois.

DON U. DEERE. Professor Deere tendered his resignation from the University of Illinois at the end of the Spring Semester, 1972 to devote all his time to consulting in Engineering Geology and Rock Mechanics. He and Mrs. Deere are now residing at Bivens Lake Estates, 2552 S.W. Fourteenth Drive, Gainesville, Florida 32601.

In his last year at the University of Illinois, Professor Deere continued his involvement with tunneling and rapid excavation. His work was concerned with both domestic and foreign projects and included the Subway System in Washington, D.C.

Whenever his busy consulting schedule allows, Dr. Deere plans to speak as an Honorary Lecturer at the University of Florida, Gainesville.

PATRICK A DOMENICO. Professor Domenico's research during the past year, has concentrated on an analytical treatment of the simultaneous transport of heat and water in porous rocks. This research, conducted in collaboration with Professor Palciauskas, is supported by a grant from the Office of Water Resources Research.

Dr. Domenico's book, Concepts and Models in Groundwater Hydrology, was recently released by McGraw-Hill and is now part of their International Series, In the Earth and Planetary Sciences. He now serves as Associate Editor of Water Resources Research, a publication of the Journal of Geophysical Research.

At present, Professor Domenico is busy teaching Geology for Civil Engineers, Hydrogeology and collaborating with Professors Palciauskas and T. Anderson in an environmental science course.

In September, Professor Domenico attended the Penrose Conference on "Aquitards in Multiple Aquifer Systems", held in Asilomar, California and acted as chairman of the session on environmental factors of aquitards.

FRED A. DONATH. Professor Donath has been named Editor of the Annual Review of Earth and Planetary Sciences, which will be the nineteenth in a series of publications covering various fields issued by Annual Reviews, Inc., a nonprofit corporation established to promote the advancement of science. The AREPS volume was organized following several years of consideration and discussion by leading scientists in the earth sciences and directors of Annual Reviews.

During the past two years, Professor Donath has served on the Committee of Examiners for the Advanced Geology Test (Educational Testing Service, Princeton, New Jersey). The committee was charged with the responsibility for complete revision of the Advanced Geology Test of the Graduate Record Examination. Several new forms of the examination were developed during this period, representing the first major revision in the history of the exam. Professor Donath has been asked to serve as chairman of the committee for the ensuing term.

Under the auspices of the American Geophysical Union, Professor Donath visited Benedict College and Columbia College (South Carolina), University of South Carolina, Florida Technological University, and Florida Institute of Technology during the early spring. At these institutions he lectured, held informal conferences with students, and consulted with faculty members on matters of curriculum and research problems. In May, he visited the South Dakota School of Mines and Technology and the University of South Dakota, presenting the annual Sigma Xi lecture at the latter institution. Other institutions visited by Professor Donath during the year included Texas A & M, U of I Chicago Circle, Knox College, Colorado State, and the University of Wyoming.

In June, Professor Donath, Dr. Fruth, and Bill Olsson (who is completing his Ph.D. under Dr. Donath's supervision) presented a paper on faulting friction in rocks at the Fourteenth Rock Mechanics Symposium, held at Penn State. During the year, Professor Donath also attended the annual GSA and AGU meetings, and he is looking forward to the GSA meeting in Minneapolis next November and the appearance in print, at that time, of GSA Memoir 135. The volume includes a paper by Dr. Donath that covers much of his work of the past ten years on the effects of planar anisotropy on the deformational behavior of rock. The book is dedicated to John W. Gruner, one of Professor Donath's former professors at the University of Minnesota.

LESTER S. FRUTH. Dr. Fruth spent the past year engaged in research in the high pressure laboratory with Professor Donath.

As in past summers, Professor Fruth helped direct the activities of an undergraduate student in the summer research program. This research resulted in information on triaxial testing of multilithologic specimens, fracture diffraction and strength relationships which were more varied and detailed.

Dr. Fruth has been involved in various research and co-authored a paper with Professor Donath and Bill Olsson, graduate student, on the experimental study of the frictional properties of faults. He has continued his research on the effects of compaction of carbonate sediment with hopes of having the results published in the near future.

JOHN C. FRYE. As in the past, Dr. Frye has continued to serve on various committees in a number of capacities, some of which were: Chairman of the Committee on Radioactive Waste Management (National Research Council); member of the Committee on Remote Sensing of Earth Resources (National Research Council); and on the Scientific Committee on Problems of the Environment (International Council of Scientific Unions).

In the spring of 1972, Dr. Frye was one of seven recipients of the U.S. Department of the Interior's Public Service Award presented in Washington, D.C. (see a copy of the citation elsewhere in Newsletter).

In spite of budget problems, Dr. Frye was able to spend some time in the field studying Pleistocene geology, and in eastern New Mexico with the Bureau of Mines and Geology.

DONALD L. GRAF. In September, Professor Graf attended the Clays Minerals Society meeting in Rapid City, South Dakota and the G.S.A. Penrose Conference on Aquitards in Monterey, California.

Professor Graf's schedule took him to the Department of Geological Sciences, State University of New York at Buffalo, where he was a member of the external visiting committee. In April, he gave two colloquia at the Department of Geological Sciences, Northwestern University. Also in April, he attended the American Geophysical Union meeting in Washington.

One graduate student, Joseph Hatch, completed his Ph.D. thesis under Professor Graf's supervision. The thesis was on the experimental relations of the NaCa carbonate minerals of the Green River Formation.

NECIP GÜVEN. Professor Guven spent this past year studying clay minerals in bentonites from different parts of the world. X-ray and electron diffraction were the two main techniques used in conducting these studies. The results of these investigations will be published in a book in cooperation with Dr. R. E. Grim.

Professor Güven will leave the University of Illinois in the fall of 1972 to accept the position of associate professor of mineralogy with Texas Technological University. His main concern there will be the establishment of a modern laboratory for clay research.

ARTHUR F. HAGNER. Professor Hagner produced two articles for publication this past year: one with Dr. D. E. Pride entitled, "Geochemistry and the Origin of the Precambrian Iron Formation Near Atlantic City, Fremont County, Wyoming," and the other, an introduction to the facsimile edition of Robert Boyle's, An Essay about the Origin and Virtues of Genus (1672).

As in the past, Dr. Hagner served as a member of the executive council of the Illinois Earth Science Association and as advisor to undergraduate and graduate students who specialize in the teaching of Earth Science.

This past summer, Dr. Hagner worked on completing a manuscript and preparing class notes and lectures for his fall course. He also supervised theses and an advanced studies program.

WILLIAM W. HAY. Professor Hay vacationed in Europe at the end of last summer, sampling wines along the Moselle and Rhine. After visiting friends in Switzerland, he attended the Regata Storica in Venice, the annual race in medieval gondolas. Returning to New York, Professor Hay attended a Joint Oceanographic Institutions Deep Earth Studies Atlantic Panel meeting.

During the fall he was in Urbana teaching courses in Oceanography and Micropaleontology. He attended the meeting of the Gulf Coast Association of Geological Societies - Gulf Coast Section of SEPM. Along with two former students, Sherwood W. Wise and Ronald D. Stieglitz, Professor Hay received an award for the best paper in the GCS-SEPM meeting in 1970. He also assumed his role as President of the Gulf Coast Section of SEPM for 1971-72. He received word last fall of his appointment as an Honorary Research Fellow of University College at the University of London.

In February, Professor Hay was invited to New Zealand by the New Zealand Committee for UNESCO to chair the geological section of the Conference on the Oceanography of the South Pacific. On the return trip, he stopped off in Tahiti and Bora Bora for a few days to look at Pacific coral reefs.

During April, Dr. Hay traveled to Denver where he presented two papers to the AAPG-SEPM meeting. He was pleased that the SEPM Council approved publication of the symposium he had chaired the preceding year in Houston, "Geologic History of the Oceans."

During the spring, Dr. Hay was in Miami. He has a new residence 26 floors up, on the beach at Key Biscayne. According to Bill, the view is great. He has developed a new interest in watching "beach processes" in action.

DONALD M. HENDERSON. In early September at Edgartown, Massachusetts, Professor Henderson participated in the American Geophysical Union (A.G.U.) Conference on Petrological Crystal Chemistry.

In addition to continuing his term as an Associate Editor for the American Mineralogist this past year, Dr. Henderson has been involved in more than his usual amount of field work. Late in September, he and graduate students, Jim Kirkpatrick and Ron Kern, and undergraduates, Jeff Newberry and Jeff Schubert, spent several days in the Duluth, Minnesota area examining and collecting from the Duluth complex and an overlying sill. The Geology 332 class went with Professors Henderson, David Anderson and Instructor Glenn Buckley to upper Michigan to look at iron formations and metamorphic rocks.

JON T. HOLDER. Dr. Holder is continuing his investigation of the electrical charge density of dislocations in ice which will involve ultrasonic sound wave and high frequency dielectric measurements. This study, as well as an investigation of elastic properties of point defects and a study of non-hydrostatic effects on structural transformations, are being carried out by three graduate students from the Physics Department.

Professor Holder wrote a comprehensive review article on ultrasonic techniques along with three others from the Physics Department. Another article on ultrasonic velocity and attenuation measurement was written with the assistance of a graduate student.

W. HILTON JOHNSON. Dr. Johnson returned to the Department after a sabbatical leave during 1970-71. This past year he taught a course in geomorphology and another in glacial and Pleistocene geology. He has also resumed his duties as Educational Coordinator and spends considerable time in Departmental administration.

Dr. Johnson is continuing research on the Pleistocene stratigraphy of central and eastern Illinois. This year he was particularly busy planning the Midwest Friends of Pleistocene Field Conference which was held in May.

GEORGE deV. KLEIN. Four courses took much of Dr. Klein's time. These included: Geology 309 (Sedimentology - undergraduate course), Geology 437 (Sedimentary Processes - graduate), Geology 477 (Recent Sedimentary Environments - graduate course) and Geology 336 (Petrography - undergraduate course), a course team-taught with Professor Chapman. Field work was conducted for Geology 309 and 437 in the Graysville and southern Illinois areas. During Spring Vacation, Dr. Klein conducted a field trip to Quachita, Arkansas and the Arbuckle Mountains, Oklahoma.

Professor Klein presented two papers at the Eighth International Sedimentological Congress in Heidelberg, West Germany in August. Part of the summer of 1971 was spent in Brazil on a consulting mission. While in Heidelberg, he was elected the North American representative of the Membership Committee of the International Association of Sedimentologists. In September 1971 an invitation was extended to Dr. Klein to speak at the centenary of the founding of the Grants Institute of Geology, University of Edinburgh. The rest of the summer was spent in Urbana working on papers.

Professor Klein attended the G.S.A. meeting in Washington and the AAPG-AEPM meeting in Denver at which he was presented with the Outstanding Paper Award of the 1970 Journal of Sedimentary Petrology for his paper "Depositional and Dispersal Dynamics of Intertidal Sand Bars." SEPM has asked that Dr. Klein serve on their research committee.



During the past year, Professor Klein has had many responsibilities which ranged from Departmental Placement Coordinator to Chairman of the Graduate Study Committee.

RALPH L. LANGENHEIM, JR. As in the past, Professor Langenheim has continued his Nevada studies among which were the August 1971 trip to the West Range near Pioche, Nevada to work on the Devonian sequence with John Trummel, an undergraduate student.

During the 1971-72 semester break, Professor Langenheim led a group to the Arrow Canyon Range in Clark County, Nevada where one student studied the paleocology of Chaetetes and another began a biostratigraphic study of the Chesterian Battleship Wash Formation.

Professor Langenheim, along with graduate student Suzanne Mahlburg, continued his study of the Las Vegas Fold-Fault Zone where Suzanne has now uncovered seven superposed asymmetric folds. This project has acquired support from the Geological Society of America for completion of field work next winter. In conjunction with this project, two Brazilian visitors studying under Dr. Carozzi, Joel de Castro and Ronaldo Alves (1971-72), were given a conducted tour of the entire Paleozoic sequence.

Field studies of the LaSalle Limestone and the Hanover Limestone have begun with the assistance of Mike Martin and Dave Beach. It is expected that such paleologic and biostratigraphic studies of Pennsylvanian Limestones in Illinois will be continued and expanded.

A book, co-authored with Stanley Frost and based on his doctoral dissertation, describes reconnaissance mapping of the Bristol Range thrust near Pioche and conodont zonation at Arrow Canyon. Reconnaissance mapping of the Bristol Range thrust near Pioche and conodont zonation at Arrow Canyon were also the subjects of a paper published during the year. A monograph of Tertiary corals and larger foraminifera from Chiapas is also in press.

Among his many responsibilities, Professor Langenheim served as chairman of a stratigraphy section and as a member of the Outstanding Paper Award Committee for the 1972 meetings of the Upper Middlewestern Section of the G.S.A. held May 11-12, 1972. He also found time to serve as a critical reader for the Journal of Paleontology, and gave several visiting lectures during the 1971-72 academic year.

C. JOHN MANN. Dr. Mann has been on sabbatical leave during the past academic year, devoting his time to writing and research. He will return to teaching this fall with an undergraduate course in Historical Geology and a graduate course in Mathematical Geology.

Dr. Mann will serve as University Coordinator for Illinois Junior Academy of Science. This university is the site of the Junior Academy's annual two-day spring meeting, highlighted by a display in the U. of I. Assembly Hall of the year's 1,000 top projects by high school students.

V. VICTOR PALCIAUSKAS. Dr. Palciauskas has continued his research in solid state geophysics, concentrating on the elastic and thermal properties of high pressure oxides. At the same time, a theoretical investigation of transport processes in porous media was conducted in collaboration with Dr. Domenico. This research was supported by a grant from the Office of Water Resources Research.

As Dr. Palciauskas describes his teaching duties, "he 'merrily' taught Mathematical Methods in Geology and 'struggled' through the Environmental Physical Science course given jointly with Drs. T. Anderson and Domenico."

To escape some of the summer heat in Champaign-Urbana, he attended the general assembly of International Union of Geophysics and Geodesy held in Moscow.

PHILIP A SANDBERG. Dr. Sandberg is continuing his research on skeletal ultrastructure of cheilostome bryozoans. In connection with this work he presented a paper, "Degree of Individuality in Cheilostome Bryozoan Colonies: Skeletal Criteria", at the Symposium on Coloniality held at the G.S.A. meeting in Washington, D.C. In addition, he presented two papers at the International Bryozoologists Association meeting in Durham, England in September 1971.

Studies in diagenesis of skeletal carbonates from the Pleistocene of southern Florida, which begun last summer with the trainee in paleontology, Susan Wunder (University of Rochester), are still in progress. Aspects of this study were presented by Nahum Schneidermann, graduate student, at the A.A.P.G. meeting in Denver.

During Easter vacation, Drs. Sandberg and Hay led the second Geology 315 trip to Bimini, Bahamas covering organism communities and sedimentary environments of the Bimini area. Participating students were primarily biologists and about half the group were certified scuba divers.

This year Dr. Sandberg had a visiting research fellow, Neils Oluf Jorgensen (University of Copenhagen), assisting him with studies on Ostracoda. This included investigations of shell ultrastructure, the nature of sensory receptors and amino acid composition of the shells.

Dr. Sandberg has been awarded a NATO postdoctoral fellowship in science for next year and will be taking a sabbatical to work on bryozoan ultrastructure at the British Museum (Natural History) in London.

HERBERT G. SETO. In collaboration with Dr. Pride, Mr. Seto taught Geology 142, an environmental physical science course for non-science majors. The course, with an enrollment of over 200, has been enthusiastically received by the students. Topics covered in the course were air and water pollution, ecology and radiation chemistry.

During the spring semester, Mr. Seto began research on the chemical modification of clay properties.

DENNIS S. WOOD During the 1971-72 session Professor Wood was responsible for the first semester major enrollment course in beginning geology, and taught courses in structural geology and geotectonics at the advanced levels in the second semester. Dr. Wood directed the summer school course in field geology, held in Britain for the second time, and followed this with three weeks of field work in central Norway.

Continuing his researches into natural rock deformation and strain measurement, a joint project with Professor John Ramsay of Imperial College, London has recently been completed. Two further major projects in collaboration with colleagues at U.C.L.A. and Brown University were undertaken. Both of these concern the relationship between magnitudes of natural strain associated with slaty cleavage and the ultrafabric as determined by texture x-ray goniometry.

During the year Dr. Wood was invited to present papers entitled "Strain and Slaty Cleavage" to the Geological Society of London and "Patterns and Magnitudes of Natural Strain" to the Royal Society. Other lectures were given at S.U.N.Y. Albany, Rensselaer Polytechnic, Brown University and the Universities of London, Edinburgh, Leeds and Manchester.

Presently, Dr. Wood is working on a book on the subject of Rock Cleavage, due for publication during 1973. Dr. Wood and his wife Dr. Anne Wood have recently presented a portrait of Dr. George W. White to the Department.

## FIELD ACTIVITIES

### GEOLOGY STUDENTS OFF TO WYOMING FOR SUMMER FIELD CAMP, 1972

Thirty-seven students and five staff members left Monday, June 12, from the University of Illinois for Sheridan, Wyoming and the university's 22nd annual Geology Summer Field Camp.

Before returning August 5, they will have covered 6,500 miles and examined many geologic features not available near the mid-Illinois campus. Headquarters will be at Sheridan College for the 17th summer.

On the way to Sheridan, studies of geologic features were made in northern Middle West and Black Hills with stops at Baraboo, Wisconsin, and Sioux Falls, Rapid City, and Spearfish, South Dakota. Once at Sheridan, studies were made in the Bighorn Mountains and the group visited Yellowstone Park, the Grand Tetons, and other points to study the geology of the northern Rockies. Working techniques were to measure and describe formations and various methods of mapping, including aerial photos, which included a flight over the mapping area.

The staff for the 1972 Camp included Professor William Cambray, Wayne State University, Professor Daniel B. Blake and R. James Kirkpatrick, graduate assistant, both from the U. of I. for the full term, with Professors George deV. Klein and David E. Anderson, U. of I., each for half the term. Professor Ralph L. Langenheim was again camp director.

### GEOLOGY 1972 SUMMER SCHOOL IN THE BRITISH ISLES

The Department offered, for the second year, a summer field course held in the British Isles. The field course was again under the direction of Professor Dennis S. Wood, with Alex Maltman as graduate assistant. A total of fourteen students participated in the course from the University of Illinois and several other colleges and universities. The course carries either graduate or undergraduate credit.

The summer school, lasting eight weeks, began in London on Monday, June 12, with an introductory address by Dr. K. C. Dunham, Director of the Institute of Geological Sciences, followed by lectures from Professors John G. Ramsay and John Sutton at the Imperial College of Science and Technology.

The primary intention of the course is to teach and demonstrate principles, rather than details of local geology, and to take advantage of the opportunity which Britain offers to study a remarkable variety of geology. Some of the areas covered were historically classic areas of Britain, worked by people such as Hutton, Murchison, Sedgwick, Lapworth, and Read. Two mapping areas were studied in the northwest Highlands of Scotland and in North Wales.

One of the more important aspects of this course is that it provides a good basis for a student at the junior level to form a senior undergraduate thesis and for more senior students to carry out field work for higher degrees.

## COURSE TRIPS

Field work remains an essential aspect of geology at both the undergraduate and graduate levels. During the past year, 25 formal field trips were taken in 21 courses.

<u>Course</u>	<u>Place(s) Visited</u>
Physical Geology	Baraboo, Wisconsin
Historical Geology	Cagles Mill, Indiana
Agricultural Geology	Fairmount, Illinois
Honors (Physical Geology)	Fredrickstown, Missouri
Honors (Historical Geology)	Southern Illinois
Regional Field Study (Undergraduate)	Grand Canyon
Environmental Physical Science	Brownfield Woods
Minerals and Rocks	Tennessee and North Carolina
Geology for Engineers	Champaign County
Geomorphology	Vermilion County
Sedimentology and Sedimentary Processes	Grayville, Illinois
Structural Geology	Gatlinburg, Tennessee
Principles of Stratigraphy	Fithian, Illinois and Wabash, Indiana
Minerology - Petrology	Marquette, Michigan
Glacial and Pleistocene Geology	Eastern Illinois
Stratigraphic Geology: Paleozoic	Southern Illinois
Principles of Engineering Geology	Baraboo, Wisconsin
Practice for Engineering Geology	Eastern Tennessee
Recent Sedimentary Environments	Grayville, Illinois and Ouachita Mountains, Arkansas and Oklahoma
Advanced Studies in Geology (Graduate)	Moapa, Nevada

## GEOLOGY CLUB

The activities of the Cyclothem Geology Club over the past year have included talks by a variety of guest speakers including Drs. Sandberg, Hay, Langenheim, and staff from the Illinois State Geologic Survey. The club also sponsored an evening of Christmas carolling at various faculty members' houses. A December party and a May picnic with steaks and beer provided for all were the final events of the year.

Elly Brouwers, the club president, and her officers directed the club's activities and reorganized the club's constitution. Joe Jakupcak served as the secretary-treasurer and Cathy Swengel as the chairman of publicity and entertainment.

## GEOLOGY LIBRARY

Organization of the map collection in the Geology Library was nearly completed during the year. Although 2,302 maps were catalogued into the collection, 4,406 duplicate copies were withdrawn, leaving the total of maps at 41,124. To make space for new materials in the Geology Library, 2,857 volumes in serials in Cyrillic and east European languages were transferred to the stacks of the Main Library in the summer of 1971. In the spring of 1972, another 299 volumes of extra copies of superseded texts were withdrawn in a continuing effort to keep the collection in the allotted space. Although new volumes continued to be added to the collection, there was an actual decrease in the size of the collection which now consists of 58,051 bound volumes and 2,184 series currently received.

The library has felt the restrictions imposed by tighter budgets and has not been able to purchase new or rare books as freely as in the past. In addition, the library complied with the request from the Library Administration to give up duplicate copies of series to create funds for new series.

In June 1971, Mrs. Harriet W. Smith, Geology Librarian, attended the meeting of the American Library Association in Dallas. In November she attended the meetings of the Geological Society of America and the Geoscience Information Society in Washington. At the latter meeting, she was a member of a panel that discussed the library problems of geologic field trip guidebooks. In May 1972, Mrs. Smith attended the Midwest Academic Libraries Conference in Evanston, Illinois.

## UNDERGRADUATE PROGRAM

Minor revisions were made concerning the course offerings in mineralogy and petrology in the undergraduate program during the past year. Students in the geology curriculum now take a two-hour course in sedimentology taught by Professor Klein, a four-hour course in mineralogy-petrology taught by Professor D. Anderson, a four-hour course in optical mineralogy taught by Professor Henderson, a four-hour course in igneous and metamorphic petrography taught by Professor Chapman, and a two-hour course in sedimentary petrography taught by Professor Carozzi. Other courses required in the geology curriculum include paleontology, stratigraphy, structural geology, geomorphology, and field camp.

The honors program is encouraged for those geology majors with high academic achievement. In this program they are able to pursue various aspects of geology in detail, and thereby gain a greater insight into the methods of geological reasoning and investigation. A well-equipped laboratory for honors work enables the students to gain practical experience essential to a complete understanding of fundamentals. Laboratory exercises in the honors sections are innovative and place emphasis on individual observation and interpretation.

## THE GRADUATE PROGRAM

This year's group of 80 graduate students was the second largest in the past 10 years, despite the general decrease in enrollment at the University as a whole. The students came from 51 different colleges and universities and seven foreign countries.

Nine students received Ph.D. degrees this year. Of these, six found permanent employment, two accepted postdoctoral positions, and one is still seeking a position. Thirteen students received M.S. degrees; six found full-time employment and seven are continuing work in Ph.D. programs here or elsewhere.

Most of the graduate students in geology received financial aid during the academic year from fellowships; traineeships, assistantships, or employment at the Illinois Geological Survey or in other geological work. This year only 8.8% of the graduate students in geology were supported entirely by family or other private sources. In addition to this academic year support, the Department was able to support the summer field work and laboratory research activities of 24 students during the summer of 1972 through grants and gifts given to the Department by industrial organizations and other agencies.

A list of graduate students enrolled during the 1971-72 academic year follows.

### FELLOWS:

#### University of Illinois Fellowships

Frank Ettensohn	BS '69	University of Cincinnati
	MS '70	University of Cincinnati
Daniel E. Lawson	BA '71	Lawrence University
W. John Nelson	BS '71	Williams College
Linda J. Provo	BA '71	Hope College

#### NDEA IV Fellowship

Richard W. Lahann	BS '71	Knox College
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#### National Science Foundation Fellowship

Regina L. Link	BA '70	University of Oregon
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#### National Science Foundation Traineeship

Roscoe G. Jackson	BS '70	University of Kansas
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## TEACHING ASSISTANTS:

Allen A. Aigen	BS '71	C.U.N.Y. City College
John J. Barnes	BS '67	Michigan State University
William F. Bawden	BSc '70 MS '72	Queens University of Kingston University of Illinois
Glenn R. Buckley	BS '67 MS '68	Wayne State University Wayne State University
Andre Chagnon	BS '68 MS '70	University of Montreal University of Montreal
Herbert A. Elliott	BS '64 MS '69	University of Virginia Louisiana State University
Harold C. Ganow	BS '67 MS '69	Colorado State University Colorado State University
Robert H. Gilkeson	BS '68	University of Illinois
James W. Granath	BA '71	University of Illinois
Joseph R. Hatch	BS '66 MS '68	Idaho State University University of Illinois
James E. Hooten	BS '69	St. Joseph College
Ronald A. Kern	AB '68	University of Rochester
Warren L. King	BS '67	State University of Iowa
R. James Kirkpatrick	BS '68	Cornell University
Dennis R. Kolata	BS '68 MS '70	Northern Illinois University Northern Illinois University
Jean B. Kulla	BS '72	University of Maryland
Alan K. Kuhn	BS '63 MS '68	Duke University Colorado State University
Nancy D. Lee	BA '71	University of Maine
Alexander J. Maltman	BS '67 MS '71	University of Liverpool University of Illinois
Michael D. Martin	BA '70	Albion College
Robert M. Mason	BS '67 MS '71	University of Notre Dame University of Kansas
E. Donald McKay	BA '71	Hanover College



James W. Mercer	BS '69 MS '72	Florida State University University of Illinois
James A. Miller	BS '70	Colorado School of Mines
David W. Moore	BA '61 MS '70	College of Wooster University of North Carolina
Rodney D. Norby	BS '67 MS '70	University of North Dakota Arizona State University
Frank J. Nowak	BS '67 MS '70	University of Notre Dame University of Illinois
William A. Olsson	BA '66 MS '68	Southern Illinois University Southern Illinois University
William D. Rice	BS '71	Knox College
Robert A. Robinson	BS '69	U.C.L.A.
Paul R. Schluger	BA '68 MS '69	Temple University University of Pennsylvania
Nahum Schneidermann	BS '67 MS '69	Hebrew University Hebrew University
Frank Schwartz	BS '68 MS '69	University of Western Ontario University of Manitoba
John M. Sharp, Jr.	BS '67 MS '71	University of Minnesota Midwestern University
Larry H. Stanker	BA '71	San Francisco State University
John Steinmetz	BS '69	University of Illinois
Richard J. Trefz	BA '71	Rutgers University
Roy J. van Ryswyk	BS '64 MS '72	University of British Columbia University of Illinois
RESEARCH ASSISTANTS:		
Richard M. Forester	BS '69	Syracuse University
James W. Mahar	BS '67 MS '69	Idaho State University Colorado State University
Michael P. Stephens	BS '68	University of Texas
Rikki L. Welsh	BS 71	University of Illinois

OTHER GRADUATE STUDENTS:

George J. Allgaier	BS '64	S.U.N.Y., Buffalo
Raymond E. Aufmuth	BS '63 MS '66	University of Dayton Miami University
Matthew J. Avcin	BA '65 MS '69	Lafayette College University of Illinois
Susan B. Avcin	BA '67	College of Wooster
Julia C. Badal	BA '67 MS '72	Bryn Mawr College University of Illinois
Keros Cartwright	BA '59 MS '61	University of California University of Nevada
Thomas L. Chamberlin	BS '68 MS '71	Michigan State University University of Illinois
Dennis D. Coleman	BS '67 MS '70	University of Wisconsin, Madison University of Arizona
William E. Cote	BA '62 MS '67	University of Massachusetts University of Illinois
Thomas P. L. Dowell, Jr.	BS '49 MS '72	Georgia Institute of Technology University of Illinois
Gordon S. Fraser	BS '68 MS '70	University of Illinois University of Illinois
Rufus T. Getzen	EA '65 MS '67	Wake Forest College South Carolina University
Michael W. Hansen	BS '65 MS '70	Idaho State University University of North Carolina
Stephen R. Hunt	BS '72	University of Illinois
Donald O. Johnson	BS '65 MS '66	Northern Illinois University Northern Illinois University
Margaret A. Kasowski	BS '64 MS '68	University of Ottawa University of Illinois
Mohamad R. Khawlie	BS '71	American University of Beirut
Thomas F. Lawry	BS '32 BS '35	Allegheny College University of Pittsburgh
Richard L. Leary	BS '58 MS '61	Virginia Polytechnic Institute University of Michigan

Chao-li Liu	BS '64 MS '68	National Taiwan University Memorial University, Newfoundland
P. Terry McCullough	BS '64 MS '68	University of British Columbia University of Illinois
William Miller	BS '71	University of Illinois
Catherine Morin	BS '71	University of Illinois
Alberto Nieto-Pescetto	BS '61 MS '63	San Marcos University of Lima Washington University
James B. Risatti	BS '66 MS '70	University of Illinois Mississippi State University
James E. Rogers	BS '67 MS '70	Western Illinois University University of Illinois
Sohrab Shayani	BSc '65	Federal Univ. of Rio Grande do Sul
Frank B. Sherman, Jr.	BA '57 MS '68	Dartmouth University Colorado State University
Brian J. Sinclair	BS '64	McGill University
Alan F. Skrzyniecki	BS '66 MS '70	University of Toledo University of Illinois
Richard A. Smosna	BS '67	Michigan State University
Gary D. Stricker	BA '63 MS '65	Wayne State University Wayne State University
Peter J. Tarkoy	BS '64 MS '67	City College of New York University of Tennessee
James G. Ward	BS '61	College of Wooster
Neil H. Whitehead	BA '69	University of Louisville
Harold T. Wilber	BS '71	University of Illinois

DEGREES GRANTED SINCE AUGUST 1971

BS and BA

Ernie Allsop	Mark Hoffman	Thomas Peale
Ronald Bluhm	Stephen Hunt	Thomas Perkins
Stephen Chicoine	Joseph Jakupcak	Suzanne Russell
Donald Ganser	David Leininger	Jeffrey Schubert
Marvin Ginzl	Howard Naslund	Cathy Swengel
John Henricks	Ralph Newberry	John Trummel
		Timothy Willand

RODNEY J. BALAZS, August 1971

Hydraulic factors controlling the migration of dunes and sand waves in a tide dominated environment.

Supervisor: G. deV. Klein

THOMAS L. CHAMBERLIN, August 1971

The Ordovician-Silurian boundary in the Arrow Canyon Range, Clark County, Nevada.

Supervisor: R. L. Langenheim

WARREN L. KING, August 1971

No thesis.

ALLEN R. LAPPIN, August 1971

Metamorphism of basic rocks from the garnet and staurolite zones, Marquette Trough, Michigan.

Supervisor: D. E. Anderson

HAYASHI SUGAHARA, August 1971

No thesis.

FREDERICK H. BEAUDRY, February 1972

Calcareous nannofossils recovered from some Pleistocene cores taken on Leg Fifteen of the Deep Sea Drilling Project.

Supervisor: W. W. Hay

THOMAS P. L. DOWELL, JR., February 1972

An automated approach to subsurface correlation.

Supervisor: C. J. Mann

SUZANNE E. MAHLBURG, February 1972

Precambrian geology of the Republic Trough, Marquette County, Michigan.

Supervisor: D. E. Anderson

JAMES W. MERCER, February 1972

No thesis.

JULIA C. BADAL, June 1972

No thesis.

WILLIAM F. BAWDEN, June 1972

No thesis.

JOHN F. RYAN, June 1972

Upper Devonian sandstones in the Arrow Canyon Range, Clark County, Nevada.

Supervisor: R. L. Langenheim

ROY J. VAN RYSWYK, June 1972

Rock bolt testing at the Churchill Falls Power Project, Labrador, Canada.

Supervisor: D. U. Deere

PhD

DONALD B. ALLEN, October 1971

Structure and petrology of the North Sullivan pluton, Hancock County, Maine.  
Supervisor: C. A. Chapman

NATHAN J. AYER, JR., October 1971

Statistical and petrographic comparison of artificially and naturally compacted carbonate sediments.  
Supervisor: F. A. Donath

JAMES C. GAMBLE, October 1971

Durability-plasticity classification of shales and other argillaceous rocks.  
Supervisor: D. U. Deere

PAUL R. SCHLUGER, February 1972

Sedimentology of the Perry Formation, New Brunswick, Canada, and Main, U.S.A.  
Supervisor: G. deV. Klein

BRIAN J. SINCLAIR, February 1972

Estimation of grout absorption in fractured rock foundations.  
Supervisor: D. U. Deere

JAMES G. WARD, February 1972

Petrology of the Rapakivi granite of the Great Wass Pluton, Washington County, Maine.  
Supervisor: C. A. Chapman

JOSEPH R. HATCH, June 1972

Phase relationships in part of the system sodium carbonate - calcium carbonate - carbon dioxide - water at one atmosphere pressure.  
Supervisor: D. L. Graf

R. JAMES KIRKPATRICK, June 1972

The kinetics of crystal growth in the system diopside-cats and the application of crystal growth theory to some geologic problems.  
Supervisor: D. E. Anderson

JAMES E. ROGERS, JR., June 1972

Silurian and Lower Devonian stratigraphy and paleobasin development: Illinois Basin--Central United States.  
Supervisor: C. J. Mann

## MIDWEST FRIENDS OF THE PLEISTOCENE

The Geology Department and the Illinois State Geological Survey jointly sponsored the twenty-first Annual Midwest Friends of the Pleistocene Field Conference on May 12-14. The conference leaders were: W. Hilton Johnson (MS '62, Ph.D. '63); Leon R. Follmer (Staff, 1970-72); David L. Gross (MS '67, Ph.D. '69); and Alan M. Jacobs (State Geological Survey). The subject of the conference was the Pleistocene stratigraphy of east-central Illinois and stops were made near Danville and Charleston.

The Conference honored George W. White, one of three originators of the concept of working field trips for Pleistocene geologists and others interested in Pleistocene geology. The first Friend's trip was held in 1934 near Hanover, New Hampshire, and the leaders were R. F. Flint, J. W. Goldthwait, and G. W. White. There were about ten participants on that first trip; on the recent trip in Illinois, there were over 150 in attendance. These included eight current students in the Department, and many of Dr. White's former colleagues and associates. Paul R. Shaffer (Staff 1947-66), long-time associate of George White, gave the main address at the banquet during the Conference.

The following alumni, staff, and former staff were present at the Midwest Friends of the Pleistocene:

### George White's Students

John Brophy  
Lee Clayton  
David L. Gross  
W. Hilton Johnson  
Paul F. Karrow  
John P. Kempton  
Steve Moran  
J. Cotter Tharin

### Current Geology Students

Dennis Coleman  
Jim Hooten  
Bob Mason  
Don McKay  
Jim Miller  
Dave Moore  
Frank Schwartz  
John Trummel

### Other Alumni

Ned Bleuer  
John D. Kiefer  
Michael Moore  
H. B. Willman

### Geology Staff

Fred A. Donath  
Leon R. Follmer  
W. Hilton Johnson  
George W. White

### Former Staff

Paul R. Shaffer

The Democratic Picnic Grounds were again the site for the annual fall picnic held in Urbana in late October. Over 40 people attended the function which was funded for the purpose of introducing new staff and graduate students to each other and to the continuing staff and students.

The picnic began with such vigorous activities as volleyball and football. After an afternoon of strenuous exercise, attendants sat down to a hearty "pot-luck" feast.

#### NONACADEMIC STAFF

Often, the contributions of the nonacademic staff go unacknowledged but not unappreciated. The Department would like to take this opportunity to thank those members of the nonacademic staff, who over the past year have lent their time and energies to see that the needs of this Department were taken care of. Members of our full-time nonacademic staff for the past year were:

John F. Bauerle, machine  
shop supervisor  
Nadine L. Brown, clerk-typist  
Donald D. Dodson, instrument  
maker  
Candace Jenisio, clerk typist

Lee Ann King, clerk-stenographer  
Leslie R. Lewis, cartographer  
Janice C. Nicholson, clerk-typist  
Jack O. Pullen, thin-section technician  
Dorothy G. Smith, administrative-  
secretary

These full-time staff members were assisted part time by approximately 20 students during the last year.

#### GIFTS TO THE DEPARTMENT

The 1971-72 academic year witnessed a significant reduction in the availability of funds from private firms.

The Shell Company Foundation continued its support of graduate research activities, which permitted us to support the field and laboratory research work of thirteen graduate students working on M.S. and Ph.D. thesis projects in various fields of geological research.

A three-year, \$6,000 unrestricted grant made by Texaco Company, now in its second year, is being used to support programs for which state funds are not available. These include aid to such projects as graduate student research, field trips, and support for guest lecturers. Several of our staff are continuing their work under grants from the National Science Foundation.

## FORMER STAFF NEWS

**\*\*\*George W. White\*\*\*** Mr. White officially became Research Professor Emeritus on September 1, 1971. He was presented with an engraved key to 419 Natural History Building, his office and workroom, with instructions to "get back to the drawing board." He took the admonition seriously and continues his various projects.

With Dr. Stanley Totten (Ph.D. 1962) of Hanover College, Mr. White spent several days in the field in northeast central Ohio in September and early June tracing a very fresh (young) till they had discovered fifteen miles farther east than any previously known Wisconsinian drift. This requires a revision of the Wisconsinian boundary.

The 402-page volume, Till: A Symposium, a collection of papers presented at the Columbus meeting of the G.S.A., appeared in April with a dedication to "George W. White, at the time of his retirement, to honor his devotion, inspiration, and teaching on the subject of till." The May 11, 12, 13 field meeting of the Midwest Friends of the Pleistocene held at Danville, Illinois, was "In honor of George White." The Till Symposium volume, signed by the contributors, was presented by Dr. Richard Goldthwait of Ohio State University, and Dr. Paul Shaffer (Staff 1947-66), now of the Association of American State Universities, made a handsome speech. Both men have been associated with Mr. White since the 1930's.

Among his current projects are: completion of a map and text of the glacial geology of Holmes County, Ohio (July 1972); completion of a report on revision of Wisconsinian boundary in northeast central Ohio (with Stanley Totten - October 1972); revision of a manuscript on "Early American Histories of Geology" (June, 1972); editing of "Geological Papers of William Maclure" for Volume 9 of the series, "Contributions to History of Geology," of which Mr. White is editor (November 1972).

Mr. and Mrs. White were in Great Britain in November and December 1971, partly in connection with business of the International Committee for History of Geology, of which Mr. White is Vice-President for North America. Another overseas visit is planned for late 1972.

\* \* \* \* \*   \* \* \* \*   \* \* \* \*   \* \* \* \*   \* \* \* \*

Derek Victor Ager (Visiting Professor 1958-59), is now in his second year as Head of the Department of Geology at University College in Swansea, United Kingdom after leaving Imperial College.

Ralph E. Grim. University of Illinois Research Professor of Geology Emeritus, Dr. Grim was awarded the first honorary membership of the International Association for the Study of Clays. In addition, he received a gold medal commemorating his role in initiating the Association in 1948.

Also in attendance was University of Illinois Professor Jose Fripiat and William S. Bradley, a former member of the Illinois State Geological Survey, now with the University of Texas.



Dr. Kingsley Charles Dunham (Visiting Professor, 1956). From the years 1950-1967, Dr. Dunham was Professor of Geology at the University of Durham. Since 1967 he has been Director of the Institute of Geological Sciences in Great Britain. In November, 1971, he also became Foreign Secretary of the Royal Society.

On June 3, 1972, Dr. Dunham was knighted by Queen Elizabeth. Sir Kingsley was most recently in Urbana June, 1971, at which time he received an honorary degree of Doctor of Science from the University.

#### ALUMNI ASSOCIATION NEWS

##### U. of I. Birthday Celebration

Following tradition, on Thursday, March 2, the Geology Alumni Association sponsored a party in honor of the University's 104th birthday. Free coffee and cake were served to all students, staff and friends who visited the Wanless Room.

##### Alumni Social Hours

Over 100 geo-alumni and friends of the Department attended alumni social hours last year at the annual meetings of both the Geological Society of America and the American Association of Petroleum Geologists. The Department looks forward to seeing many of you at similar parties this year at GSA in Minneapolis and AAPG in Anaheim. The GSA cocktail party is scheduled for Monday evening, November 13, at 5:30 to 7:30 p.m. in the Solarium Room at the Curtis Hotel.

##### Join the Alumni Association

We would like to encourage you to maintain your membership in the Illinois Alumni Association. A portion of your dues goes to the Geology Alumni Association for support of alumni and departmental activities. In addition to the activities noted above, the alumni fund has given financial support to the Geology Club, annually awarded a Brunton compass to the outstanding senior, and supported other Departmental needs. We hope you will continue to give us this support in the future.

## ALUMNI NEWS

- WOLCOTT, PHILIP P. (MS '36), retired as Geology Department Manager from the Creole Petroleum Corporation following 31 years of service in Venezuela and France. He is now making his home at Box 521, Marco Island, Florida.
- DECKER, WILLIS M. (BS '39), continues as an Area Representative with Cities Service Company in Anchorage, Alaska.
- LACY, WILLARD C. (MS '40), has left the University of Arizona to assume the position of Foundation Chairman in Geology at James Cook University, Townsville, Queensland, Australia.
- DIETZ, ROBERT (Ph.D. '41), has received the gold medal of the Department of Commerce, the highest honor the department bestows. Commerce Secretary, Maurice Stans, presented the award October 28, 1971 in a Washington ceremony. Cited for research which has significantly advanced the understanding of solid earth geophysics, Dr. Dietz has done his most recent studies with the Atlantic Oceanographic and Meteorological Laboratories of the National Oceanic and Atmospheric Administration. With the Department of Commerce since 1963, Dr. Dietz was earlier with the U.S. Coast and Geodetic Survey.
- COCKRUM, EARL C. (AB '43), continues as a Headquarters Geologist with the Carter Oil Company in Evansville, Indiana.
- OTTON, Edmond George (MS '47), is now a Senior Staff Hydrologist for the U.S. Geological Survey in Maryland, Delaware, and the District of Columbia. Mrs. Otton (Lucille Fredigke, BS '40) is teaching Geology I and Historical Geology in the evenings at the University of Maryland, Baltimore. The Otton's have two children: James, a third-year graduate student at Pennsylvania State University, and Janet, a recent graduate from the University of Maryland majoring in psychology and art.
- THREET, RICHARD L. (MA '49), has accepted the position of professor and Chairman of the Department of Geology at San Diego State University.
- OLIVER, WILLIAM A., JR. (MS '50), is presently employed by the United States Government Survey as a Research Paleontologist.
- WILLIAMS, FREDERICK E. (MS '51), is presently involved in mineral exploration, both domestic and foreign, with the Allied Chemical Corporation in Boulder, Colorado.
- QUIRKE, TERRENCE T., JR. (BS '51), was recently appointed western regional manager for the International Nickel Company's field exploration. He has worked for International Nickel since 1960.
- GORE, DOROTHY J. (MS '52), has been working with a number of urban-regional planners and students of planning at Southern Illinois University in the capacity of associate professor.

- FOX, ROBERT E. (MS '53), is Vice-President and Managing Director of the Placid Oil Company (Dallas) international affiliates. Since 1964 he has been headquartered in The Hague setting up and directing petroleum exploration and production operations in the North Sea. Bob was a principal speaker at the second Scottish Council International Forum in February, 1972.
- GLAWE, LLOYD N. (BS '54), is now making his home in Monroe, Louisiana where he is Associate Professor of Geology at Northeast Louisiana University.
- MCCOLLUM, JAMES T. (AB '56), is now a self-employed attorney-at-law in Rochester, New York.
- MOTTS, WARD S. (Ph.D. '57), is presently teaching Environmental Geology and Hydrogeology at the University of Massachusetts. He has been conducting research on the hydrogeology of wetlands in Massachusetts and problems of ground-water contamination and occurrence in different parts of New England. Research on valley fill and Permian rocks in southeastern New Mexico has also been conducted.
- CROPP, F. W. (Ph.D. '58), received a six-month leave from the College of Wooster where he is Dean and Vice-President for Academic Affairs and spent the time at the Center for Research and Development in Higher Education in Berkeley.
- HAUSER, DONALD (BS '58), is now registered as a civil engineer in California.
- STURN, DAVID L. (BS '59), has recently accepted the appointment as Geologist III with the State of Illinois Department of Transportation, Division of Highways in Elgin, Illinois.
- STONE, JOHN E. (Ph.D. '60), remains Professor and Head of the Department of Geology at Oklahoma State University, Stillwater.
- DONAHUE, JACK (BA '60), is presently living in Bethel Park, Pennsylvania where he has accepted a position as assistant professor at the University of Pittsburgh.
- DOHM, PAUL (BS '61), has transferred, with his wife and four boys, to Broomfield, Colorado where they have resided for the past seven years. Paul received his MS from the University of Kentucky, Lexington, in 1963 and worked for Amoco Production Company since then. He currently holds the position of Senior Grade Geologist.
- WILLIAMS, DONALD R. (MS '62), is now living in Calgary, Alberta-Canada where he is a Senior Geologist for Monsanto Oils Ltd.
- TEXTORIS, DANIEL A. (Ph.D. '63), has just returned with his family from a five-month research leave spent mainly in Liverpool, England. He plans to participate in the Geological Congress in Montreal in the fall of 1972.
- TUBB, JOHN B. JR., (Ph.D. '63), is now a District Geologist with Signal Oil and Gas Company of Louisiana.
- HEIM, GEORGE E. (Ph.D. '63), is employed as a Senior Geologist with Dames and Moore in Park Ridge, Illinois.

CAPRITTA, DIANNE (BS '65), has moved to Syracuse, New York where she is Acquisitions Librarian at the F. Franklin Moon Library on the campus of New York State College of Forestry.

SKINNER, SUSAN (HERBST) (BS '67), has been teaching Earth Science in Aurora, Illinois for the past five years. For the last three summers, she has attended the National Science Foundation Institute for Teachers. During the summer of 1970, Susan and her husband enrolled in a nine-hour course in Oceanography at Northeastern Illinois State College and studied two months in Europe, mainly at the Marine Institute in Monaco, hydrologic studies in Antwerp, Belgium, and at the Institute for Marine Studies in Mamaia, Romania.

RUPPEL, STEPHEN C. (BS '69), received his MS from the University of Florida, Gainesville, in December 1971. His thesis title was "Conodont Biostratigraphy and Correlation of the Fort Payne Chert and Tuscumbia Limestone (Mississippian) at Selected Sites in Northwestern Alabama." He now works for Chevron Oil (Louisiana) as a Developmental Geologist.

SCHMIDT, ALLAN (BS '70), has just recently completed his MS at the University of Florida. He has accepted a position as exploration geologist with the Union Oil Company of California and will make his new home in New Orleans as of July 1972.

SIMONDS, CHARLES H. (Ph.D. '71), has accepted a two-year position as post-doctoral assistant scientist with Lunar Science Institute in Houston, Texas. He will be using the equipment at NASA's Manned Spacecraft Center to conduct experimentation on recrystallization of single and multiple phase silicate aggregates.

TAYLOR, GILBERT (MS '71), has just returned from a South Pacific cruise with the University of Miami as Shipboard Paleontologist and Technician. He has accepted a position with Mobil Research in Dallas where he will be employed as Research Geologist. He has been working on his Ph.D. at Louisiana State University and expects to complete it in August.

## IN MEMORIAM

William Emerson Cote (MS '67). The Department expressed its sympathy to Mrs. Shirley Cote and her two children, Curtis and Cheram, on the passing of Bill Cote (January 21, 1972) through their contribution to the American Cancer Society.

Mr. Cote graduated from the University of Massachusetts in 1962. He received his masters degree from this Department and was a June 1972 doctoral candidate. The University of Massachusetts awarded him the L. R. Wilson Award for earth science. While he was working on his masters degree at the University, he worked as a teaching assistant.

After he graduated from the University of Massachusetts in 1962, he worked as a geologist for Standard Oil of Texas. In June 1963 he came to work for the Illinois State Geological Survey where he did education extension work.

George E. Ekblaw (AM '23), former head of Engineering and Geology and Topographical Mapping Section of the Illinois State Geological Survey, passed away July 8, 1972 at the Americana Nursing Center in Urbana.

An alumnus of Rantoul Township High School, Dr. Ekblaw received the bachelor and master of arts degrees from this Department. He earned a doctorate degree from Stanford University.

During the summer of 1920 he was a field assistant for the Illinois State Geological Survey. He served as assistant geologist during the summers of 1921-25, and was associate geologist of engineering geology from 1927-29, and a geologist and geologic editor for the following 16 years. Between 1929 and 1931 he was in charge of an engineering geology section. He served as head of the engineering and geology division from 1931-1945 and from that date to 1957 he was head of the division of engineering geology and topographic mapping. From 1957 to 1963, when he retired, he was a geologist and head of the section of engineering geology and topographic mapping.

John A. Hulse (MS '63). It is with deep regret that the Department learned a few months ago of the tragic plane crash on September 2, 1968 in the Mackenzie Mountains, Northwest Territories, Canada, which took the life of John A. Hulse. John was a graduate student in the Department from 1960-63 when he earned a Master of Science degree. After leaving Urbana in 1963, he taught for fifteen months in a London Technical College. He then worked for two years as a geologist for the government of Kenya. Early in 1967 he joined the staff of Barringer Research and worked for a period of time in Portugal and the Republic of Ireland. In March 1968 he went to Canada to work in the Yukon and Northwest Territories and remained there until his death.

Faris K. Moyer (BS '39). Alumnus Faris Moyer passed away very unexpectedly May 10, 1971. He was employed as a Division Geologist for Texaco at the time of his passing and is survived by four children.

Dwight Pearce (AB '23). Just recently the Department learned of Mr. Pearce's passing on September 28, 1971. Mr. Pearce earned a bachelor's degree from this University in 1923. He was associated with The Lake County Agency of Hammond, Indiana, a general insurance company, in which he filled the capacity of vice-president.

Russel S. Poor (Ph.D. '27), former director of the U.S. Atomic Energy Commission passed away February 17, 1972 while visiting friends in Gainesville, Florida.

Since 1964, when the director of the National Institute of Health appointed Dr. Poor as the head of a special committee, five dental research and training institutes have been established to advance dental science. He retired from the committee in 1970 but remained as a special consultant.

In 1962 he became director of nuclear education and training at the U. S. Atomic Energy Commission. He held that position until his retirement in 1970.

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PLEASE SEND ME THE CURRENT ADDRESS(ES) FOR THE FOLLOWING ALUMNI AND/OR  
STAFF MEMBERS:

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# TWENTY-THIRD ANNUAL NEWSLETTER

DEPARTMENT of GEOLOGY  
University of Illinois  
Urbana

1972-73

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at Urbana-Champaign

1972-73

GEOLOGY



TO THE ALUMNI AND FRIENDS OF THE DEPARTMENT

As I will be away from campus on sabbatical leave during the fall semester at the time the NEWSLETTER is being prepared, this letter will be understandably brief.

In reading the NEWSLETTER I am sure you will discover that in spite of a continued tight budgetary situation, the Department maintains a great variety of activities that continues to attract outstanding students, at both the graduate and undergraduate levels. Not only are course enrollments still increasing, but again our advanced-degree graduates have been exceptionally successful in obtaining the better positions available. Also, I am pleased to announce the recent promotions of three of our academic staff: P. A. Domenico to full professor, and T. F. Anderson and D. S. Wood to Associate Professor, respectively.

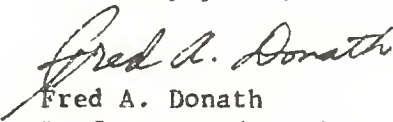
We are sorry to report the loss to our programs of Professor William W. Hay, who resigned this year to accept a full time appointment at the Institute of Marine Science of the University of Miami. Professor Hay joined the staff of this department in 1960 upon completion of his Ph.D. at Stanford University, and worked enthusiastically to develop our program in micro-paleontology. Also departed from our staff this year are Glenn R. Buckley and Douglas E. Pride. Glenn Buckley was appointed as an Instructor in February 1971 and had devoted considerable time to the development and improvement of the honors program in physical geology. Upon completion of the Ph.D. in June, he accepted a position with Esso Production Research in Houston, Texas. Assistant Professor Pride joined the staff upon completion of the Ph.D. in 1969 and assisted in the development of the environmentally-oriented courses. Dr. Pride resigned to accept a position as Assistant Professor of Geology at Ohio State University.

For those of you planning to attend the GSA meetings in Dallas this November, please note that the Department will have an educational exhibit booth there. The exhibit will draw attention to the various programs available to students here at Illinois, and we hope that you may also find this exhibit of interest.

The success of many of our activities is very much dependent upon the continued support of our alumni and friends, and this help is very much appreciated. The research and field activities of a number of our graduate students was again supported by generous gifts from Shell Oil Company, Texaco Foundation, and Humble Oil Company, as well as by independent contributions to the Wanless Fund and Leighton Memorial Fund of the Illinois Alumni Association.

We hope you will find this twenty-third edition of the NEWSLETTER of interest, and that you will help us by returning the last page of this issue with information about your activities. Once more we remind you that information concerning your fellow alumni is available simply by writing to the departmental office, 249 Natural History Building, Urbana, Illinois 61801.

Sincerely yours,

  
Fred A. Donath  
Professor and Head

P.S. The University of Illinois cocktail party at the GSA Meeting is scheduled for Monday evening, November 12, in the Ballroom of the Baker Hotel, from 5:30 to 7:30 p.m. There will be a cash bar. We hope to see you there!



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## GUEST LECTURERS

The following outstanding lecturers came to the Department to speak during the past year:

HELEN M. MC CAMMON

Field Museum of Natural History,  
Chicago

"The significance of nutrient  
assimilation in the lophopore of  
brachiopods"

October 3, 1972

RICHARD B. MC CAMMON

University of Illinois,  
Chicago Circle

"Areal sampling considerations in  
environmental mapping"

October 3, 1972

JOHN S. STEINHART

University of Wisconsin, Madison

"The earth sciences and the environmental  
predicament of mankind"

October 9, 1972

REINO E. KALLIO

Department of Microbiology, U. of I.

"Microbial alteration of petroleum  
in reservoirs"

October 17, 1972

W.F. WEEKS

U.S. Army Cold Regions Research and  
Engineering Lab, and Dartmouth College

"Utilization of icebergs as a fresh  
water source"

"The structure, mechanics, and drift  
of the Arctic Ocean ice pack"

October 24, 1972

F.T. MAC KENZIE

Northwestern University

"Geochemical cycling"

October 31, 1972

L.F. BROWN

Texas Bureau of Economic Geology

"Environmental geology and genetic mapping"

November 1, 1972

Tj. H. VAN ANDEL

Oregon State University, School of  
Oceanography

"Cenozoic depositional history of the eastern  
Equatorial Pacific"

November 16, 1972

GODFREY BUTLER

Esso Production Research, Houston

"Origin of Evaporites in  
Supratidal Flats"

December 13, 1972

SIGMUND SNELSON

Shell Oil Company

"Seismic data bearing on the  
Tectonic style of the valley  
and ridge province"

February 13, 1973

ICKO IBEN JR.

Head, Department of Astronomy,  
U. of I.

"Where the action is in the  
stellar interior"

March 16, 1973

JOHN CLARK

Associate Curator of Sedimentary  
Petrology, Field Museum of Natural  
History, Chicago

"Interpretation of tertiary  
continental sediments"

March 19, 1973

S.R. RUNCORN

Physics Department, the University  
of Newcastle, England

"Physics of the moon"

March 28, 1973

C. BRANNING JOHNSON

Pennsylvania State University,  
Department of Geosciences

"Fracture Mechanics, Contact  
Problems and Glacial Chattermarks"

May 8, 1973

LAWRENCE D. PORTER

Northern Illinois University,  
Department of Geology

"Analysis of strong-motion  
seismic data"

May 22, 1973

## HONORS AND AWARDS

Dr. Charles W. Collinson was elected President of the Society of Economic Paleontologists and Mineralogists at the annual meeting held in May 1973 at Anaheim, California.

Dr. Jose J. Fripiat was elected to a three-year term as Vice President of the International Association for the Study of Clay Minerals held in June 1972 at Madrid, Spain. When Dr. William F. Bradley of the University of Texas at Austin, who was elected President at the 1972 meeting, was killed in an automobile accident in January 1973, Dr. Fripiat then became President of the Association.

Early in 1973, Dr. Ralph E. Grim, Research Professor Emeritus, was named a Knight of the National Order of the Ivory Coast. Dr. Grim was recognized for his role in the creation and development of SODEMI, the state corporation for mining development of the Ivory Coast and "in grateful recognition of his quality as a professor, scientific promoter, dean of the technical committee and its first chairman". The honor was presented in Abidjan, capital of the republic, by Paul Gui Dibo, minister of mines and mineral resources.

At a meeting of the Executive Council in the spring of 1973, Professor Arthur F. Hagner was elected President of the Illinois Earth Science Association.

A portrait of Dr. George W. White, Research Professor Emeritus, was presented to the Department of Geology by Dr. Dennis S. Wood on October 23, 1972. The portrait, painted by Judith Shackleton of Leeds, England, is to be displayed in the Geology Library. Dr. White was Head of the Department from 1947 to 1965, and Research Professor of Geology until his retirement in 1971. Dr. Fred A. Donath, Head of the Department, received the portrait on behalf of the Department at a reception held in the Geology Library. Those attending, besides students, staff members and their wives, included: Chancellor Jack W. Peltason; Vice Chancellor Morton W. Weir, Dean Robert W. Rogers of the College of Liberal Arts and Sciences; Dr. Lucien W. White and Robert W. Oram of the University Library, and Jack A. Simon, William H. Smith, and Dr. W. Arthur White representing the Illinois State Geological Survey.



October 23, 1972

Presentation of portrait of  
George W. White to Department  
of Geology

From left to right, Dr. White,  
Chancellor Peltason, Dr. Donath

March 28, 1973

Dr. Paul Plusquellec (Ph.D. '68),  
representing  
Texaco Companies Foundation,  
presenting a check for \$2,000  
to Dr. Fred A. Donath  
(see story on page 27)





## STAFF NEWS

DAVID E. ANDERSON. In addition to teaching mineralogy, metamorphic petrology and theoretical petrology, Dr. Anderson has been working on applications of multi-component diffusion theory to cation transport in feldspar glass, olivine and garnet systems. To date, all such diffusion studies have been made using the electron microprobe to measure concentration profiles. A recent university grant supporting construction of equipment necessary for the measurement of tracer diffusion coefficients will enable Dr. Anderson's lab to study both the microscopic and macroscopic properties of diffusion in silicates.

Field work has continued in the vicinity of Marquette, Michigan. Dr. Anderson and his students are now trying to determine if unambiguous evidence of diffusion exchange can be found in the rocks of this area.

THOMAS F. ANDERSON. Dr. Anderson continued his research in the areas of oxygen isotope mobility in carbonate and silicate minerals and stable isotope geochemistry of deep sea carbonates. He also initiated a joint research program with the Department of Agronomy on the application of nitrogen isotope abundances to the distribution and fate of nitrogen fertilizers in agricultural fields. He presented papers at the annual meeting of the Geological Society of America and the American Association of Petroleum Geologists and at an invited conference on Geochemical Transport and Kinetics sponsored by the Carnegie Institute of Washington. He also presented a colloquium in the School of Oceanography at Oregon State University. Professor Anderson was awarded a University of Illinois faculty summer fellowship in 1973 to continue his studies on stable isotope geochemistry of deep sea carbonates.

Professor Anderson was the senior author on a paper published by the Journal of Sedimentary Petrology in June, 1973. Two additional papers by Professor Anderson were accepted for publication during the 1972-73 academic year.

During July, 1973 Professor Anderson visited the Laboratory of Mineral Physical Chemistry, University of Louvain, Belgium and the Departments of Geology at the University of Natal campuses at Pietermaritzburg and Durban, South Africa.

Professor Anderson was also involved in teaching the Environmental Physical science sequence and Chemistry of the Earth in this department.

DANIEL B. BLAKE. Dr. Blake is continuing his studies on the taxonomy and paleobiology of certain Paleozoic Bryozoa; efforts are being made to determine patterns of growth and the functional significance of various skeletal structures. In addition, studies on the taxonomy and evolution of Cenozoic and modern starfish are continuing.

Teaching of both undergraduates and graduates took much of Dr. Blake's time. A dissertation on a varied and unusual Ordovician echinoderm fauna was completed by Dennis Kolata, and others in progress include one on Devonian bivalves and another on Mississippian echinoderms. Masters theses in progress include a study on Ordovician Bryozoa and another on Mississippian gastropods.

GLENN R. BUCKLEY. While completing work on his Ph.D. dissertation, Dr. Buckley has been teaching the honors lab sections of Physical Geology.

He received his Ph.D. in October, 1973, and has accepted a position with Esso Production Research Company in Houston, Texas.

ALBERT V. CAROZZI. In September 1972 Professor Carozzi attended a conference on the diagenesis of recent reefs at Discovery Bay, Jamaica. During October he briefly returned to the Amazon Basin to initiate with Petrobras, the Brazilian National Petroleum Company, a program of study of the Lower Paleozoic clastics of that basin. During Thanksgiving vacation, he returned to the Philippines exploring for oil in the islands of Samar and Leyte while continuing his training program of Philippine geologists made even more important now that the martial law has prevented some of them to come to the Department as originally planned.

In December 1972, Professor Carozzi presented at the National Meeting of the A.A.A.S., in Washington, D.C., an invited paper on the influence of Agassiz on the development of geological thinking in the Americas.

Between semesters, with Professor Ralph E. Grim, he returned to the Ivory Coast for the supervision of the mineral exploration with emphasis this time on nickel-bearing laterites.

At Easter time he returned to the Philippines where exploration was concentrated on the island of Panay and where drilling operations are being started.

Professor Carozzi attended the A.A.P.G.-S.E.P.M. Annual Convention in May at Anaheim, California and a field trip of the A.A.P.G. Carbonate Subcommittee in the salt flats of Baja California, Mexico.

In June he spent 3 weeks in Salvador, Brazil giving a course on the petrography of carbonate rocks in relation to a program of the Brazilian Government to develop evaporite deposits in that area and related carbonates. From there he went back for the whole month of July in the Amazon Basin to complete the investigation of the clastic rocks.

His new course on sedimentary petrography for undergraduates, Geology 338, got off on a good start and he is presently expanding the graduate course in the same field (Geology 438). He is also preparing a volume in the Benchmark Series on "Sedimentology: evolution of ideas and concepts."

CARLETON A. CHAPMAN. Professor Chapman is investigating the variation of grain size and mineralogical composition near the contacts in granite plutons along the eastern half of the Maine coastal region. It is expected that such a study will lead to a better understanding and more detailed picture of how the large plutons were emplaced and the order in which the magma consolidated in the different parts of the magma chamber.

In early August, time was spent in the field at Mount Desert Island, Maine, making a road log and other preparations for a field trip, which he is scheduled to conduct in that area in mid-October, 1974 for the New England Intercollegiate Geological Field Conference.

Teaching duties during the academic year consisted of giving lectures in elementary physical geology for science majors (Geology 101) and Petrography (Geology 336), and revising a number of laboratory exercises in Geology 101.

**CHARLES W. COLLINSON.** Professor Collinson still maintains a heavy schedule of meetings as a result of various committee assignments. Among other things he has served as coordinator for Geological Research in Lake Michigan for the Illinois State Geological Survey.

This spring he was elected President of the Society of Economic Paleontologists and Mineralogists.

**MARIBEL CRUZ-CUMPLIDO.** Professor Cruz taught Clay Mineralogy, Geology 461 and 462, during the past year. She attended the GSA meeting in October, 1972 at Minneapolis. In March, 1973, she was a visitor at the Department of Civil Engineering in Rochester, New York, and at the U.S. Army Cold Regions and Engineering Laboratory in Hanover, New Hampshire. Dr. Cruz also attended a meeting of the American Chemical Society on Catalysis in Dallas in April, 1973.

After the academic year in June, Dr. Cruz attended a conference on catalysis at Montreal, and while she was there, visited the Department of Civil Engineering at McGill University. She spent the rest of the summer in Europe. In early June, she visited the Servico de Pomento Mineiro (Porto) in Portugal, and attended the "Fourth International Conference of the Origins of Life" in Barcelona, Spain. During the month of July she worked with Dr. Fripiat at the Laboratoire de Physico Chimie Minerale in Louvain, Belgium.

**PATRICK A. DOMENICO.** Professor Domenico's research during the past year has concentrated on transport processes in hydrogeology. This research has resulted in a paper on mass transfer in groundwater flow published in Water Resources Research (with F. Schwartz), a paper on convective heat transfer in groundwater flow (in press) in the GSA Bulletin (with V. Palciauskas), and a paper in press in the Journal of Hydrology on optimization theory (with V. Palciauskas). In addition to teaching Hydrogeology and Geology for Engineers, Professor Domenico is collaborating with Professor Palciauskas and T. Anderson in an environmental science course. Other departmental responsibilities included Chairman of the Graduate Study Committee and a member of the Advisory Committee to the Head.

Professor Domenico attended the Penrose Conference on Water and Carbonate Rocks in Vail, Colorado during the week of September 16, and will present a paper at the GSA meeting in Dallas.

**FRED A. DONATH.** Professor Donath began the academic year with a visit to the Illinois Field Camp in Sheridan, Wyoming, and ended it with a visit to the Illinois Field Course in Great Britain. He was with the British Isles group during the last two weeks of the course which included visits to the great slate quarries of north Wales and to classic sections of lower Paleozoic stratigraphy, as well as to features of historical and cultural interest. While in Britain he also visited the universities at Leeds and Manchester.

Other trips during the year included visits to Carleton University in Ottawa, Yale, University of Missouri-Rolla, Penn State, University of Arizona, Texas Tech, University of Montana, Oregon State, Wyoming, Nebraska, Iowa, and Laurentian University in Sudbury. Professor Donath also gave a lecture series at the Phillips Petroleum Company in Bartlesville, Oklahoma, and attended an annual meeting of the Association of Engineering Geologists in Kansas City, Geological Society of America in Minneapolis, and American Geophysical Union in Washington.

**JOSE J. FRIPIAT.** Dr. Fripiat was nominated as Frank G. Chiapetta Lecturer by the Catalysis Society of America and Canada. He was presented with an award at their meeting in Pittsburgh. Subsequently, Dr. Fripiat gave a total of 10 lectures--at California, Pittsburgh, New York, Chicago, Philadelphia, Canada, in New England and in the Southwest. In addition to lecturing, he visited the Department of Civil Engineering at Rochester, New York, and the U.S. Army Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire. Also, Dr. Fripiat attended a meeting of the American Chemical Society (on Catalysis) in April at Dallas. He attended the Conference of Catalysis at Montreal and the Fourth International Conference of the Origins of Life in Barcelona, Spain before returning to his laboratory in Louvain, Belgium. At the meeting of the International Association for the Study of Clay Minerals held in Madrid, Spain in June, 1972, Dr. Fripiat was elected to a three-year term as Vice-President.

**LESTER S. FRUTH, JR.** Dr. Fruth spent the last year conducting and overseeing the research activities in the High Pressure Laboratory with Professor Donath. He has devoted considerable time to his duties as Technical Services Supervisor for the department. In the spring he also attended the AGU meetings in Washington, D.C.

Dr. Fruth's laboratory research has included the continuing studies of apparatus effects and fracture diffraction and strength relationships in triaxially formed multilithologic specimens. His research on the effects of rate, sediment type, and test type on the artificial compaction of carbonate sediments has continued. A new study of the effects of pore fluid pressure on intact and prefaulted rock specimens has tentatively been initiated. Besides this, he also helped set up equipment and run tests for department colleagues involving studies of acoustical emissions of triaxially deformed rock specimens, the effects of triaxially deforming carbonate oolites with a controlled intermediate stress, and the effects of grain size on the strength properties of marble.

In his spare time, along with Fred Donath, Dr. Fruth has continued the improvement, construction and testing of a portable rock deformation apparatus being marketed for both demonstration and research purposes.

**JOHN C. FRYE.** Dr. Frye continued to serve as Chairman, Committee on Radioactive Waste Management and member of Panel on Engineered Storage (NRC); as member, Committee on Remote Sensing of Earth Resources (NRC), Earth Science Division Executive Committee of NRC as representative of NAE, and Committee on Environmental Engineering of NAE; as member of the National Advisory Board of Desert Research Institute, University of Nevada System; as member, Advisory Committee on Technology of Oak Ridge National Laboratory; and as Associate Editor of GSA. He also spent another two weeks in the field in eastern New Mexico with the Bureau of Mines and Geology.



DONALD L. GRAF. During the past academic year, Dr. Graf attended the annual meeting of Clay Minerals Society, the Geological Society of America, and the American Geophysical Union. He delivered a paper at the Clay Minerals Society meeting on the design of high-pressure cells for X-raying clays in contact with brine. He also gave two talks at Kent State University.

In the past year, Dr. Graf taught sedimentary geochemistry, chemistry of the earth, and nonequilibrium thermodynamics in earth science.

Professor Graf is supervising three thesis projects: Mike Stephens (Na-Ca exchange on illite under deep-basin conditions), Rick Lahann (Mo transport mechanisms in surface bodies of water), and Bill Miller (localization of heavy metals in particular mineralogical constituents of coal).

ARTHUR F. HAGNER. Professor Hagner and Douglas Pride presented a paper on The Economic Geologist and Mineral Resources in the Future at the National Symposium on the Future Resources in Society. This paper has been accepted for publication in a volume that will contain papers presented at the symposium.

Dr. Hagner has been elected President of the Illinois Earth Science Association for the academic year 1973-1974. Much of the past year has been devoted to the affairs of the Association, and to revising the honors course in physical geology (Geology III) and the course in Minerals and Rocks (Geology 233).

During this year Terry McCullough and Al Skrzyniecki completed their Ph.D. theses under Dr. Hagner's supervision. Dr. Hagner has assumed the responsibility of checking all M.S. and Ph.D. theses for the department, which helps to expedite the format check made by the Graduate College.

DONALD M. HENDERSON. Dr. Henderson has continued to do at least a token amount of field work. During the summer of 1972 he spent a week working in the White Mountains of New Hampshire. During mid-May of 1973 he spent several days in the Marquette trough area with Dave Anderson and the Geology 332 (Mineralogy-Petrology) class.

In addition to teaching, he has continued as an Associate Editor for the American Mineralogist, served as chairman of the departmental Undergraduate Committee and served on the LAS Committee on Advising, Enrollment and Registration.

JON T. HOLDER. Dr. Holder initiated a study of the use of acoustic emission techniques to investigate microfracture and plastic flow in rocks in cooperation with Drs. Fruth and Donath. It is hoped that the techniques will lead to a direct determination of microscopic processes occurring in deformed rocks. An experimental investigation of the effects of non-hydrostatic stress on structural transformation, nearing completion, also makes use of some of Professor Donath's equipment.

The study of mechanical properties of ice continues with the measurement of charged dislocation behavior in ice crystals. A new geology student is beginning an experimental study of the microscopic processes involved in creep in ice.

Dr. Holder taught Geology 350, Introduction to Geophysics, in the spring semester, and continued research in the University's Materials Research Laboratory in the summer.

W. HILTON JOHNSON. Dr. Johnson continues to serve as Educational Coordinator in the Department and in that capacity works closely with our undergraduate and graduate students. He is responsible for our instruction in geomorphology and glacial and Pleistocene geology, and usually teaches one of the beginning courses.

Dr. Johnson continues to work on the till stratigraphy of east-central Illinois. Graduate students David Moore and Donald McKay are currently working on related theses problems. Dr. Michael Zwarich, a pedologist from the University of Manitoba, is a Visiting Scholar in the Department this year and is working in association with Dr. Johnson.

GEORGE deVRIES KLEIN. Two courses occupied much of Dr. Klein's time during the fall--Geology 309 (Sedimentology-undergraduate) and Geology 437 (Sedimentary Processes-graduate). Field work for both courses was undertaken on a Holocene point bar in the Wabash River, and both the Mississippian and Pennsylvanian of southern Illinois.

Professor Klein attended the annual meeting of the Geological Society of America (in November) as departmental Placement Coordinator, and the Sedimentology meetings at the University of Kentucky in January, 1973. He also visited Brazil in August, teaching a short course for Petroleo Brasileiro, and presented a paper at the XXIV International Geological Congress in Montreal. Professional Society Committee work appears to be increasingly on Dr. Klein's agenda, as he has been appointed to both the Research Committee and the Committee on Committees of the Geological Society of America, the Research Committee of the Society of Economic Paleontologists and Mineralogists, and the Marine Geology Committee of the American Association of Petroleum Geologists, in addition to continuing as a member of the Membership Committee of the International Association of Sedimentologists. The Society of Economic Paleontologists and Mineralogists has slated Dr. Klein as a candidate for the Society's Vice-Presidency for 1974-75.

Professor Klein left Urbana in April to undertake a two-week combined field trip and lecture tour of four geology departments in New Zealand--Auckland, Otago, Canterbury, and Victoria--before leaving Wellington to participate as a sedimentologist with Leg 30 of the Deep Sea Drilling Project. He returned to Urbana early in the summer.

RALPH L. LANGENHEIM, JR. Two of Professor Langenheim's long-term projects have gone to press. "Correlation of Great Basin Stratigraphic Units," a comprehensive Precambrian through Pleistocene Correlation Chart and Explanatory Text for the entire Great Basin, will appear, with the assistance of E.R. Larsen, as Nevada Bureau of Mines Bulletin 72. This work was initiated in 1961 by a committee of the now-defunct Eastern Nevada Geological Association. A few years later, Dr. Langenheim assumed responsibility for its completion and, in 1966, submitted a finished manuscript to the Nevada Bureau of Mines and Geology. Since that time,

technical problems have delayed publication, but the charts themselves are now printed and the remainder of the job is under way. "Tertiary Reef Biofacies: Paleontology and Biostratigraphy of Chiapanecan Scleractinia and Larger Foraminifera" being published with Stanley Frost, is now in galley proof and will soon be issued by the Northern Illinois University Press. This 600 page manuscript, with more than 100 plates, is a monographic work on Caribbean Tertiary corals and larger foraminifera. It also has been in preparation for almost a decade and it is a relief to see it finished and published.

Research continued during the winter season at Arrow Canyon. This last year mapping with Sue Mahlburg continued in the Las Vegas Range, and new work was started with the paleoecology of Pennsylvanian and Permian fusulinids. A preliminary report on the structure of the Las Vegas fold belt was presented with Miss Mahlburg at the Portland, Oregon meetings of the Cordilleran Section of the Geological Society of America.

During the past year, Dr. Langenheim has been instrumental in organizing a North Central Section of the Paleontological Society. Plans were submitted to the Paleontological Society Council at the Minneapolis Meetings and the proposal is being voted upon by the PS membership this fall. Dr. Langenheim also continued as a critical reader for the Journal of Paleontology.

Professor Langenheim again taught his regularly assigned courses, including the 1973 Field Camp. A highlight of this year's Field Camp was a staff expedition to the top of Cloud's Peak--which arrived in a dense cloud and descended through a snowstorm. Other special instructional activities included an advanced course on the paleontology of corals, and a Geology 115 expedition to the bottom of the Grand Canyon in Spring Semester. Dr. Langenheim also gave several invited lectures at other universities and to other groups.

Professor and Mrs. Langenheim are in Iran for the Fall Semester, 1973, where he is serving with the Geological Survey of Iran under the auspices of the International Executive Service Corps. His mission is to provide biostratigraphic control for field mapping in Paleozoic rocks in support of mineral investigations. He is a bit nonplussed by the fact that he is expected to deal with all phyla of invertebrates through the entire Paleozoic. Barring complete nervous exhaustion, the experience should be stimulating and valuable. (At last word, the work was going smoothly, and progress was being made.)

C. JOHN MANN. Professor Mann continues to teach undergraduate courses in historical geology and stratigraphy, and a graduate course in mathematical geology. This past summer he again joined Professor Langenheim in Sheridan, Wyoming for the summer Field Camp after a four year absence. This summer's group of students was a particularly congenial one, and together with the usual excellent Wyoming weather, made the summer an exceptionally enjoyable session. Following the summer session, Dr. Mann did field work in Wyoming, Montana, and Idaho.

Professor Mann's research into geological data enhancement through quantitative filtering techniques is continuing, as is quantitative stratigraphic correlation methods.

The 1973 Illinois Junior Academy of Science state exposition held each May in the Assembly Hall was one of the biggest and most successful ever held. Exhibits by Illinois junior and senior high school students continue to demonstrate their great interest in science and an increasing proficiency in their handling of scientific concepts and phenomena. Dr. Mann is University Coordinator for this annual event.

ALBERTO NIETO-PESCECETO. Professor Nieto taught Engineering Geology, Geology 450 and 451 this past year and led two field trips--one to Baraboo, Wisconsin, and the other to major construction sites in Indiana, Kentucky, Tennessee, and Georgia.

He presented a paper at the Fourth International Congress on Salt in Houston. The paper, co-authored by Professor A.J. Hendron, Jr. of the Civil Engineering Department, deals with a case history, but also includes some new concepts on the development of sinkholes induced by brining operations.

Mr. Nieto reduced his involvement in civil engineering projects in order to finalize the experimental part of his doctoral thesis project.

V. VICTOR PALCIAUSKAS. Dr. Palciauskas has continued his research in solid state geophysics, concentrating on the elastic and thermal properties of high pressure materials. In particular the variation of acoustic wave velocities with pressure and temperature and the predictability of structural phase transformations were of special interest. At the same time a theoretical investigation of the kinetics of mass and energy transport in convective media was continued in collaboration with Dr. Domenico and supported in part by a grant from the Office of Water Resources Research.

As in the previous years, his teaching duties consisted of Mathematical Methods in Geology and Environmental Physical Science, the latter in collaboration with Drs. T. Anderson and P. Domenico.

DOUGLAS E. PRIDE. During the past year, Dr. Pride taught Physical Geology, Minerals and Rocks, and Environmental Physical Science. Among the meetings he attended were: the GSA meeting in Minneapolis; the Massive Sulfide Symposium during the spring, in Chicago; and also in Chicago, the Symposium on Future Status of Earth Resources, where he gave a paper on educating the economic geologist of the future, with Dr. Hagner.

Dr. Pride's most recent contribution to earth science education was a publication on the geologic histories of selected topographic regions of the United States, published by Hubbard Scientific Company of Chicago.

During the summer Dr. Pride was busy with field work. His geochemistry exploration research in Wisconsin included lake sediment sampling in

Greenstone areas, and water and soil survey over known mineralization at Ladysmith, Wisconsin. In the San Juan Mountains of Colorado, he was involved in the examination of several bodies of breccia pipe intrusives. He also continued his research on the origin of the iron formation body at Atlantic City, Wyoming.

Dr. Pride is no longer with the University--he has accepted a position for the fall at Ohio State University, where he is teaching the economic geology of metallic mineral deposits.

PHILIP A. SANDBERG. Dr. Sandberg has been on sabbatical leave this year (1972-73) on a NATO Postdoctoral Fellowship in Science at the British Museum (Natural History), London. His major activity has been an investigation of skeletal ultrastructure in cheilostome Bryozoa, utilizing the scanning electron microscope and the BMNH collections. He has also been affiliated with Imperial College, London, as an Academic Visitor in the Department of Geology.

In November Dr. Sandberg spent four weeks in Israel collecting bryozoans in the Gulf of Elat, visiting geological sections and lecturing at Hebrew University, Jerusalem. Other shorter trips were made to the Geological Institute, Copenhagen, to utilize electron microscope equipment and to lecture there and at the Geological Institute, University of Koln, Germany; and the fifth Meeting of Carbonate Sedimentologists in Liverpool. In addition, he served as cruise lecturer for the Royal Viking Line, speaking on various oceanographic, geologic, and cultural topics.

DENNIS S. WOOD. During the 1972-73 session, Dr. Wood taught Geology 101 in the first semester and Geotectonics at the graduate level in the second semester, before leaving for Europe in early May. The annual advanced summer school course in field geology (Geology 315) in Great Britain again proved to be most successful, attracting an outstanding group of students from such schools as Chicago, Duke, Harvard, University of Texas, University of Nebraska, University of Wisconsin, Southern Methodist, Montana State, Albion College, Augustana College, University of North Carolina and Bryn Mawr. Prior to returning to the United States, Dr. Wood was occupied in field work in Britain in collaboration with Dr. Gerhard Oertel of UCLA.

During the Christmas vacation Dr. Wood presented a paper, dealing with work undertaken jointly with Dr. Donath, to the Annual Tectonic Studies Meeting of the Geological Society of London. During the course of the academic year Dr. Wood accepted invitations to deliver lectures at UCLA, Harvard, MIT, University of Toronto, University of New Brunswick, Imperial College of London, and the University of Leeds. Dr. Wood has recently received an invitation from the Royal Society to organize an international meeting of the Society on "Finite Strain in the Earth's Crust" which is to be held in London in March 1975.

In addition to continuing his researches into natural rock deformation, Dr. Wood found time to act as a regular critical reader for the Geological Society of America and for Tectonophysics. In cooperation with the Department of Civil Engineering, Dr. Wood has paid several visits to Washington, D.C. in connection with the University contract related to tunneling

operations of the Washington rapid transit (Metro) system. During the session, James Granath and Richard Trefz completed Masters' theses, and Alexander Maltman completed the Ph.D. degree prior to taking a permanent faculty position at the University of Wales.

#### FORMER STAFF NEWS

GEORGE W. WHITE. Dr. White, research professor emeritus, and Stanley Totten, (Ph.D. 1932), department head at Hanover College, completed field checking for maps and reports on glacial geology of Columbiana and Mahoning Counties in eastern Ohio. A bulletin and a colored map for each county will be published by the Ohio Geological Survey. These are now in process and will be completed during the fall. The glacial boundary crosses the more southerly county and five separate till sheets are exposed at the surface and are present in the subsurface. These are correlated with units in adjacent Pennsylvania, already published by White and Totten, with David Gross (Ph. D. 1969). Dr. White has also just completed a colored map and text for Ashland County, also for the Ohio Survey.

During the summer Dr. White conferred at various times with Gerald Groenewold (U. of I., B.S. 1968; Ph.D., North Dakota, 1972), now on the staff of the Pleistocene Section of the Ohio Survey. Dr. Groenewold is completing the mapping of the glacial geology of Medina County, using in part data collected earlier by Dr. White, in U.S.G.S. investigations.

Dr. White continues as Vice-President for North America of the International Committee for History of Geology. He and Mrs. White were in Madrid in March, 1973, to confer with officers of the Committee who are arranging a symposium on history of geology in connection with a meeting of the Committee in July, 1974.

RALPH. E. GRIM. At the time when Dr. Grim visited the Ivory Coast in West Africa in January as a consultant for the Ivory Coast government, he was named a Knight of the National Order of the Ivory Coast.

He was appointed Adjunct Professor of Geology at Texas Tech University in Lubbock, Texas, and spent a week there with Professor Güven giving lectures and working on a joint volume on bentonite.

Dr. Grim visited Brazil in May as a consultant to the Brazilian government to assess the mineral resources of the San Francisco Valley for a regional development program.

## FIELD ACTIVITIES

### WYOMING SUMMER FIELD CAMP, 1973

Twenty-six students and six staff members left Monday, June 11, from the University of Illinois for Sheridan, Wyoming and the department's 23rd annual Geology Summer Field Camp.

Returning on August 4, they had covered more than 6,500 miles and had examined geologic features of the platform, foreland and geosyncline that are not available near the mid-Illinois campus. Headquarters of the camp were located at Sheridan College for the 18th summer.

The camp curriculum is two-fold--dealing both with regional geologic analysis and techniques of field mapping--but with emphasis on mapping techniques. Regional study on the way to camp, at Sheridan, and on a one-week excursion to Yellowstone, the Tetons and western Wyoming included examination of the Baraboo and Sioux Precambrian outliers, the Badlands, Black Hills, Powder River and Bighorn Basins, the Absaroka, Beartooth, Hoback, Wind River and Owl Creek Mountains, and various oil fields, iron mines and uranium mines. Training in field techniques covers section measurement and mapping by plane table, on a topographic base, and on aerial photographs, and deals with a wide variety of rock types and structures.

Staff for the 1973 camp included Professor F. William Cambray of Wayne State University, Professor C. J. Mann of the University of Illinois, and Miss Suzanne Mahlborg of Brown University as an instructor. Teaching Assistants were Mark Reinbold and Ron Kern of the U. of I., and R. L. Langenheim was again Director.

Special activities included a Clouds Peak climb (which arrived in a cloud and descended in a snowstorm), a visit to the Craters of the Moon, and all of the senior staff giving lectures on the Wyoming Geological Association summer program.

The group returned to Urbana wearing specially prepared "Camp Ralphie" tee shirts.

### GEOLOGY 1973 SUMMER SCHOOL IN THE BRITISH ISLES

The advanced field class in Britain was held for the third time under the direction of Professor Dennis S. Wood, with Alexander Maltman and Graham Copeland as graduate assistants. A total of twenty-four students participated in the course, representing some thirteen universities as far apart as Massachusetts, Texas and Montana. The course is designed for senior undergraduate and graduate students and is available for 8 hours or two units of credit at these levels.

The course, lasting eight weeks, commenced in London on June 13th with a visit to the Institute of Geological Sciences and an address from the Director, Sir Kingsley Dunham FRS, who is an honorary graduate of the University of Illinois. This was followed by lectures from Dr. Janet Watson and Professor John Ramsay at the Imperial College of Science and Technology. Somewhat later in the course other lectures were kindly

given by Professor Robert Shackleton FRS at the University of Leeds and by Dr. M.R.W. Johnson at the University of Edinburgh.

The primary intention of the course is to teach and demonstrate principles rather than details of local geology, and to take advantage of the opportunity which Britain offers to study a remarkable variety of geological phenomena. Some of the areas covered were those regions made classic as a result of the work of geologists such as Hutton, Murchison, Sedgwick, Lapworth and Read. Training and experience in detailed mapping was obtained in northwest Scotland and in North Wales and the extremely high standard of work produced was subsequently much commended by several British field geologists. The group was most happy to have had Professor Donath present for the final three weeks of the course.

### COURSE TRIPS

Field work remains an essential aspect of geology at both the undergraduate and graduate levels. During the past year, 21 formal field trips were taken in 21 courses.

#### Course

Physical Geology	Baraboo, Wisconsin
Historical Geology	Cagles Mill and Turkey Run, Indiana
"	LaSalle, Illinois
Honors--Physical Geology	Southeast Missouri and Southeast Illinois; Danville area
Honors--Historical Geology	Wabash, Indiana and Madison, Indiana
Regional Field Study--Undergraduate	Grand Canyon
Paleontology and Stratigraphy	Wabash, Indiana
Minerals and Rocks	East Tennessee and West North Carolina
Geology for Engineers	Danville area
Geomorphology	Vermilion and Champaign Counties, Ill.
Sedimentology	Grayville and Dixon Springs, Ill.
Advanced Field Methods	Miami and the Bahamas
Invertebrate Paleontology	Northwest Illinois
Principles of Stratigraphy	Fithian, Illinois and Wabash, Indiana
Mineralogy-Petrology	Marquette, Michigan
Regional Field Study--Graduate	Galena, Illinois--Baraboo, Wisconsin
Sedimentary Processes	Grayville and Dixon Springs, Ill.
Principles of Engineering Geology	Baraboo, Wisconsin
Practice of Engineering Geology	Tennessee and North Georgia
Mineralogy of Clays	Hamilton, Illinois
Advanced Structural Geology	Kentland, Indiana
Advanced Studies in Geology	Eastern Kentucky



## GEOLOGY LIBRARY

As with all libraries, the Geology Library continues to feel the restrictions of space and tighter budgets. In order to keep the collection in the space of the library, it is necessary to transfer a number of volumes to the Stacks of the Main Library each year. During the summer of 1973, 980 volumes in 37 series were transferred to the Main Library leaving a total of 60,581 volumes in the Geology Library, and 2,270 serials are being received. The limited space will keep the size of the collection almost constant. With more materials stored in the Main Library, inconvenience and time are imposed on faculty and students in retrieving the literature they need. The Map Collection consists of 21,402 cataloged maps, 20,768 uncataloged maps, and 331 series of maps are being received. The resources for geological literature on the campus of the University of Illinois at Urbana-Champaign are among the best in the country.

Early in 1973 Dr. George V. Cohee, Chairman, Geological Names Committee, U.S. Geological Survey, Washington, and alumnus of the Geology Department, presented a gift of his valuable collection of field trip guidebooks to the Geology Library. The collection contained many that had not been reported previously in the collection of any research geology library in the country. Dr. Charles H. Simonds, alumnus with the National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, has supplied the Library with copies of the Lunar Information Catalogs for the Apollo 15, 16, and 17 Moon probes. Mr. Robert J. White, alumnus in Geography and Geology, presented the library with a number of Apollo and Lunar Science volumes, procedures for studying Moon samples, and photographs of specimens of Moon materials.

Mrs. Harriet W. Smith, Geology Librarian, remains active in professional organizations, and she has attended the meetings of the Geological Society of America and the Geoscience Information Society. In 1972 she journeyed to New Zealand and Australia for her vacation and visited a number of geology libraries in those countries.

### UNDERGRADUATE PROGRAM

The Department currently has about 70 undergraduate students majoring in either geology or the teaching of earth science. The Earth Science Teaching Curriculum has seven students and the remaining students are about equally split between the Geology Curriculum and the Science and Letters Curriculum with a field of concentration in geology.

The field of concentration is a new concept in the College of Liberal Arts and Sciences. Instead of having a major and minor, students work in a field of concentration which requires certain courses in the field, as well as courses in cognate areas. We have purposely kept our requirements in the field of concentration at a minimum so that there is a maximum of flexibility and students can arrange academic programs to meet their individual needs. Currently we require 28 hours in geology and 31 hours of cognate courses in this program.

## THE GRADUATE PROGRAM

This year's group of 87 graduate students was the largest in the past 10 years. The students came from 62 different colleges and universities and 6 foreign countries. Eight of our students were registered in absentia and were completing their degrees while away from the campus.

Eleven students received Ph.D. degrees this year. Of these, nine found permanent employment, two accepted postdoctoral positions. Thirteen students received M.S. degrees; three students received M.S. in Teaching of Earth Science. Of those 13, 7 found permanent employment and 6 are continuing work in Ph.D. programs here or elsewhere.

As in years past, the great majority of our students received financial aid through fellowships, traineeships, teaching or research assistantships, or employment at the State Geological Survey.

A list of graduate students enrolled during the 1972-73 academic year follows:

### FELLOWS:

#### University of Illinois Fellowships

Frank Ettensohn	BS '69 University of Cincinnati
	MS '70 University of Cincinnati
Daniel E. Lawson	BA '71 Lawrence University
Larry Maple	EA '72 Lawrence University
Mark Reinbold	BS '72 Eastern Illinois University

#### NDEA IV Fellowship

Richard W. Lahann	BS '71 Knox College
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#### National Science Foundation Traineeship

Roscoe G. Jackson	BS '72 University of Kansas
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#### NDEA IV Fellowship

Richard W. Lahann	BS '71	Knox College
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#### National Science Foundation Traineeship

Roscoe G. Jackson	BS '72	University of Kansas
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TEACHING ASSISTANTS:

Allen A. Aigen	BS '71 C.U.N.Y. City College
Jack B. Bailey	BS '67 University of Arkansas MA '71 Columbia
John J. Barnes	BS '67 Michigan State University
William Bond	BS '71 San Diego State College
James Brenneke	BA '72 Augustana College
Sally Ann Cole	BS '72 University of Washington
Graham C. Copeland	BA '72 Knox College
Richard M. Forester	BS '69 Syracuse University
Harold C. Ganow	BS '67 Colorado State University MS '69 Colorado State University
Julia B. Graf	BA '67 Bryn Mawr College MS '72 University of Illinois
Ronald A. Kern	AB '68 University of Rochester
Dennis R. Kolata	BS '68 Northern Illinois University MS '70 Northern Illinois University
Gary I. Kuhnenn	BS '70 Morehead State University MS '72 Eastern Kentucky University
Jean E. Kulla	BS '72 University of Maryland
Nancy D. Lee	BA '71 University of Maine
Regina Link	BA '70 University of Oregon
Tso-an Ma	BS '70 National Taiwan University
Alexander Maltman	BS '67 University of Liverpool MS '71 University of Illinois
Michael Martin	BA '70 Albion College
E. Donald McKay	BA '71 Hanover College
David W. Moore	BA '61 College of Wooster MS '70 University of North Carolina
W. John Nelson	BS '71 Williams College
Julio C. Olimpio	BA '72 University of New Hampshire

William A. Olsson	BA '66 Southern Illinois University
	MS '68 Southern Illinois University
Annette Price	BS '72 Michigan State University
Linda J. Provo	BA '71 Hope College
William D. Rice	BS '71 Knox College
Joan M. Schram	BS '67 University of Illinois
	MS '72 Eastern Illinois University
John M. Sharp	BS '67 University of Minnesota
	MS '71 Midwestern University
Susan Soloyanis	BS '72 Smith College
Larry Stanker	BA '71 San Francisco State University
Gary D. Stricker	BA '63 Wayne State University
	MS '65 Wayne State University
Richard J. Trefz	BA '71 Rutgers University
Susan J. Wunder	BS '72 University of Rochester

RESEARCH ASSISTANTS:

Elizabeth Foraster	BS '72 University of Illinois
Sekung Lee	BS '69 Seoul National University
	MA '72 Temple University
Robert Robinson	BS '69 U.C.L.A.
Suzanne Russell	BS '72 University of Illinois
Michael Stephens	BS '68 University of Texas
Peter J. Tarkoy	BS '64 City College of New York
	MS '67 University of Tennessee

OTHER GRADUATE STUDENTS:

George J. Allgaier	BS	'64 S.U.N.Y., Buffalo
Raymond E. Aufmuth	BS	'63 University of Dayton
	MS	'66 Miami University
Matthew J. Avcin	BA	'65 Lafayette College
	MS	'69 University of Illinois
Victor A. Benavente	BS	'72 Washington and Lee University
Glenn R. Buckley	BS	'67 Wayne State University
	MS	'68 Wayne State University
Susan Buckley	BA	'67 College of Wooster
Keros Cartwright	BA	'59 University of California
	MS	'61 University of Nevada
Thomas L. Chamberlin	BS	'68 Michigan State University
	MS	'71 University of Illinois
Dennis D. Coleman	BS	'67 University of Wisconsin, Madison
	MS	'70 University of Arizona
Thomas P. L. Dowell, Jr.	BS	'49 Georgia Institute of Technology
	MS	'72 University of Illinois
Herbert Elliott	BS	'64 University of Virginia
	MS	'69 Louisiana State University
Suzanne E. Emery	BS	'71 University of Illinois
Faith Fiene	BS	'72 Illinois State University
Gordon S. Fraser	BS	'68 University of Illinois
	MS	'70 University of Illinois
Rufus T. Getzen	BA	'65 Wake Forest College
	MS	'67 South Carolina University
Robert H. Gilkeson	BS	'68 University of Illinois
Andrew Gombos	BS	'70 Washington and Lee University
Michael Hansen	BS	'65 Idaho State University
	MS	'70 University of North Carolina
Henry Harris	BA	'70 Haverford College
Gary G. Hendrix	BS	'72 University of Illinois

Cathy S. Hunt	BS	'72 University of Illinois
Stephen Hunt	BS	'72 University of Illinois
Margaret Ann Kasowski	BS	'64 University of Ottawa
	MS	'68 University of Illinois
Mohamad Khawlie	BS	'71 American University of Beirut
Warren L. King	BS	'67 State University of Iowa
Alan K. Kuhn	BS	'63 Duke University
	MS	'68 Colorado State University
Chao-Li Liu	BS	'64 National Taiwan University
	MS	'68 Memorial University, Newfoundland
James W. Mahar	BS	'67 Idaho State University
	MS	'69 Colorado State University
Robert M. Mason	BS	'67 University of Notre Dame
	MS	'71 University of Kansas
F. Terry McCullough	BS	'64 University of British Columbia
	MS	'68 University of Illinois
James Mercer	BS	'69 Florida State University
	MS	'72 University of Illinois
William G. Miller	BS	'70 Colorado School of Mines
Ralph J. Newberry	BS	'72 University of Illinois
Alberto Nieto-Pescetto	BS	'61 San Marcos University of Lima
	MS	'63 Washington University
Rodney D. Norby	BS	'67 University of North Dakota
	MS	'70 Arizona State University
Jack R. Palomino	BS	'61 University Nenal, San Marcos
	MS	'63 University of Illinois
James E. Risatti	BS	'66 University of Illinois
	MS	'70 Mississippi State University
Robert W. Root	BS	'72 Washington and Lee University
Herbert Seto	BS	'65 Otterbein College
	MS	'67 University of Illinois
Frank B. Sherman, Jr.	BA	'57 Dartmouth University
	MS	'68 Colorado State University



Alan F. Skrzyniecki      BS '66 University of Toledo  
                                  MS '70 University of Illinois

Richard A. Smosna        BS '67 Michigan State University  
                                  MS '70 University of Illinois

Neil H. Whitehead        BA '69 University of Louisville

Harold T. Wilber         BS '71 University of Illinois

Non-Degree Candidates: James F. Behensky and Robert Ringler.

DEGREES GRANTED SINCE AUGUST 1972

BS and BA

David K. Beach	William R. Highland	Sharon Mosher
Rodney T. Bloese	Thomas L. Jones	William P. Skibbe
John Darabaris	Robert A. Linka	Jeffrey S. Stein
Karen Lee Eason	David L. Macke	Remy Tshibangu
Kurt A. Grove	Rebecca J. May	Richard Louis Vega
Charles W. Hedel	James E. McGovney	Michael J. Zwart

MS

BARNES, JOHN J., February 1973  
 No thesis.

BUCKLEY, SUSAN B., October 1972  
 No thesis.

FORESTER, RICHARD M., August 1972  
 Isotropic variability of cheilostome Bryozoan skeletons.  
 Supervisor: Philip A. Sandberg

GRANATH, JAMES WILTON, June 1973  
 The deformational and metamorphic history of the precambrian rocks  
 of Wind River Canyon, Central Wyoming.  
 Supervisor: Dennis S. Wood

HOOTEN, JAMES E., August 1972  
 Glacial geology of eastern Champaign County, Illinois.  
 Supervisor: W. Hilton Johnson

JACKSON, ROSCOE GEORGE III, June 1973  
No thesis.

KHAWLIE, MOHAMAD R., August 1972  
Mineralogical studies of clays occurring in several Ordovician  
bentonites.  
Supervisor: N. Güven

MILLER, JAMES A., August 1972  
Quaternary history of the Sangamon River drainage system,  
Central Illinois.  
Supervisor: W. Hilton Johnson

SHAYANI, SOHRAB, October 1972  
Leakage from reservoirs on limestone terraines.  
Supervisor: Patrick A. Domenico

TREFZ, RICHARD JOSEPH, June 1973  
An analysis of small-scale structures in the Late Precambrian elitic  
schists of the Monian system of Anglesey, United Kingdom.  
Supervisor: Dennis S. Wood

MS in TEACHING OF EARTH SCIENCE

GILKESON, ROBERT HOWARD, June 1973  
No thesis.

MORIN, CATHERINE L., August 1972  
No thesis.

WILBER, HAROLD T., February 1973  
No thesis.

PhD

CARTWRIGHT, KEROS, June 1973  
The effect of shallow ground-water flow systems on rock and soil  
temperatures.  
Supervisor: Patrick A. Domenico

DOWELL, THOMAS PERRY LANING, JR., June 1973  
A geological model for land-use suitability evaluation.  
Supervisor: C. John Mann

JOHNSON, DONALD O., October 1972  
Stratigraphic analysis of the interval between the Number Six coal  
and Piassa Limestone in southwestern Illinois.  
Supervisor: R. L. Langenheim, Jr.

- MASON, ROBERT M., February 1973  
Landscape evolution in a portion of the Illinoian drift plain in  
Central Illinois.  
Supervisor: W. Milton Johnson
- MERCER, JAMES WAYNE, JR., June 1973  
Finite element approach to the modeling of hydrothermal systems.  
Supervisor: Patrick A. Domenico
- NOWAK, FRANK J., October 1972  
The microfacies of the Upper Bird Spring Group (Pennsylvanian-Permian),  
Arrow Canyon Range, Clark County, Nevada.  
Supervisor: A. V. Carozzi
- OLSSON, WILLIAM ARTHUR, June 1973  
Deformational behavior of intact and prefaulted crown point limestone  
at elevated temperatures and pressures.  
Supervisor: Fred A. Donath
- SCHNEIDERMAN, NAHUM, October 1972  
Selective dissolution of recent coccoliths in the Atlantic Ocean.  
Supervisor: W. W. Hay
- SCHWARTZ, FRANKLIN W., October 1972  
Digital simulation of hydrochemical patterns in regional groundwater  
flow.  
Supervisor: Patrick A. Domenico
- SKRZYNIECKI, ALAN FRANCIS, June 1973  
Geology and geochemistry of the Sheep Rock mineralized norite,  
Albany County, Wyoming.  
Supervisor: Arthur F. Hagner
- SMOSNA, RICHARD A., February 1973  
Upper Pennsylvanian-Lower Permian stratigraphy of southern and  
eastern Nevada.  
Supervisor: R. L. Langenheim, Jr.

## DEPARTMENTAL ACTIVITIES

The Hickory Hill Country Club grounds were the site for the annual fall picnic held on September 30th. Over 60 people attended the function which was held for the purpose of introducing new undergraduate and graduate students to the staff.

The picnic began with such vigorous activities as volleyball and football. After an afternoon of strenuous exercise, attendants sat down to a hearty "pot-luck" feast.

## NONACADEMIC STAFF

Often, the contributions of the nonacademic staff go unacknowledged but not unappreciated. The Department would like to take this opportunity to thank those members of the nonacademic staff, who over the past year have lent their time and energies to see that the needs of this Department were taken care of. Members of our full-time nonacademic staff for the past year were:

John F. Bauerle, machine  
shop supervisor  
Peggy J. Cook, clerk-  
stenographer  
Donald D. Dodson, instrument  
maker  
David L. Foster, electronics  
technician

Linda D. Ingram, clerk-typist  
Barbara M. Kwintiuk, clerk-typist  
Wanda L. Morrison, clerk-typist  
David R. Phillips, cartographer  
Jack O. Pullen, thin-section  
technician  
Dorothy G. Smith, administrative  
secretary

There was a large turnover in the nonacademic staff during this past year.

Nadine Brown moved to Sacramento, California and was replaced by Peggy Cook.

Both Candy Jenisio and Lee Ann King left the department to raise families. We wish them luck. Linda Ingram now takes care of the accounts, and Wanda Morrison has assumed Candy's responsibilities.

Leslie Lewis, the department's former cartographer, is now working for the Ohio Geological Survey. His successor, David Phillips, worked for 15 years in the Agronomy Department before coming here.

Janice Nicholson, who was with the Department for 9 years, accepted a position with the Housing Division at the University, and was replaced by Barbara Kwintiuk.

These full-time staff members were assisted part time by 21 students during the last year.

## GIFTS TO THE DEPARTMENT

Dr. Paul Plusquellec visited the Department on March 28, 1973 to present a \$2,000 check to Dr. Donath. The check represented the third payment of a \$6,000 gift pledged to the Department three years ago by the Texaco Foundation. The money is to be used at the Department's discretion to aid student programs not supported by state budgeted funds. Dr. Plusquellec (Ph.D. '68) is Assistant District Geologist in the off-shore division of Texaco at offices in New Orleans. While at the University of Illinois, Dr. Plusquellec studied with the late Professor Harold Wanless and with Professor Philip Sandberg.

The Shell Companies Foundation, through their Shell Aids Program, permitted the Department to support the field and laboratory research work of ten graduate students working on M.S. or Ph.D. thesis projects. Because of their continued support, our graduate students are able to conduct field investigations in many diverse geographical areas.

During this past year the Department received a new unrestricted grant from the Humble Companies Foundation. The funds from this award will be used in the support of student programs for which public funds are not available.

The Department of Geology is indeed grateful for the support provided by these Foundations. Without their support, many of our students' projects would never have been attempted.

## IN MEMORIAM

William Frank Bradley (BA, Geology '30; Ph.D. Chemistry '35), former Chemist and Head of the X-ray Division of the Illinois State Geological Survey, died in Gainesville, Florida on January 16, 1973 from injuries received in an automobile accident.

Dr. Bradley was a recognized authority on clay mineralogy, crystal chemistry, and X-ray diffraction analysis. He continued to serve the Illinois State Geological Survey as a Research Consultant after his resignation in 1961 to take a position as Professor of Chemical Engineering at the University of Texas at Austin, where he remained until his death.

Elinor Savage, widow of Thomas E. Savage, Professor of Geology in this department from 1919 to 1934, died on January 28, 1973, in Pontiac, Illinois.

Arle Herbert Sutton (formerly Professor of Geology at the University of Illinois) died October 9, 1972 at his home in Columbus, Indiana. He was born August 4, 1896 in Jonesville, Indiana where he spent his early years. He received his high school education in Columbus and in 1921 took his AB Degree from Indiana State Teachers College in Terre Haute. Between 1921 and 1924 he was an extremely successful high school teacher and basketball coach at Rushville, Indiana. His introduction to college teaching came in 1924-25 when he was appointed Assistant Professor of Geology at Colorado College in Colorado Springs. This experience encouraged him to begin graduate work in geology the next fall at the University of Chicago, where he received the PhD Degree in 1927.

In September 1927 Doctor Sutton joined the Department of Geology at the University of Illinois as Assistant Professor. In 1946 he was advanced to the rank of Professor. While at Illinois he taught courses mainly in paleontology, stratigraphy, and historical geology and supervised thesis studies at both the Master's and Doctor's levels. He was an excellent teacher and showed great interest in and concern for students.

His research interests were mainly in the fields of paleontology and stratigraphy, and he worked particularly with Mississippian rocks. Much of his field work was conducted in the summer as a member of the Kentucky Geological Survey. To a less extent he investigated stratigraphic problems of the Silurian and Devonian rocks in the midwestern United States. During this period of academic work he published about 30 papers.

In the later part of his career, he became progressively more involved with the discovery of fluorspar reserves. This work began with employment, in the summer of 1941, as consulting geologist with the Aluminum Company of America in the fluorspar district of southern Illinois. He was most successful in this endeavor; and in 1946 he resigned from the University to become Chief Geologist for the Mining Division of Alcoa in Pittsburgh, Pa.

After retirement in 1958 he returned to a new home in Columbus, Indiana. His wife, formerly Ilah Mendenhall of Pennville, Indiana, whom he married in 1929, died in Columbus in 1960. Arle Sutton's many many friends will always remember him as an extremely generous, thoughtful and unselfish gentleman.

David Knowlton Webb, Jr. (Ph.D. '61), died suddenly on September 2, 1973 at Columbus, Ohio. At the time of his death he was Assistant State Geologist at the Ohio State Geological Survey.

- DIETZ, ROBERT S. (Ph.D. '41) was presented with the Walter H. Bucher Medal by the American Geophysical Union of the National Academy of Sciences-National Research Council at their fifty-second annual meeting in Washington, D.C., April 13, 1971. He was awarded the medal for his original contributions to the basic knowledge of the earth's crust. Also, recently Dr. Dietz was elected an Honorary Member of the Brazilian Geological Society. During Semester I, 1973-74, Dr. Dietz has been appointed as Visiting Professor in this department.
- OTTON, EDMOND GEORGE (MS '47) is continuing his work at the U.S. Geological Survey in Parkville, Maryland.
- BACK, WILLIAM (AB '48) has received the 1973 O.E. Meinzer Award, along with Bruce B. Hanshaw, for their paper entitled "Comparison of Chemical Hydrogeology of the Carbonate Peninsulas of Florida and Yucatan (Mexico)." The GSA Council has approved the selection, and the award will be presented at the Annual Meeting in Dallas in November. Mr. Back presently works at the Water Resources Division of the U.S. Geological Survey in Washington, D.C.
- FINFROCK, LAWRENCE JOHNSON (MS '48) has been involved in Pleistocene subsurface geology and stratigraphy in the Gulf of Mexico offshore Louisiana since 1970. He reports this to be the most rewarding geological experience of his career. He is employed by the Sun Oil Company, Houston, Texas.
- JOHANNES (HARTSHORN), ANN (BS '48) is employed as a high school librarian in Covington, Indiana.
- TAYLOR, WARREN L. (MS '49) is working as a petroleum consultant in Englewood, Colorado.
- THREET, RICHARD L. (MA '49) is continuing as Professor and Chairman in the Department of Geology at California State University, San Diego.
- SCHWALB, HOWARD RAY (BS '49) is working as an independent geologist at the Kentucky Geological Survey, in Henderson, Kentucky. In addition, he is teaching an evening course in geology at the University of Evansville, and is also doing oil and gas consulting outside of the State of Kentucky.
- FERGUSON, JOHN ALEXANDER (Ph.D. '50) is Chief Geologist at Brick and Pipe Industries, Ltd. in Melbourne, Australia. He is also busy editing the volume "Geology of Victoria," which should be available for the International Geological Congress in Australia in 1976.
- SCHUBERT, RAYMOND D. (BS '50) has the position of Seismologist-Vice President at Dawson Geophysical Company, Midland, Texas.
- RALL, RAYMOND WALLACE (MS '51) is the Senior Geologist at Tenneco in Calgary, Canada. He is in the frontier group, looking at the east coast of Canada. Mrs. Rall (Elizabeth Pretzer, Ph.D. '65) is a Consulting Geologist at Wainoco, also in Calgary. She is now doing regional subsurface studies in British Columbia. The Ralls have four children--three of them at various colleges in the United States, and one at home.

- BROWN, ROBERT P. (BS '51) is now a State Corrosion Engineer for the Florida Department of Transportation at Oviedo, Florida.
- GOLDMAN, CHARLES R. (AB '52) is Professor of Limnology, Division of Environmental Studies at the Davis campus of the University of California. He recently co-authored a paper entitled "Surface Sediments in Lake Tahoe, California-Nevada" which appeared in the June, 1972 issue of the Journal of Sedimentary Petrology. He also collaborated on "Quaternary History of Lake Tahoe, California-Nevada" which was published in the Geological Society of America Bulletin in May, 1972.
- FISHER, JAMES H. (Ph.D '53) is continuing his work as professor at Michigan State University where he is in charge of the petroleum curriculum in the geology department. He does consulting work in petroleum during the summer vacations. Dr. Fisher is also the A.A.P.G. delegate from Michigan.
- DELLENBACK, CHARLES R. (MS '53) has been named Exploration Supervisor at Humble Oil and Refining Company and will head the Strat-Paleo Project in the Southwestern Exploration Division at Midland, Texas.
- ANDRESEN, MARVIN J. (MS'56) is still a Consulting Geologist in Fairbanks, Alaska, and also the managing Director of Geonomics, Assoc. They are expanding their exploration activities in Alaska and the Rocky Mountains under the name "Alaska Energy Corporation," a privately held company. Mr. Andresen will be relocating in Santa Barbara, California, but major activities will still be in Alaska. He encourages students and faculty to undertake thesis research in Alaska, where the geology is spectacular and the spectrum of problems is infinite.
- SIMS, DEWEY LEROY (MS '57) is working as a staff systems analyst for Mobil Oil Corporation, Exploration Service Center, in Dallas, Texas.
- BROPHY, JOHN ALLEN (Ph.D. '58) is the recipient of the 1973 Faculty Lectureship at North Dakota State University, Fargo. He spoke on "Of Ice and Men" Tuesday, February 20, 1973. He is associated at the University with another University of Illinois geology graduate, Dr. Charles Metzger (Ph.D. '65).
- HAUSER, DONALD GENE (BS '58) received a BS degree in Civil Engineering from the University of Southern California in June, 1972, and is presently an Associate Civil Engineer for the Ventura County Flood Control in Ventura, California.
- BUDIHARTO (BS '59) is employed as Senior Geophysicist at P.T. Stanvac Indonesia in Jakarta, Indonesia.
- WILLIAMS, DONALD R. (MS '62) was promoted from senior geologist to the post of Regional Geologist at Monsato Oils Ltd., Calgary, Alberta, Canada in October, 1971. He is responsible for conceiving, planning, and implementing a geological program to find oil and gas at a profit. He also directs and controls the geological work performed by company geologists in Canada toward these objectives.



- TEXTORIS, DANIEL A. (Ph.D. '63) is an Associate Professor of Geology and Assistant Dean for Research Administration at the University of North Carolina at Chapel Hill. He attended the International Geological Congress in Montreal in August, 1972, and gave a paper there. During the fall of 1971, after participating in the International Sedimentological Congress in Heidelberg, Dr. Textoris and his family spent the semester in Liverpool on research leave.
- ZARTMAN, WILLIAM BOTKIN (BS '63) continues to work as Company Geologist-Sand Analyst at Manley Sand Company (division of Martin-Marietta Corp.) in Rockton, Illinois. He married Joyce Nicol in 1971. The Zartmans' now have a daughter, born in August, 1972.
- ACHALABHUTI (POOTHAI), CHARAN (MS '63) is still working on his Ph.D. at the University of Texas at Austin, in the Bureau of Economic Geology.
- LEUNG, SAMUEL SEH-SHUE (Ph.D. '64) is now an Associate Professor of Geology at Eastern Kentucky University in Richmond.
- MOSE, DOUGLAS G. (BS '65) obtained his Ph.D. from the Department of Geology at the University of Kansas in 1971. He is now an Assistant Professor of Geology at Brooklyn College of the City University of New York, where he teaches isotope geochemistry and is setting up a K-Ar geochronology laboratory. The laboratory is nearing the operational stage--the initial research projects will involve Appalachian geochronology and midcontinent geochronology.
- WILBAND, JOHN T. (Ph.D. '66) was one of four faculty members selected as "Outstanding Teachers" for 1973 at the University of Toledo in Ohio. He received a citation and a cash award at the University's spring quarter commencement ceremonies on June 15. Dr. Wilband joined the University of Toledo faculty in 1965. He has had extensive experience as a geologist with the provincial government of New Brunswick, the Geological Survey of Canada, the Geological Survey of Wyoming, and with several private industrial firms and geological consultants.
- BUTLER, WILLIAM CHARLES (BS '66) received his Ph.D. in geology at the University of Arizona in September 1972--the dissertation title is: Permian Conodonts from Southeastern Arizona. He is presently employed as an Assistant Professor at Russell Sage College, Troy, New York, in the Department of Mathematics and Physical Sciences. As the one geologist on campus, Dr. Butler teaches physical geology, oceanography, astronomy, and meteorology.
- ROSECRANS, JACK JULIAN (BS '67) is now working as a stockbroker for Walston and Company, Inc. in Los Angeles, California.
- GROENEWOLD, GERALD HENRY (BS '67) has accepted a position at the Ohio State Geological Survey in Columbus.
- BLEUER, NED KERMIT (MS '67) is now employed as a Glacial Geologist in the Indiana Geological Survey at Bloomington.

HOFF, HENRY A. (BA '69) was released from active duty in the Air Force in February, 1973. He received a B.A. degree in mathematics from the College of Great Falls, Montana in June, 1973, and began work on an M.S. in Crystallography at the University of Illinois at Chicago Circle in September. He has been granted a research assistantship to Professor Khan.

SIZE, WILLIAM B. (Ph.D. '71) has been appointed Assistant Professor of Geology at Emory University in Atlanta, Georgia. He formerly taught at Eastern Illinois University and the University of Hawaii and has worked as a consulting geologist for a Canadian engineering firm.

MILLER, JAMES A. (MS '72) is continuing his work as an Assistant Geologist at Dames and Moore in Park Ridge, Illinois.

## ALUMNI ASSOCIATION NEWS

### Redecoration of the Wanless Room

The Wanless Room was redecorated in part last year and the Geology Alumni Association paid for the cost of new carpeting. The room is widely used by both students and staff and is the informal "meeting place" in the Department. We hope that you will stop in for a visit when you are on campus. The Wanless Room is located next to the departmental office.

### Alumni Social Hours

Over 100 geo-alumni and friends of the Department attended alumni social hours last year at the annual meetings of both the Geological Society of America and the American Association of Petroleum Geologists. The Department looks forward to seeing many of you at similar parties this year at GSA in Dallas and AAPG in San Antonio. The GSA cocktail party in Dallas is scheduled for Monday evening, November 12th, from 5:30--7:30 P.M. in the Ballroom of the Baker Hotel.

### U. of I. Birthday Celebration

Following tradition, on Friday, March 2, the Geology Alumni Association sponsored a party in honor of the University's 105th birthday. Free coffee and cake were served to all students, staff and friends who visited the Wanless Room.

### Join the Alumni Association

We would like to encourage you to maintain your membership in the Illinois Alumni Association. A portion of your dues goes to the Geology Alumni Association for support of alumni and departmental activities. In addition to the activities noted above, the alumni fund has given financial support to the Geology Club, annually awarded a Brunton compass to the outstanding senior, and supported other departmental needs. We hope that you will continue to give us this support in the future.

### PH. D. JOB SEEKERS

On the following pages you will find a list of the twelve Ph.D. candidates who are seeking positions for 1974-75. If you know of any positions for which they could qualify, please bring them to our attention or contact the students directly. Although in the past the Department has been very fortunate in that most of our graduate students have been successful in finding excellent positions, any assistance you can give us in placing our students will always be appreciated.

UNIVERSITY OF ILLINOIS  
DEPARTMENT OF GEOLOGY

Ph.D. CANDIDATES SEEKING POSITIONS FOR 1974-75

Addresses, unless otherwise indicated: Dept. of Geology, 254 Nat. Hist. Bldg., Univ. of Illinois  
Urbana, Illinois 61801

Name	Degree & Graduate Status	Primary Fields (Secondary Fields)	Ph.D. Dissertation & Advisor	References in Addition to Advisor
J. J. Barnes	B.S. '67.Mich. St. U. M.S. '73.U. of Ill. Ph.D. exp. June, 1974	Sedimentology, Sedimentary Petrology	Sedimentology of the Zabriskie Quartzite and Harkless Formation (Cambrian). (G. deV. Klein)	Dr. D.L. Blake Dr. P.A. Domenico
<p>Publications: Barnes, J.J., 1973, Origin of a Cambrian sandstone-mudstone intertongue (Zabriskie Quartzite-Harkless Formation), (Abs): Geol. Soc. America Abstracts with Programs, 1973 Annual Meeting (Dallas).</p> <p>Barnes, J.J., and Klein, G.deV., In Press, Tidal deposits in the Zabriskie Quartzite (Cambrian), eastern California and western Nevada: in Ginsburg, R.N., editor, Tidal and shoal water deposits: Berlin, Springer-Verlag.</p>				
T. L. Chamberlin	B.S., '68.Mich. St. U. M.S. '71.U. of Ill. Ph.D. exp. June, 1974	Stratigraphy, Petroleum Geology	Stratigraphy of the Upper Ordovician Ely Springs Dolomite in the southeastern Great Basin, Utah and Nevada (R.L. Langenheim, Jr.)	Dr. T.L. Phillips (Dept. of Botany) Dr. D.C. Bond (Ill. Geological Survey)

Publications: Chamberlin, T.L., and Langenheim, R.L. Jr., 1971, Stratigraphy of the Ordovician-Silurian Boundary in the Arrow Canyon Range, Clark County, Nevada, Wyoming Geol. Assoc. Earth Sci. Bull., Sept. 1971 No., p. 7-25.

Name	Degree & Graduate Status	Primary Fields (Secondary Fields)	Ph.D. Dissertation & Advisor	References in Addition to Advisor
H. E. Elliot, Jr.	B.S. '64.U. of Virginia M.S. '69.Louisiana St.U. Ph.D. exp. June, 1974	Micropaleontology, Biostratigraphy	Late Miocene-Early Pliocene Coccolithophorid Paleobiogeography (W.W.Hay; U. of Miami)	Dr. W.A.VanDen Bold (LSU) Dr. C.W. Collinson (Ill.St.Geological Survey)
Publications:	Elliot, H.E., Ellison, R. and Nichols, M.M., 1966, Distribution of Recent Ostracoda in the Rappahannock Estuary, Virginia; Chesapeake Sci., v. 7, p. 203-207.			
F. R. Ettensohn	B.S. '69.U. of Cincinnati M.S. '70.U. of Cincinnati Ph.D. exp. Sept., 1974	Paleontology, Paleoeology, Pleistocene Geology	The paleoecology of the Chesterian members of the Newman Limestone (D.B. Blake)	Dr. G.dev.Klein Dr. R.L.Langenheim, Jr.
Publications:	Ettensohn, F.R., In Press, The Pre-Illinoian clays of the Cincinnati Region: Ohio Jour. Sci. Ettensohn, F.R., 1969, The influence of ground water access routes on concretionary development in proglacial lake clays (Abs): Geol. Soc. America, Abs., with Programs, v. 1.			
G. S. Fraser	B.S. '68.U. of Ill. M.S. '70.U. of Ill. Ph.D. exp. Dec., 1973	Sedimentary Petrology, Clay Mineralogy, Pleistocene Geology	Petrology of the Glenwood Shale - transition between an Orthoquartzite and a shallow-water carbonate (G.dev.Klein)	Dr. A.F. Wagner Dr. James Bradbury (Ill. Geol. Survey) Dr. Norman Hester (Eastern Kentucky U.)
Publications:	7 papers and 6 abstracts. Partial List Below:			
	Fraser, G.S., 1969, Radiographic exposure guides for mud, sandstone, limestone, and shale: Ill. Geol. Circ. 443, 20 p.			
	----- 1971, Deltaic sedimentation in Glacial Lake Douglas, Ill.: St. Geol. Survey Circ. 466, 12 p. (With J.C. Steinmetz).			

Name	Degree & Graduate Status	Primary Fields (Secondary Fields)	Ph.D. Dissertation & Advisor	References in Addition to Advisor
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G. S. Fraser (Concluded). Publications (Concluded)

-----1972, Properties of chert related to its reactivity in an alkaline environment: Ill. St. Geol. Survey Circ. 468, 29 p. (With R.D. Harvey and P.C. Heigold).

-----1973, Sedimentology of a beach-ridge complex and its significance in land-use planning: Ill. Geol. Survey Environ. Geol. Note 63, 24 p. (With N.C. Hester).

-----In Press, Sediment distribution in a beach-ridge complex and its application to beach replenishment: Ill. Geol. Survey Environ. Geol. Note (With N.C. Hester).

Julia Badal Graf	B.A. '67. Bryn Mawr Coll. Sedimentology		Sedimentation and sediment dispersal patterns in the nearshore environment of SW Lake Michigan (G.deV.Klein)	Dr. F.A. Donath Dr. C.W. Collinson (Ill. Geol. Survey)
	M.S. '72. U. of Ill.			
	Ph.D. exp. Dec., 1973			

Publications: Collinson, C. W., and Badal, Julia C., 1972, Surficial sediments in southern Lake Michigan (Abs): Fifteenth Conf. on Great Lakes Rese, p. 18.

R. G. Jackson	B.S. '70. U. of Kans. Sedimentology, Hydromechanics		Sedimentology of the Lower Wabash River Meander Belt (G.deV.Klein)	Dr. P.A. Domenico Dr. F.A. Donath Dr. D.L. Graf
	M.S. '73. U. of Ill.			
	Ph.D. exp. June, 1974			

Publications: Jackson, R.G., 1973, Velocity-bedform-texture patterns of meander bends in the Lower Wabash River (Abs): Geological Society of America Abs. with Programs, 1973 Ann. Meeting (Dallas).

Regina L. Link	B.S. '70.U. of Oregon Ph.D. exp. Sept., 1974	Micropaleontology	Normal pore distribution in selected Ostracoda (P.A. Sandberg)	Dr. D.B. Blake Dr. C.J. Mann
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Name	Degree & Graduate Status	Primary Fields (Secondary Fields)	Ph.D. Dissertation & Advisor	References in Addition to Advisor
David W. Moore	B.A. '61. Wooster Coll. M.S. '72. U. of N. Carolina Ph.D. exp. June, 1974	Pleistocene Geology, Geomorphology, Environmental Geology	Petrographic variability of surface drift, Iroquois County, Ill. (W.H. Johnson)	Dr. G.W. White Dr. C.J. Mann Dr. J.M. Dennison (U. of N.C.)
R. D. Norby	B.S. '67. U. of N. Dakota M.S. '71. Arizona St. U. Ph.D. exp. June, 1974	Micropaleontology, Biostratigraphy	Multi-element conodont species from the Mississippian System (C.W. Collinson)	Dr. D.B. Blake Dr. T.L. Phillips (Dept. of Botany) Dr. W.W. Hay (U. of Miami)
<p>Publications: Norby, R.D., and Lundin, R.F., Mississippian Conodont zones of southeastern Arizona (Abs): Am. Assoc. Petroleum Geologists Bull., v. 56, p. 642.</p> <p>Norby, R. D., and Avcin, M.J., 1972, Reevaluation of conodont assemblages, Modesto Formation (Abs): Geol. Soc. America Abstracts with Programs, v. 4, p. 308.</p> <p>Collinson, C.W., and Norby, R.D., et al, 1972, Pennsylvanian conodont assemblages from LaSalle County, northern Illinois: Ill. Geol. Survey Guidebook Ser. 10, 37 p.</p> <p>Norby, R.D., and Kolata, D.J., In Press, Preservation of paleontological collecting sites in Monroe and St. Clair Counties: Ill. Geol. Survey Environ. Geol. Note.</p> <p>Also, three other abstracts not listed.</p>				
J. M. Sharp	B.S. '67. U. of Minn. (Engr) M.B.A. '71. Midwestern U. Ph.D. exp. June, 1974	Hydrogeology, Mathematical Geology	Heat transport in compacting porous media and its role in the development of economic mineral deposits (P.A. Domenico)	Dr. V.V. Palciauskas Mr. J.W. Smith (Sheppard AFB, Wichita Falls, Tex. 76311)
M. P. Stephens	B.S. '68. U. of Texas Ph.D. exp. June, 1974	Geochemistry, Hydrology	Ion exchange reactions of Marblehead Illite at conditions simulating deep diagenetic environments (D. L. Graf)	Dr. D.E. Anderson Dr. J.J. Fripiat Dr. V.V. Palciauskas





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STAFF MEMBERS:

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# TWENTY-FOURTH ANNUAL NEWSLETTER

DEPARTMENT of GEOLOGY  
University of Illinois  
Urbana

1973-74

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DEPARTMENT OF GEOLOGY

November 1974

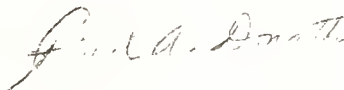
Dear Alumni and Friends:

It is a pleasure to greet you once again and to thank you for the contributions which keep us up-to-date regarding your activities. We hope you enjoy reading this issue of the Newsletter and we welcome your comments regarding its format and content.

Geology has had an exciting and successful year in spite of some severe problems caused by inflation and budget reductions. We are determined, however, to keep our programs viable and flexible in order to meet the ever changing needs of the State of Illinois and the nation. We have had more contact than usual this year with oil companies interviewing our students for employment, and conversations with their representatives have been interesting and enlightening. Our students, also, are much aware of the practical aspects of their work and, perhaps as never before, Geology is being recognized as a "now" science.

I hope that many of you will be attending one or another of the national meetings of the GSA, AAPG, or AGU during the coming year so that it will be possible for me to meet with you personally. It is always a pleasure to renew old acquaintances and to make new friends at such gatherings.

Sincerely,



Fred A. Donath  
Professor and Head

FAD: jr





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Mr. Larry Grubbs, district geologist for the Tulsa Division of Texaco, Inc. (on the right) is shown presenting a check from the Texaco Foundation, to be used for graduate student research projects, to Dr. Donath.

FIELD WORK .



BIMINI



WYOMING - Langenheim teaching



GREAT BRITAIN  
Wood - teaching



Harriet Smith, Geology Librarian, and students



After a grand reception at GSA in Dallas, the Departmental display comes home to rest a bit in the Wanless Room before being dismantled. The Friday afternoon card game was in session.



## GUEST LECTURERS

The following outstanding lecturers came to the Department to speak during the past year:

### HUNTER YARBOROUGH

Exxon Company  
"Energy and mineral problems--future supply and demand"  
October 15, 1973  
"The origin of oil and gas and sedimentary environments favorable for the occurrence of major hydrocarbon accumulations"  
October 16, 1973

### JOHN V. GUY-BRAY

Chief Geologist, International Nickel Company, Toronto, Canada  
"Sudbury: the ores, the irruptive and the meteorite impact theory"  
October 26, 1973

### GARY LANE

University of Indiana  
Department of Geology  
"Arm types and feeding habits of Paleozoic Crinoids"  
November 2, 1973

### NICHOLAS RAST

Head, Department of Geology  
University of New Brunswick  
"Stratigraphic and structural comparisons between the Appalachian Fold Belt and Northwestern Europe"  
November 9, 1973

### JAMES R. LAWRENCE

Columbia University  
Department of Geology  
"Isotopic studies of deep sea sediments"  
November 16, 1973

### VICTOR VON BRUNN

University of Natal, South Africa  
"Late Paleozoic glaciation in Natal, South Africa"  
November 28, 1973

### MIRIAM BAUMGADNER

Purdue University  
"Application of remote sensing to earth resources and Man's environment"  
November 30, 1973

### MARCUS E. MILLING

Esso Production Research Corp., Houston, Texas  
"Depositional model for submarine fans"  
December 3, 1973

### RALPH PECK

University of Illinois, Urbana  
Department of Civil Engineering  
"Engineering consequences of valley downcutting"  
January 25, 1974

### WILLIAM A. OLIVER

U.S. Geological Survey, Washington, D.C.  
"Biogeography and coral distribution in the Devonian"  
February 1, 1974

### DAVID A. JOHNSON

Woods Hole Oceanographic Institution  
"Deep ocean currents past and present"  
February 4, 1974

### GUNNAR KULLERUD

Head, Department of Geology  
Purdue University  
"New trends in sulfide research"  
February 8, 1974

### WOLFGANG BERGER

Scripps Institution of Oceanography  
"Pleistocene record of the deep sea--faunal, floral, and isotopic evidence"  
February 15, 1974

### RICHARD W. BURKHARDT

University of Illinois, Urbana  
Department of History  
"Paleontology and Evolutionary Theory in the 19th Century"  
March 1, 1974

### DAVID A. RAHM

Western Washington State College  
"A flying geologist looks at Cordilleran Western North America"  
March 7, 1974

JOHN HALLER  
Harvard University  
"Geological evaluation of Eastern  
Greenland"  
March 8, 1974

JOHN D. MUDIE  
Scripps Institution of Oceanography  
"Detailed studies of oceanic  
ridge-crests"  
March 15, 1974

BRUCE P. LUYENDYK  
University of California,  
Santa Barbara  
"Plate tectonics and Paleo-  
circulation of the oceans"  
March 29, 1974

FRIEDRICH LIPPMANN  
University of Tübingen,  
West Germany  
"Functions describing preferred  
orientation of flake-like clay  
minerals"  
April 4, 1974

JAMES W. VALENTINE  
President, The Paleontological  
Society  
University of California, Davis  
"Faunal diversity, its attainment,  
maintenance and depauperation"  
April 5, 1974

HANS E. REINECK  
Director, Senckenberg Institute for  
Marine Geology and Marine Biology  
"Recent nearshore sedimentation of  
Spain, Italy, and Southeastern United  
States"  
April 16, 1974

N. T. EDGAR  
Chief Scientist, Deep Sea Drilling  
Project, Scripps Institution of  
Oceanography  
"Some major scientific problems  
arising from drilling in the deep  
oceans"  
April 19, 1974

NICHOLAS HOTTON  
Curator of Vertebrate Paleontology  
Smithsonian Institution  
"Studies of Therapsid reptiles in the  
Permo-Triassic Karoo rocks of South  
Africa: its relevance apropos  
mammalian evolution and continental  
drift"  
April 25, 1974

MICHAEL E. TAYLOR  
U.S. Geological Survey, Washington,  
D.C.  
"Paleoenvironmental significance of  
Late Cambrian trilobite biofacies in  
the Western United States"  
April 26, 1974

WILLIAM D. JONES  
University of Missouri, Columbia  
Department of Geology  
"Clay mineral catalysis and the  
origin of petroleum"  
May 9, 1974

JOHN HOWER  
Case Western Reserve University  
Department of Geology  
"Burial metamorphism of shales--  
back to Van Hise"  
May 13, 1974

DUWAYNE M. ANDERSON  
Chief, Earth Sciences Branch  
U.S. Army Cold Regions Research  
and Engineering Laboratory  
"Clay mineralogy as it relates to  
permafrost problems and the  
environment"  
May 15, 1974

## GIFTS AND GRANTS TO THE DEPARTMENT

The continued pressure upon the Department to reduce its operating budget has consequently increased the importance of receiving additional outside funding for its programs. This past year the Department of Geology was fortunate to again be the recipient of unrestricted grants provided by the foundations of three oil companies. For the second consecutive year an unrestricted grant was received from the Exxon USA Foundation. These funds, presented by Paul C. Lingo to President Corbally, were used to support the field investigations of four graduate students working in the states of Nevada, New Mexico, and New York.

The Department was again pleased to receive a gift from the Shell Companies Foundation, through their Shell Aids Program, which supported the field and laboratory research work of three graduate students working on Ph.D. thesis projects. In addition, these funds were used to cover the expense of five visiting senior scientists who each spent two weeks in the Department lecturing and giving several graduate level seminars on various aspects of marine geology.

Mr. Larry Grubbs, District Geologist with Texaco's Tulsa Division, visited the Department and presented a check to Dr. Donath from the Texaco Foundation. The check represents Texaco's continued support of our programs beyond their initial three year pledge. The funds provided by this unrestricted grant are to be used in the support of graduate student programs for which state funds are not provided.

This past year proved to be successful for a number of our graduate students applying to funding agencies for research support. During the academic year 1973-74 support for field and laboratory research was provided by the following agencies: The Geological Society of America, Sigma Xi, European Research Association, and the Illinois Mining Institute.

The Department of Geology sincerely appreciates the support provided by these Foundations and agencies. Their generous support ensures the continued excellence and quality of our programs.

## ACADEMIC PROFILES

PROFESSOR THOMAS F. ANDERSON and his students continued their studies on the isotope geochemistry of oceanic sediments from the Deep Sea Drilling Project. Isotope studies of materials from Leg 30 and Leg 35 will appear in the Initial Report of these legs. We hope to participate in the analyses of sediments from a long, continuous core that will be drilled on Leg 41.

In cooperation with scientists from Scripps Institution of Oceanography, an investigation of stable isotope methods applied to Cenozoic stratigraphy of deep sea sediments and of the effects of selective dissolution on the isotope composition of planktonic foraminifera was initiated. Professor Anderson also completed a preliminary comparative isotopic study of calcareous nannoplankton and planktonic foraminifer, which will be published in the Journal of Foraminiferal Research. He continued collaboration on the kinetics and mechanisms of oxygen isotopic exchange between minerals and hydrothermal solutions, and several manuscripts on this subject are in preparation.

During the past year, Professor Anderson taught a graduate course in Isotope Geochemistry and an introductory course in environmental science. He also participated with Professor Graf in offering Chemistry of the Earth and served as coordinator for Marine Geology in Professor Klein's absence during the second semester.

PROFESSOR DANIEL B. BLAKE is continuing his studies on the taxonomy, phylogenetic relationships, and paleobiology of Paleozoic Bryozoa. Efforts are being made to infer as complete a picture as possible of the functional morphology and evolutionary relationships within a single suborder. He attended the meetings of the International Bryozoological Association in Lyon, France during the summer and is on sabbatical at the Smithsonian this fall. Studies on the taxonomy and relationships of Cenozoic and modern starfish are continuing.

Student research in progress under Dr. Blake's direction include doctoral studies on Mississippian paleoecology and depositional environments, Devonian bivalves, and peat formation. A Masters thesis is in progress on Ordovician Bryozoa, and another on Mississippian gastropods was completed.

PROFESSOR ALBERT V. CAROZZI spent 2 weeks in La Paz, Bolivia, in September 1973, giving a short course on the reconstruction of environments of deposition of carbonate and clastic rocks as applied to oil exploration. The course was sponsored by the Servicio Geologico de Bolivia (GEOBOL), Yacimientos Petroliferos Y Fiscales de Bolivia and the Universidad Mayor de San Andres in La Paz. Participants numbered more than 50 and came from Bolivia, Argentina and Peru. A field visit to pre-Inca ruins and to the geology of the Titicaca Lake area followed the course. Carozzi was nominated honorary member of the Geological Society of Bolivia.

In November-December 1973, Professor Carozzi returned to the Philippines for a helicopter survey of several islands of the central part of the archipelago to evaluate their petroleum potential. He also gave a series of lectures to the Bureau of Mines of the Philippines on recent developments in the investigation of carbonate rocks.



He was granted a leave of absence for the spring semester 1974 to complete 2 books, one for the Benchmark Series entitled, "Sedimentary rocks: concepts and history" now in press, the other an annotated translation of Argand's, "Tectonics of Asia" which has also been completed and is now being typed for publication in 1975.

In January 1974, Professor Carozzi returned to Belem, Brazil on behalf of PETROBRAS to supervise a previously started investigation with 5 Brazilian geologists on the petroleum evaluation of the clastic rocks of the Maranhao Basin, located east of the Amazon. This project was completed during another trip in March when it was integrated in Salvador with the offshore exploration program. At that time another project was begun dealing with a petrographic study of the provenance of clastics in the Reconcavo Basin, near Salvador. This study, done with 5 other PETROBRAS geologists, is to be completed in January 1975 and the major results will be presented at the AAPG national meeting in the spring of 1975.

April 1974 was occupied by another extensive helicopter survey in the Philippines.

In May-June, Professor Carozzi gave a short course of 2 weeks in Lima, Peru on the environmental interpretation of carbonate and clastic rocks as related to oil exploration. The course was sponsored by PETROPERU, the national petroleum corporation, and was attended by 55 geologists among whom were representatives of 15 foreign companies involved in the exploration of the Peruvian portion of the Amazon basin. A week was spent in Northwestern Peru, near the border of Ecuador, in the supervision of J. Roger Palomino's thesis. Palomino is on the staff of Belco Petroleum Corporation of Peru and is working for his doctoral dissertation on one of the most productive clastic formations of that area. Ten days were finally set aside for a kind of vacation to visit several of the famous Inca temples and cities in the Andes such as Machu Picchu.

A brief return to Urbana was followed by another month-long visit to Brazil during August for the supervision of the Reconcavo project, with a side trip to the famous Iguassu falls at the border of Argentina and Paraguay.

Then, it was back for classes with two courses and the preparation of a new undergraduate course, Geology 106 "Exploring the Earth: Application of principles of historical geology to the exploration for oil and mineral resources" to be given next spring. A trip to the Philippines in October concentrated on the selection of wildcat sites and a series of lectures to the University of the Philippines in Manila on basin evaluation.

On the editorial side, Professor Carozzi published an edited version of the famous work of Louis Agassiz "Lake Superior" in the spring, and in late fall a reprint of L. W. Collet's "Structure of the Alps" is scheduled to appear. An introduction to the reprinting of Agassiz-Hartt "Geology and Physical Geography of Brazil" was also completed for a release in Spring 1975.

Professor Carozzi also wrote the preface for the first manual of laboratory techniques in sedimentology published in the Spanish language.

The book is authored by L. A. Rodrigo and F. Coumes from the Universidad of San Andres in La Paz, Bolivia.

Four papers written with his coworkers of PETROBRAS have been published or are in print after presentation at various meetings in South America.

In August 1974, Professor Carozzi was appointed to the newly formed U.S. Committee on the History of Geology of which Professor George W. White is the Chairman.

PROFESSOR DONALD L. GRAF presented a paper at the AGU meeting that discussed various one-dimensional models for describing diagenesis. The manuscript has been accepted for publication in Journal of Geology.

During the year, he continued to design and build equipment for measuring the membrane behavior of shales. A paper of his that appeared in American Mineralogist describes several possible designs for a cell to X-ray clays at elevated temperatures and pressures in contact with brines.

Two of his students completed theses, Michael Stephens for a doctorate and William Miller for a master's degree. Mike, now employed by Dresser Industries in Houston, measured sodium-calcium adsorption selectivity on illite up to 200°C. Bill studied heavy-metal distribution and accessory-mineral composition of some Illinois coals. He continues to be employed at the Illinois Geological Survey, where his thesis research was carried out.

PROFESSOR RALPH E. GRIM, Research Professor Emeritus, received the 1974 Roebling Medal from the Mineralogical Society of America.

PROFESSOR GEORGE deVRIES KLEIN taught Geology 309 (Undergraduate Sedimentology) and Geology 437 (Sedimentary Processes - graduate) again in the Fall term of 1973. As in past years, field work comprised a major portion of both courses, with trips to the Holocene Point Bar complex in the Wabash River and the Mississippian and Pennsylvanian of Southern Illinois. Geology 437 also participated in the 1973 Tri-State Field Conference, where Dr. Klein was an invited panelist.

In the Spring of 1973, Dr. Klein served as a sedimentologist on Leg 30 of the Deep Sea Drilling Project which obtained cores from three marginal basins in the southwest Pacific and from two sites on the Ontong-Java Plateau. During the summer of 1973, he served as a Visiting Research Geologist at Deep Sea Drilling Project Headquarters working on site reports and research papers, and serving as an editorial advisor. Dr. Klein held an appointment during the Winter Term of 1974 as an Associate of the Center of Advanced Study and elected to take the off-campus provision of such appointments at the School of Oceanography of Oregon State University. There, he completed site chapters and scientific papers resulting from his involvement with the Deep Sea Drilling Project. He also completed several other writing projects, including a Benchmark book manuscript.

While on the West Coast, Dr. Klein presented several lectures at Oregon State, the University of Oregon and UCLA. In addition, he taught two short courses on tidal sedimentation, one at Esso Production Research Corp. in Houston and the other at the United States Geological Survey in Menlo Park, California.

This past winter, Dr. Klein was appointed U.S. National Correspondent for the International Association of Sedimentologists. In 1973, he was also appointed Editorial Advisor of Geology, the new current awareness journal of the Geological Society of America.

And, in addition to all these activities, Dr. Klein got remarried in August, 1973 - to Mrs. Judith Goodrich Ayer, a social psychologist from Champaign, Illinois.

PROFESSOR RALPH L. LANGENHEIM, JR.'s book, "Tertiary Reef Biofacies: Paleontology and Biostratigraphy of Chiapanecan Scleractinia and Larger Foraminifera" being published with Stanley Frost is now in the bindery according to information from the Northern Illinois University Press. Hopefully, the book will appear soon and will capitalize on the current interest in the large petroleum discoveries in Chiapas and Tabasco.

Professor Langenheim's work in Iran went well, if not according to plan. Field work proved difficult, but, through dint of hiring a taxicab on weekends and utilizing the services of Mrs. Langenheim as a field assistant, it was possible to acquire a well-documented stratigraphic sequence of Mississippian corals from the Alborz Mountains. These are now being sectioned and descriptive and interpretive work will soon be under way. In addition, several smaller, interesting collections were obtained from the Geological Survey of Iran.

Work at Arrow Canyon continued in January and was most notable for the fact that we got caught in the worst snowfall on record for Clark County, Nevada. Even so, it all was gone in two days and no real problems ensued. Work for January, 1974 included further mapping, study of Mississippian coral paleoecology, detailed examination of the basal Devonian sandstones and continuation of work with late Devonian sandstones. All of this, save the mapping, involved student efforts.

Professor Langenheim presented an invited paper on the paleoecology of Chaetetes at the Carboniferous Coral Symposium at Stillwater, Oklahoma and another on the paleoecology of fusulinids at the S.E.P.M. meetings in March. Both of these were in collaboration with John Nelson.

At the May meetings of the North Central Section of the Geological Society of America, Professor Langenheim appeared as convenor of the organizational meeting of the North Central Section of the Paleontological Society. It was very gratifying to finally see this group launched. In addition, he has served as a critical reader for the Journal of Paleontology and the Bulletin of the Geological Society of America. He has also presented several invited lectures, including appearances at Pahlavi University in Shiraz, Iran, Demavand College in Tehran, the Geological Survey of Iran and at the Wyoming Geological Association.

Instructional activities included yet another year at the Summer Field Camp and his regularly assigned Spring Semester courses. In addition, he organized and presented an experimental, no-prerequisite course on the Geology of the Energy Crisis. This turned out to be an entirely new world!

A new research orientation is also energy related. Professor Langenheim has obtained a study contract from the Atomic Energy Commission

to produce a summary description of the pre-Cretaceous sandstones of the Michigan, Illinois and Forrest City Basins and their adjacent shelves. The contract currently supports two research assistantships and will continue for at least the year.

PROFESSOR GEORGE W. WHITE is continuing his work on glacial geomorphology and stratigraphy of the Allegheny Plateau. He and Dr. Stanley M. Totten (U.I. Ph.D. 1962) spent the summer of 1973 completing field work in Columbiana County and Mahoning County (Youngstown), Ohio, supported by the Geological Survey of Ohio. Two colored maps (1/63, 360) and reports are now in press by the Ohio Survey. Totten and White spent the summer of 1974 in field work in Ashtabula County, Ohio (the most northeastern county in the state) for the Ohio Survey. The map and report are now in process.

Dr. White's colored map and report on Holmes County was published in late 1973 as Ohio Survey Report of Investigations No. 91. His maps and reports on Lake County and on Ashland County are now in press. The cartography of these maps is expertly done by Leslie R. Lewis, formerly cartographer in the U.I. Geology Department, but now at the Ohio Survey.

Dr. White presented a paper, "Buried Glacial Geomorphology," at the Fifth Annual Geomorphology Symposium at SUNY-Binghamton September 28-30. The papers were published and distributed at the beginning of the Symposium in a 398-page book. Dr. White's paper is pp. 331-349. The volume is dedicated jointly to George W. White and Robert F. Legget in a very gracious foreword.

Dr. White presented a paper on "Stratigraphy of the Western Allegheny Plateau" at the GSA Penrose Conference in Amherst, Massachusetts October 13-18, on Pleistocene Geology of the Northwestern United States. He also gave the "wrap-up" at the end of the conference on "Whither are We Drifting"--a projection of the next 25 years.

Dr. White was appointed in May, 1974, Chairman of the newly formed U.S. National Committee for History of Geology, a subcommittee of the U.S. National Committee of Geology. He continues as U.S. Representative on the International Committee for History of Geology and is Vice President for North America.

Dr. and Mrs. White were in England, Scotland, and Ireland in November and December, 1973, where Dr. White conferred on glacial, bibliographic, and library matters with geologists in London, Edinburgh, and Dublin. They will again be in Great Britain in December, 1974, sailing from New York on the Q.E. II and returning by air.

PROFESSOR DENNIS S. WOOD taught Geology 101 and Geology 311 (Structural Geology) in the first semester and Geotectonics at the graduate level in the second semester. Leaving for Europe in May, Dr. Wood gave several lectures at Universities in Britain and carried out field research in Scotland and Wales prior to directing the annual summer session advanced course in field geology (Geology 315) in the British Isles.

A research program into the relationship between strain during rock deformation and the degree of preferred orientation of rock fabrics was continued in collaboration with Professor Gerhard Oertel of UCLA.

In addition, a new program was developed to investigate the relationship between strain and magnetic susceptibility, this in collaboration with a group headed by Professor S. K. Runcorn at the University of Newcastle, England. Dr. Wood is currently engaged, together with Professor J. G. Ramsay, in the organization of a meeting of the Royal Society to discuss the subject of "Natural Strain & Geological Structure". This meeting will bring together structural geologists from the United States, Western Europe, Russia, Canada, Australia, New Zealand, and South Africa. It will commence in London on March 20th. Subsequently, Dr. Wood will be co-sponsoring a Penrose Conference to be held in New England during the fall of 1976 on the subject of "Rock Cleavage".

In the course of the academic year, Dr. Wood presented an invited paper to the Canadian Geoscience Conference meeting in New Brunswick and gave lectures at Johns Hopkins University, Bryn Mawr College, to the Philadelphia Academy of Sciences and to the Washington Geological Society. Currently, Dr. Wood is preparing a contribution to the Penrose Conference on "Pre-Mesozoic Plate Movements" which is to be held in Vail, Colorado during January of 1975, and is continuing joint work with Professor Donath concerning the natural and experimental evaluation of paths of progressive deformation in rocks.

#### FORMER STAFF NEWS

JOHN D. BREDEHOEFT. Dr. Bredehoeft, who was visiting associate professor in the Department from 1967 to 1968 and received his master's and Ph.D. degrees here ('57, '62), was recently named deputy assistant chief hydrologist of the U.S. Geological Survey.

FREDERICK W. CROPP III. Dr. Cropp, an alumnus (M.S. '56; Ph.D. '58) and former assistant professor in the Department (1959-1966), informed us recently of his marriage last December to Marian Belmont. Dr. Cropp was a widower. The couple now resides in Wooster, Ohio. Our congratulations and best wishes!

FRANK H. T. RHODES. Dr. Rhodes was recently appointed vice president for academic affairs at the University of Michigan in Ann Arbor. He was a postdoctoral fellow in geology at the U of I in 1950 and stayed on with the Department in the capacity of assistant professor, associate professor and visiting professor from 1954 through 1959. Since that time, he has been professor, department chairman and dean at the University of Wales, Swansea and professor of geology and dean of the College of Literature, Science and the Arts at the University of Michigan.

U-M's president Robben W. Fleming, in announcing Rhodes' appointment, said, "As a scientist and a classroom teacher, he is the embodiment of two cultures--science and humanism. And, having been educated and having taught in both Great Britain and this country, he embodies the best of two other cultures. Frank Rhodes is an urbane, gentle man who should be an able academic vice-president for this university."

## RETIREMENTS

Three of our friends retired this year. Professor Arthur F. Hagner and Mrs. Hagner have moved to 40 West Elm, Greenwich, Connecticut for their retirement years. Professor Hagner served the Department since 1948.

Administrative Secretary Dorothy Smith retired in August after 11 years with the Department. She and Mr. Smith have returned to their previous home in Mason County. Her address is R. R. 2, P.O. Box 205, Mason City, Illinois. Both Dr. Hagner and Mrs. Smith were honored with farewell luncheons by the Department.

John C. Frye has retired from the Illinois State Geological Survey where he served as Chief for 20 years. He accepted a position as Executive Secretary of the Geological Society of America in Boulder, Colorado. His and Mrs. Frye's address is 4470 Chippewa Drive, Boulder, Colorado 80303.

## CYCLOTHEM GEOLOGY CLUB

1937 -

In 1973-74, Cyclothem Geology Club undertook a diverse program to advance the academic interests of geology students. Both graduate and undergraduate students became active in the Club. In addition to providing coffee and doughnut service in the Wanless Room, Geology Club sponsored parties for the get-together of students and a 10-day spring field trip to Arkansas to collect minerals. Club meetings were held bimonthly, with speakers from the Department, industry, and the Illinois Survey featured.

In addition, a full day Symposium on Continental Glaciation was sponsored in the spring. Seven speakers from the Department and the Survey talked about aspects of continental glaciation ranging from the history of glacial research to the engineering consequences of glaciation. The Symposium proved to be highly successful, with over 120 people from nine midwestern universities and the Illinois Survey in attendance.

Geology Club hopes to continue the success of the past year into 1974-75. A concerted effort to contact all undergraduate geology majors in order to bring them into the academic and social life of the Department is planned. A diverse speakers program was begun, utilizing the talents of people both within and without the geologic profession. A field trip to southeastern Iowa to collect geodes was taken in the fall. A spring field trip to a significant geologic locality is anticipated. The second annual symposium sponsored by Cyclothem Geology Club is scheduled for March 15. This year's topic will concern coal as an energy resource. Further information about the symposium may be obtained by contacting Cyclothem Geology Club, c/o the Department of Geology.

### Charter Members 1937-38

Bean, Beryl  
Card, Mary E.  
Corbett, Paul  
Cordell, Robert  
Deuth, M. J.  
Elias, M.  
Franklin, D. W.

Grubb, Robert  
Harper, F.  
Harris, Lloyd A.  
Hoover, Janet  
Johnson, Thelma  
Lester, J.  
Moyer, F. K.

Otton, G.  
Schmitz, W. C.  
Thomas, Dolores  
Winkler, Virgil  
Dr. C. A. Chapman  
Dr. Harold Wanless

## UNDERGRADUATE PROGRAM

The Department currently has 30 undergraduate students majoring in either geology or the teaching of earth science. The Earth Science Teaching Curriculum has six students and the remaining students are about equally split between the Geology Curriculum and the Science and Letters Curriculum with a field of concentration in geology.

The field of concentration is a new concept in the College of Liberal Arts and Sciences. Instead of having a major and minor, students work in a field of concentration which requires certain courses in the field, as well as courses in cognate areas. We have purposely kept our requirements in the field of concentration at a minimum so that there is a maximum of flexibility and students can arrange academic programs to meet their individual needs. Currently, we require 28 hours in geology and 31 hours of cognate courses in this program.

### TOP SENIOR IN GEOLOGY

Patricia A. Santogrossi, of Springfield, was named the outstanding graduating senior in geology in the University of Illinois.

The Geology Alumni Association Award, a Brunton compass, was presented to her at a departmental colloquium by Professor W. Hilton Johnson, associate Head of the UI department of geology.

Miss Santogrossi was vice president of the UI Geology Club during the past year. She has entered the graduate program in the Department.

Her senior thesis, under supervision of Professor Ralph L. Langenheim, Jr., was titled "Paleoenvironmental Analysis of 'Lithostrotion' Biostromes, Clark County, Nevada".

A Brunton compass, a precision field instrument used by geologists, is presented annually by the alumni group.



## THE GRADUATE PROGRAM

This year's group of 82 graduate students came from 70 different colleges and universities and 5 foreign countries. Ten of our students were registered in absentia and were completing their degrees while away from the campus.

Ten students received Ph.D. degrees this year. Of these, all ten found permanent employment. Fourteen students received M.S. degrees, 1 student receiving the M.S. in Teaching of Earth Science. Of those 14, 8 found permanent employment and 6 are continuing work in Ph.D. programs here or elsewhere.

As in years past, the great majority of our students received financial aid through fellowships, traineeships, teaching or research assistantships, or employment at the State Geological Survey.

A list of graduate students enrolled during the 1973-74 academic year follows:

### FELLOWS:

#### University of Illinois Fellowships

Herbert G. Seto	BS '65 Otterbein College
	MS '67 University of Illinois
John M. Sharp	BGE '67 University of Minnesota
	MS '74 University of Illinois

#### NDEA IV Fellowship

Richard W. Lahann	BS '71 Knox College
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#### National Science Foundation Fellowship

James C. Brenneke	BA '72 Augustana College
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#### National Science Foundation Traineeship

Roscoe G. Jackson	BS '72 University of Kansas
	MS '73 University of Illinois

### TEACHING ASSISTANTS:

Robert W. Andrews	AB '73 Earlham College
Jack B. Bailey	BS '67 University of Arkansas
	MA '71 Columbia
John J. Barnes	BS '67 Michigan State University
	MS '73 University of Illinois

William H. Bond	BS '71 San Diego State MS '74 University of Illinois
Mary E. Brownlee	BA '73 Occidental College
Graham C. Copeland	BA '72 Knox College
Frank R. Ettensohn	BS '69 University of Cincinnati MS '70 University of Cincinnati
Richard M. Forester	BS '69 Syracuse University MS '72 University of Illinois
Gordon S. Fraser	BS '68 University of Illinois MS '70 University of Illinois PhD '74 University of Illinois
Harold C. Ganow	BS '67 Colorado State University MS '69 Colorado State University
James J. Hayes	BS '67 Kansas State University MS '73 University of Tulsa
Ronald W. Jorgensen	BA '73 Wittenberg University
Ronald A. Kern	AB '68 University of Rochester MS '74 University of Illinois
Theodore A. Koelsch	BA '73 Occidental College
Gary L. Kuhnhenh	BS '70 Morehead State University MS '72 Eastern Kentucky University
Jean B. Kulla	BS '72 University of Maryland
Daniel E. Lawson	BA '71 Lawrence University MS '74 University of Illinois
Regina L. Link	BA '70 University of Oregon
Tso-An Ma	BS '70 National Taiwan University
Larry C. Maple	BA '72 Lawrence University
John F. McHone	BS '68 Old Dominion College MS '73 Old Dominion College
David W. Moore	AB '61 College of Wooster MS '72 University of North Carolina
Julio C. Olimpio	BA '72 University of New Hampshire
Annette Price	BS '72 Michigan State University MS '74 University of Illinois
Mark L. Reinbold	BS '72 Eastern Illinois University

Robert W. Root	BS '72 Washington and Lee University
Linda J. Sindelar	BA '73 Bradley University
Michael P. Stephens	BS '68 University of Texas PhD '74 University of Illinois
Thomas J. Suchomel	BS '73 University of Iowa
Larry H. Stanker	BA '71 San Francisco State College MS '73 University of Illinois
Jerry P. Walker	BS '72 Indiana University, Bloomington
Susan J. Wunder	BA '72 University of Rochester

RESEARCH ASSISTANTS:

Sally A. Cole	BS '72 University of Washington
Elizabeth B. Forester	BS '72 University of Illinois
Sekyung Lee	BS '69 Seoul National University MA '72 Temple University
James W. Mahar	BS '67 Idaho State University MS '69 Colorado State University
Robert A. Robinson	BS '69 University of California, LA
Suzanne J. Russell	BS '72 University of Illinois
Jerry J. Sweeney	BS '70 University of Illinois MS '73 University of Illinois

OTHER GRADUATE STUDENTS:

Allen A. Aigen	BS '71 C.U.N.Y. City College MS '74 University of Illinois
Raymond E. Aufmuth	BS '63 University of Dayton MS '66 Miami University
Matthew J. Avcin	AB '65 Lafayette College MS '69 University of Illinois PhD '74 University of Illinois
Susan B. Buckley	BS '67 College of Wooster MS '72 University of Illinois
David H. Carnes	BA '73 Northeastern University

Thomas L. Chamberlin	BS '68 Michigan State University MS '71 University of Illinois
Dennis D. Coleman	BS '67 University of Wisconsin, Madison MS '70 University of Arizona
Herbert A. Elliott	BS '64 University of Virginia MS '69 Louisiana State University
Faith L. Fiene	BS '72 Illinois State University
Rufus T. Getzen	BA '65 Wake Forest College MS '67 South Carolina University PhD '74 University of Illinois
Andrew M. Gombos	BS '70 Washington and Lee University MS '73 University of Illinois
Julia B. Graf	BS '67 Bryn Mawr College MS '72 University of Illinois
Michael W. Hansen	BS '65 Idaho State University MS '70 University of North Carolina
Henry J. Harris	BA '70 Haverford College
Gary G. Hendrix	BS '72 University of Illinois
Cathy S. Hunt	BS '72 University of Illinois
Stephen R. Hunt	BS '72 University of Illinois
Margaret A. Kasowski	BS '64 University of Ottawa MS '68 University of Illinois
Timothy J. Kemmis	BS '70 University of Illinois
Mohamad R. Khawlie	BS '71 American University of Beirut MS '72 University of Illinois
Warren L. King	BA '64 State University of Iowa MS '71 University of Illinois
Chao-Li Liu	BS '64 National Taiwan University MSc '68 Memorial University of Newfoundland
Michael D. Martin	BS '70 Albion College MS '74 University of Illinois
Patrick T. McCullough	BS '64 University of British Columbia MS '68 University of Illinois PhD '74 University of Illinois
Edward D. McKay	BA '71 Hanover College

William G. Miller	BS '71 Colorado School of Mines MS '74 University of Illinois
Walter J. Nelson	BA '71 Williams College MS '73 University of Illinois
Ralph J. Newberry	BS '72 University of Illinois MS '74 University of Illinois
Alberto Nieto-Pescetto	BS '61 San Marcos University of Lima MS '63 Washington University
Rodney D. Norby	BS '67 University of North Dakota MS '70 Arizona State University
Jack R. Palomino	BS '61 University Nacional San Marcos MS '63 University of Illinois
William D. Rice	BS '71 Knox College MS '74 University of Illinois
Robert W. Ringler	BS '70 University of Illinois
James B. Risatti	BS '66 University of Illinois MS '70 Mississippi State University
Joan M. Schram	BS '67 University of Illinois MS '72 Eastern Illinois University
Frank B. Sherman, Jr.	BA '57 Dartmouth University MS '68 Colorado State University
James A. Wexler	BA '70 Queens College, C.U.N.Y.

DEGREES GRANTED SINCE AUGUST 1973

BS and BA

William I. Ausich	Sandra J. Lindquist
James J. Brossman	Cynthia A. Morgan
William C. Dawson	Patricia A. Santogrossi
Mark V. Filewicz	Craig B. Smith
Larry S. Foreman	Keith L. Stoffel
Barry A. Frey	Susan M. Taylor
Christopher Ledvina	Michael R. Warfel
Joseph J. Letko	Margaret M. Watson

BS in TEACHING OF EARTH SCIENCE

Deborah A. Drew	Jane M. Sennello
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MS

AIGEN, ALLEN A., May 1974

Early Mississippian gastropods of the Burlington Limestone  
Supervisor: Daniel B. Blake

GOMBOS, ANDREW MICHAEL, October 1973

A study of some central equatorial Pacific Neogene Diatoms  
Supervisor: R. L. Langenheim

KERN, RONALD ARTHUR, January 1974

Structure and Petrology of the Vinalhaven Pluton, Maine  
Supervisor: C. A. Chapman

LAWSON, DANIEL E., May 1974

No thesis

MARTIN, MICHAEL D., May 1974

La Salle Limestone (Upper Pennsylvanian) conodonts of La Salle County;  
Illinois  
Supervisor: R. L. Langenheim

MILLER, WILLIAM G., August 1974

Relationships between minerals and selected trace elements in some  
Pennsylvanian age coals of northwestern Illinois  
Supervisor: D. L. Graf

NELSON, WALTER JOHN, October 1973

Paleoenvironmental analysis of Chaetetes biostromes (Pennsylvanian)  
of the Arrow Canyon Quadrangle, Clark County, Nevada  
Supervisor: R. L. Langenheim

NEWBERRY, RALPH J., August 1974

The Structural and Metamorphic history of the Wissahickon Formation  
within Washington, D.C.  
Supervisor: D. S. Wood

PRICE, ANNETTE, August 1974

An Investigation of the effects of modified streamflow of the  
Sangamon River, Illinois, on the Adjacent Flood Plain  
Supervisor: P. A. Domenico

PROVO, LINDA JEANNE, October 1973

Interpretation of a turbidite: sedimentology of the West River Shale  
and the Ithaca Formation (Upper Devonian)  
Supervisor: G. D. Klein

RICE, WILLIAM D., May 1974

Conodont zonation of the Battleship Wash Formation, late Mississippian,  
Arrow Canyon Range, Clark County, Nevada  
Supervisor: R. L. Langenheim

SHARP, JOHN MALCOLM, January 1974

No thesis

STANKER, LARRY HENRY, October 1973

Upper Pleistocene calcareous nanofossils from three Caribbean cores  
Supervisor: W. W. Hay

#### MS in TEACHING OF EARTH SCIENCE

BOND, WILLIAM H., May 1974

No thesis

#### PhD

AVCIN, MATTHEW J., May 1974

Des Moinesian conodont assemblages from the Illinois Basin  
Supervisor: C. W. Collinson

BUCKLEY, GLENN ROBERT, October 1973

The effect of diffusion on garnet zoning  
Supervisor: D. E. Anderson

FRASER, GORDON SIMON, January 1974

Sedimentology of the St. Peter-Platteville transition, Middle  
Ordovician Black Riveran stage, upper Mississippi valley region  
Supervisor: G. D. Klein

GETZEN, RUFUS T., May 1974

The Long Island ground-water reservoir, a case study in  
anisotropic flow

Supervisor: P. A. Domenico

KOLATA, DENNIS ROBERT, October 1973

Paleoecology and systematics of the echinoderm faunas of the Middle  
Ordovician Platteville and lower Galena groups of north-central  
Illinois and south-central Wisconsin

Supervisor: D. E. Blake

KUHN, ALAN KARL, October 1973

A geological study and engineering evaluation of the Strait of  
Gibraltar area

Supervisor: A. V. Carozzi

MALTMAN, ALEXANDER JAMES, October 1973

The serpentinites and related rocks of Anglesey, North Wales,  
United Kingdom

Supervisor: D. S. Wood

MCCULLOUGH, PATRICK TERRENCE PETER, January 1974

Origin of the Ragged Top Gneisses, Laramie Range, Wyoming

Supervisor: A. F. Hagner

STEPHENS, MICHAEL P., May 1974

Ion exchange selectivity of clay under conditions simulating sub-  
surface environments

Supervisor: D. L. Graf

STRICKER, GARY DALE, October 1973

Carbonate microfacies of the Pogonip Group (Lower Ordovician),  
Arrow Canyon Range, Clark County, Nevada

Supervisor: A. V. Carozzi



## FIELD ACTIVITIES

### WYOMING SUMMER FIELD CAMP, 1974

Thirty-seven students and five staff members left Monday, June 10, from the University of Illinois for Sheridan Wyoming and the Department's 21st annual Geology Summer Field Camp. They returned August 3 after having traveled more than 6,500 miles.

Camp emphasis on mastery of techniques continued with instructions in section measurement by both the Hewett method and by plane table (an innovation this year); mapping by plane table, on a topographic base map, by pace and compass and aerial photography; and report preparation--including preparation of structure sections, drafting, etc. Along with thorough grounding in techniques, students were given repeated opportunity to conduct semi-independent field studies. Finally, to insure maximum instructional benefit, all student work was heavily criticized and discussed during the field camp session so that lessons learned early in the course could be applied to exercises set later in the session.

Instruction in regional observation and synthesis continued with observations made on the trip to Sheridan, in the Sheridan region and on the Parks Trip. In this manner, students were able to develop first-hand knowledge of the geology of the northern plains, middle rockies, the Wyoming thrust belt and the Yellowstone volcanics. In addition, practical application of geology was emphasized in visits to several oil fields, coal mines, the Gas Hills uranium district, the Atlantic City iron mine, and several mineral deposits in the Black Hills.

Staff for the 1974 camp included Professor Robert Furlong of Wayne State University and W. Hilton Johnson of Illinois, Teaching Assistants Mark Reinbold and Ron Kern and the Director, Professor Langenheim. Our curtailed staff and increased enrollment placed the staff on what amounted to a 70 hour work-week, but, through grinding effort, essential instructional needs were met.

The academic performance of this year's student group was somewhat above average with more than the normal share of "A" students and a complete absence of really low marks. Enrollment from off-campus included representation from Pennsylvania University, New York University, Knox College, University of Maryland, University of Southern Mississippi, Eastern Michigan University, Dennison University, State University of New York at Brockport and Clemson University. Unfortunately, off-campus enrollment had to be curtailed because of an abnormally large contingent from Illinois.

Special activities included a group traverse of Paintbrush Divide in the Tetons (the first group to make the trip for the year), an all day field conference with the A.E.C. on the part of Professors Johnson and Langenheim, the usual staff lectures for the Wyoming Geological Association, and a thorough revision of the "crystalline rock" exercise.

The following was taken from the Sheridan (Wyo.) Press, Thursday, June 27, 1974.

### Illinois geologists share knowlege with residents

The University of Illinois Geology Department, which has utilized the facilities of Sheridan College since 1956 for the summer practicum, are going to let the people of Sheridan in on the geologic features of the area Saturday.

In a combination lecture and field trip, the geologists will explain and show Sheridanites about their own area.

The discussion will include the rocks, fossils, geologic structure, character and geologic history of the Big Horn Mountains and the foothills surrounding Sheridan.

Dr. Ralph L. Langenheim, director of the summer program here, will head the project with the aid of Dr. W. Hilton Johnson. Langenheim has been studying the area with his students for eight years as a participant and another six years of being the director. Johnson has been with the program here for 12 years.

The informal outing will begin with an approximately one hour lecture introduction and organizers suggest bringing a lunch and drinking water.

They will distribute booklets on the geology of the area and offer other illustrative material. No walking will be required during the field trip which will go to the Steamboat Point area in private cars. Parents are asked to supervise small children.

The session will last until mid-afternoon Saturday and begin with a 9 a.m. introduction in room 1 at the College.

Langenheim has his Ph.D. in Geology from the University of Minnesota, is the author of about 50 scientific papers on historical geology and paleontology, and has done considerable research in the Great Basin and Rocky Mountains.

Johnson has his Ph.D. in geology from the University of Illinois and has written numerous papers dealing primarily with glacial geology and geomorphology with research done in Illinois and Wyoming.

The following appeared in the Wyoming Geological Association, Casper, Wyoming, Vol. XX, No. 7, July - 1974.

#### WGA Calendar

- |  |   |
|--|---|
| July 2, 1974<br>11:30 a.m. - Ramada Inn  | - John A. Connors, University of Wyoming<br>"The Missoula Flood"  |
| July 12, 1974<br>11:30 a.m. - Ramada Inn | - W. Hilton Johnson, University of Illinois<br>"Pleistocene Stratigraphy of East-Central Illinois"          |
| July 19, 1974<br>11:30 a.m. - Ramada Inn | - Robert B. Furlong, Wayne State University<br>"Clay Mineralogy of the Java, Mindinao and Mariana Trenches" |
| July 26, 1974                            | - Ralph L. Langenheim, Jr., University of Illinois<br>"Geological and Other Observations on Iran"           |

## GEOLOGY 1974 SUMMER SCHOOL OF FIELD GEOLOGY IN THE BRITISH ISLES

The advanced field class was held for the fourth successive summer under the direction of Professor Dennis S. Wood, with Julio Olimpio and Graham Copeland as graduate assistants. A total of 24 students participated, representing some fourteen institutions. In addition to six graduate students from the University of Illinois, there were members from Brown University, Bryn Mawr College, La Salle College (Philadelphia), Knox College, Lehigh University, the University of Wisconsin, Southern Methodist University, the University of Rochester, the University of Massachusetts, and the College of William and Mary. The course is designed for senior undergraduate and graduate students and is available for 8 hours or 2 units of credit at these levels.

The party departed from Chicago on June 1st and the course commenced in London on June 3rd with a visit to the Institute of Geological Sciences and an address by the Director, Sir Kingsley Dunham, an honorary doctorate of the University of Illinois. Other lectures were given by Professor John Sutton and Dr. Janet Watson at Imperial College, London. After a Visit to the University of Cambridge, the party was lectured by Professor John Ramsay at the University of Leeds and Dr. Michael Johnson at the University of Edinburgh.

Approximately half of the eight week period is spent under canvass and the remaining time is spent either at hotels or University Residence Halls. Detailed mapping is carried out in two areas of the Northwest Highlands of Scotland and North Wales respectively. A great variety of geologic problems are considered, pertaining to rocks of Archaean, Proterozoic, Lower and Upper Paleozoic age. All aspects, sedimentological, volcanic, plutonic, metamorphic and tectonic of the Caledonian Orogenic Belt are examined. The relationship between this fold belt and its Appalachian continuation are considered in the light of Mesozoic plate movements, as are the correlations between the Archaean and Proterozoic rocks of Scotland and their counterparts in the Canadian Shield.

Some of the areas examined in detail were those made classic as a result of the work of James Hutton, Sedgwick, Murchison, Lapworth and others. Time was taken to examine many non-geologic culture aspects and many Stone Age, Celtic Bronze Age, and Roman settlements in addition to a plethora of Norman castles and cathedrals. After a short holiday period following the course, the party returned by charter flight to Chicago on August 17th.

### COURSE TRIPS

Field work remains an essential aspect of geology at both the undergraduate and graduate levels. During the past year, 21 formal field trips were taken in 17 courses.

#### Course

Physical Geology

Honors: Historical Geology

Baraboo, Wisconsin

Southern Indiana

Olive Hill, Kentucky

Honors: Physical Geology	Danville and Southern Illinois S. E. Missouri
Regional Field Study	Southern Appalachians Southern Nevada
Undergraduate Open Seminar (History of Life)	Effingham, Illinois
Paleontology and Stratigraphy	Dixon, Illinois
Structural Geology	Gatlinberg, Tennessee
Geomorphology	Bedford, Indiana
Advanced Field Methods	Bahamas
Sedimentology	Southern Illinois
Invertebrate Paleontology	Olive Hill, Kentucky
Principles of Stratigraphy	Wabash, Indiana
Mineralogy-Petrology	Marquette, Michigan
Glacial and Pleistocene Geology	Two Creeks, Wisconsin
Sedimentary Processes	Grayville, Illinois Carbondale, Illinois
Principles of Engineering Geology	Baraboo, Wisconsin
Practice of Engineering Geology	Wisconsin

#### GEOLOGY LIBRARY

Although space in the Geology Library remains at a premium, the collection continues to show some growth. As of June 30, 1974 there were 63,715 volumes in the Library and a total of 2,315 serials were being received. During June and July of 1974, 1814 volumes were transferred to the stacks of the Main Library in order to have space for volumes to be received during the coming year. In the Map Room, there were 23,735 cataloged maps and 20,849 uncataloged maps, and 406 series of maps were being received.

On two different occasions the Library had visitors from Esso Exploration, Inc. to study and use the Russian and eastern European geological and petroleum exploration literature. When they completed their work, they stated that "the University of Illinois has one of the finest libraries in the United States and Europe on these subjects."

On November 1, 1973, Miss Susan Yugo joined the staff of the Library as Assistant Geology Librarian. Miss Yugo received her B.A. from the University of Wisconsin - Racine with a major in geography and a minor in geology. She received her M.A. from the University of Wisconsin - Madison, and worked in the Geology-Geography Library there.

Mrs. Harriet W. Smith attended the G.S.A. and G.I.S. meetings in Dallas in November, 1973 and is a member of the Constitution Revision Committee of G.I.S. In April, 1974 while attending a meeting of the Seminar on the Acquisition of Latin American Library Materials in Austin, Texas, she visited the Geology Department of the University of Texas - Austin, and also attended the hearings of the National Commission on Library and Information Service in Austin where G.I.S. made a presentation on the problems in geological bibliographies and documentation.

## DEPARTMENTAL ACTIVITIES

The October picnic was held at Hickory Hills Country Club. Fun and games and fine food was enjoyed by staff and students.

The Fall Golf Tournament for staff and students was held on the morning preceding the picnic. Grand champion was Bill Goodman, Administrative Assistant to Dr. Donath.

The academic staff are mixing pleasure with business each Wednesday noon as they meet for luncheon at the Illini Union.

The Nonacademic staff meets monthly for a luncheon, business, program meeting.

## ALUMNI NEWS

CORDELL, ROBERT J. (B.S. '39; M.S. '40) is a research scientist for Sun Oil Company in Richardson, Texas. His recent activities include writing four papers on the origin and primary migration of oil for the AAPG Bulletin and serving as the 73-74 Secretary for the Executive Committee of the Dallas Geological Society. He is General Chairman for the National AAPG-SEPM Convention (Dallas, April 7-9, 1975) and is busy with over 30 committees preparing for the convention.

EKBLAW, SIDNEY E. (A.B. '29; M.S. '30) recently retired as Visiting Professor from the Department of Geography at Arizona State University at age 70. After leaving our Department in 1930, he went on to receive his Ph.D. in Geography from Clark University in 1934. From there, he joined the faculty at Kansas City University (now University of Missouri - Kansas City) and served as Head of the Department from 1938 to 1969. He retired from UMKC in 1970 and then joined the staff at Arizona State until his second retirement in 1973. Refusing to be "put to pasture", he visits the campus often and is busy preparing a book for publication.

FISCHER, WILLIAM A. was presented the first annual William T. Pecora Award by Interior Secretary Rogers C. B. Morton and NASA Administrator James Fletcher on July 12 this year. The presentation was a highlight of ceremonies dedicating the U.S. Geological Survey's new National Center at Reston, Virginia. Fischer, Senior Scientist of Interior's EROS (Earth Resources Observation Systems) program, was honored for his work in overseeing the many scientific experiments of the EROS program, aimed at the application of high altitude data to a wide variety of natural resource and environmental studies.

Last fall, Fischer received NASA's Exceptional Scientific Achievement Medal, awarded for "outstanding contributions to the space program." Two years ago, he also received the Interior Department's highest honor--the Distinguished Service Award.

Fischer joined USGS in 1942 as one of the Nation's first photogeologists. During his Survey career, he directed mapping of Alaska petroleum reserves and of suspected uranium-bearing areas in the western U.S. He gained international recognition for his research that proved the feasibility of expanding earth science knowledge through the use of high-altitude sensing and that led to the concept and planning of the Earth Resources Technology Satellite (ERTS) system.

**GUBER, ALBERT L.**, associate professor of geology at Penn State was one of two University faculty members to receive Penn State's highest teaching award at the June Commencement. He received the Christian R. and Mary F. Lindback Award for Distinguished Teaching which consists of a plaque and a check for \$1,000. He earned his B.S. at the University of Pittsburgh and his Ph.D. at the University of Illinois in 1962.

**HATCH, JOSEPH R.** (M.S. '68; Ph.D. '72) reports that he is now employed by the Branch of Coal Resources of the U.S. Geological Survey. He says he and wife Sandra are excited about their move to Denver.

**JAMES, ALAN THOMAS** (B.S. '68; M.S. '69) received his Ph.D. degree in Geology from Rice University on May 11, 1974.

**MICKLIN, RICHARD F.** (B.S. '67) joined the exploration staff on Florida Gas Exploration Company's New Orleans Division as Geologist in March of this year. After leaving the U. of I., Mr. Micklin received his master's degree in geology from the University of Arizona. Since 1969, he had been employed by Texaco in New Orleans, most recently as Offshore Assistant District Geologist. The New Orleans Division of Florida Gas is responsible for oil and gas exploration activities in Southern Louisiana and in all offshore areas of the Gulf of Mexico.

**NOWAK, FRANK J.** (M.S. '70; Ph.D. '72) and wife, Mary Ellen, are still in Louisiana. Frank is employed by Texaco in New Orleans. Hello Frank and Mary Ellen!

**SMOSNA, RICHARD A.** (M.S. '70; Ph.D. '73) was a coauthor of a paper given the Levorsen Award of the American Association of Petroleum Geologists for the best paper presented at the 1973 meetings of the Eastern Section of the Association. The paper, "Stratigraphy and petrology of the Middle Silurian McKenzie (Lockport) Formation in West Virginia and adjacent areas" by D. G. Patchen (who read the paper), R. Smosna and H. Buchanan was presented at the annual meeting of the section, held in Pittsburgh on April 18-19.

**STIEGLITZ, RONALD D.** (Ph.D. '70) has been promoted to Head of the Regional Geology Section at the Ohio Geological Survey in Columbus.

**WILBAND, JOHN T.** (Ph.D. '65) was honored this spring as one of the University of Toledo's four Outstanding Teachers for 1973. Wilband, associate professor of geology, and three other faculty members received certificates and \$1,000 cash awards at the University's June commencement in recognition of their teaching effectiveness.

After receiving his Ph.D. from Illinois in 1965, Dr. Wilband joined the faculty at Toledo. Within two years, he was listed on the Graduate Student Association's roll of outstanding teachers. He specializes in X-ray diffraction and spectroscopy, igneous petrology and the geochemistry of ore deposits and guides students in the use of the department's more sophisticated analytical laboratory equipment.

Of his profession, he says, "I like teaching and I like being a geologist. People generally do best what they enjoy doing. I find real satisfaction in watching a student move up in this field."

#### ALUMNI ASSOCIATION NEWS

GSA - The Department display at GSA in Dallas was much admired (see photo) and the cocktail party for alumni and friends was also much admired! Hope to see you in Miami Beach this November. The party will be held at the Deauville Hotel on Monday, November 18 at 5:30 p.m. Signs will be posted in the lobby of the Deauville announcing the location.

AAPG - The AAPG cocktail party in San Antonio last March was a grand success. We hope to see you at next year's convention in Dallas.

University of Illinois Birthday Celebration - 106 years old - Aren't birthday parties fun! A beautiful, giant cake with coffee or tea on a dreary work day and you have the atmosphere of the traditional "Happy Birthday, U. of I." party. Thank you, Geology Alumni Association members for making so many staff and students happy.

Ph.D. Job Seekers - On pages 29-31 are listed our newest Ph.D. job seekers. If you have positions, please contact us or the student directly. Any assistance in helping our students find excellent positions is appreciated.

THANK YOU for your membership. Your interest and dues money help in so many ways (see U. of I. top Senior this issue, also Cyclothem Geology Club writeup). By joining the University of Illinois Alumni Association, you also become a member of the Geology Alumni Association and a portion of your dues come to the Department.

## IN MEMORIAM

LESLIE A. HOLMES (B.S. '26; M.S. '28; Ph.D. '42), former president of Northern Illinois University at DeKalb and a doctoral consultant in career services at Arizona State University, died August 21, 1974 in Tempe, Arizona.

Dr. Holmes also worked for Shell Oil Company, taught high school in Argo, Illinois and served as administrative assistant to the president of Illinois State University at Normal.

ESTHER UTZIG MURRAY (B.A. Geography '24; M.A. Geography '26), widow of Albert N. Murray (Ph.D. Geology '28) died on November 19, 1973 in Tulsa, Oklahoma.

Mrs. Murray had taught science in a Tulsa school and was active in the Tulsa Garden Club, serving on its board and heading its conservation committee.

Her husband headed the Department of Geology at the University of Tulsa from 1928 to 1960. He died in 1961.

MAXWELL SILVERMAN (M.S. ?), an oceanographic shipbuilding and inspection specialist, died February 14, 1974. He had been employed by the Oceanographer of the Navy as staff ships liaison officer since June, 1973. Earlier he had worked for the Scripps Oceanographic Institute, the Woods Hole Oceanographic Institute and the Naval Electronics Laboratory in San Diego, California.

ROBERT F. SITLER (M.S. '55; Ph.D. '57), professor of geology at Kent State University for 17 years, died June 5, 1974. For a time he was also associate dean and then acting dean of the College of Liberal Arts at Kent State. His research and publications were on petrography of glacial deposits and on areal studies. He was a fellow of The Geological Society of America and member of other national and international professional societies.



UNIVERSITY OF ILLINOIS  
DEPARTMENT OF GEOLOGY

Ph.D. CANDIDATES SEEKING POSITIONS FOR 1975-76

Addresses, unless otherwise indicated: Dept. of Geology, 254 Nat. Hist. Bldg., Univ. of Illinois  
Urbana, Illinois 61801

Name	Degree & Graduate Status	Primary Fields (Secondary Fields)	Ph.D. Dissertation & Advisor	References in Addition to Advisor
T. L. Chamberlin	B.S. '68 Mich. St. U. M.S. '71 U. of Ill. Ph.D. exp. June, 1975	Stratigraphy, Petroleum Geology	Stratigraphy of the Upper Ordovician Ely Springs Dolomite in the south-eastern Great Basin, Utah and Nevada (R.L. Langenheimer, Jr.)	Dr. T.L. Phillips (Dept. of Botany) Dr. D.C. Bond (Ill. Geological Survey)
<p>Publications: Chamberlin, T.L., and Langenheimer, R.L. Jr., 1971, Stratigraphy of the Ordovician-Silurian Boundary in the Arrow Canyon Range, Clark County, Nevada, Wyoming Geol. Assoc. Earth Sci. Bull., Sept. 1971 No., p. 7-25.</p>				
F. R. Ettensohn	B.S. '69 U. of Cincinnati M.S. '70 U. of Cincinnati Ph.D. exp. June, 1975	Paleontology, Paleogeology, Pleistocene Geology	The Paleogeology and Stratigraphy of the Upper Newman Group (Chester), North-eastern Kentucky (D.B. Blake)	Dr. G. dev. Klein Dr. R.L. Langenheimer Dr. K.E. Caster (U. of Cincinnati) Dr. F.L. Koucky (College of Wooster)
<p>Publications: Ettensohn, F.R., The Pre-Illinoisian Clays of the Cincinnati Region, The Ohio Journal of Science (In press). Ettensohn, F.R., 1969, The Influence of Ground-Water Access Routes on Concretionary Development in Proglacial Lake Clays (Abs): Geol. Soc. Amer. Ann. Mtg. pp. 59-60.</p>				
<p>Also, three other abstracts not listed.</p>				
R. M. Forester	B.S. '69 Syracuse Univ. M.S. '72 U. of Illinois Ph.D. exp. June, 1975	Mathematical Paleogeology, Micropaleontology	Concepts of fossil and modern ostracode abundance, distribution, and diversity patterns portrayed by probabilistic methodology. (P.A. Sandberg)	Dr. D.B. Blake Dr. C.J. Mann Dr. W.W. Hay (U. of Miami)

Name	Degree & Graduate Status	Primary Fields (Secondary Fields)	Ph.D. Dissertation & Advisor	References in Addition to Advisor
R. M. Forester (Concluded)				
Publications:	Forester, R. M., Sandberg, P. A., and Anderson, T. F., 1971. Isotopic Variability of Cheilostome Bryozoan Skeletons, in <u>Living and Fossil Bryozoa</u> , G. P. Larwood, ed., pp. 79-94.			
H. C. Ganow	B.S. '67 Colorado St. U. M.S. '69 Colorado St. U. Ph.D. exp. June, 1975	Geotechnical Engineering Clay Mineralogy and Clay Crystal Chemistry	Dr. R.B. Peck (Dept. of CE) R.B. Johnson Illinois (F.A. Donath)	Dr. R.B. Peck (Dept. of CE) R.B. Johnson (Colorado St. U.) Dr. D.A. Lindsey (Denver Fed. Center)
Publications:	Ganow, H.C., Hayes, A.W., and Grender, G.C., Petrography and Interpretations of Selected Middle-Ordovician Limestones of Southern Virginia (Abs): Virginia Academy of Sci., 1970.			
Lindsey, David A., Ganow, Harold, and Mountjoy, Wayne, Hydrothermal Alteration Associated with Beryllium Deposits at Spor Mountain, Utah, U.S. Geol. Survey Professional Paper 818-A.				
R. G. Jackson	B.S. '70 U. of Kans. M.S. '73 U. of Ill. Ph.D. exp. January, 1975	Sedimentology, Hydromechanics	Sedimentology of the Lower Wabash River Meander Belt (G.dev. Klein)	Dr. P.A. Domenico Dr. F.A. Donath Dr. D.L. Graf
Publications:	Jackson, R.G., 1973, Velocity-bedform-texture patterns of meander bends in the Lower Wabash River (Abs): Geological Society of America Abs with Programs, 1973 Ann. Meeting (Dallas).			
R. W. Lahann	B.A. '71 Knox College Ph.D. exp. August, 1975	Low-temperature geochemistry, environmental geology	Molybdenum Transport Mechanisms in Fresh Water Environments (D.L. Graf)	Dr. D.E. Anderson Dr. T.F. Anderson Dr. D.M. Henderson
Publications:	Moore, D.M., and Lahann, R.W., Preliminary report on a sample of the Purington Shale prepared as a geochemical standard, Geological Society of Amer. Abs., 1969, p. 284.			
Moore, D.M., and Lahann, R.W., Mineralogy and geochemistry of vug-fillings at Gray's Quarry, Hamilton, Illinois, North Central Section, Geological Society of America Abs., 1972, pp. 332-333.				

Name	Degree & Graduate Status	Primary Fields (Secondary Fields)	Ph.D. Dissertation & Advisor	References in Addition to Advisor
Regina L. Link	B.S. '70 U. of Oregon Ph.D. exp. Sept., 1975	Ostracoda Paleoecology	Normal Pore Distribution in Selected Ostracoda (P.A. Sandberg)	Dr. D.B. Blake Dr. C.J. Mann
R. D. Norby	B.S. '67 U. of N. Dakota M.S. '71 Arizona St. U. Ph.D. exp. August, 1975	Micropaleontology, Biostratigraphy	Multi-element conodont species from the Mississippian System (C.W. Collinson)	Dr. D.B. Blake Dr. T.L. Phillips (Dept. of Botany) Dr. W.W. Hay (U. of Miami)

Publications: Norby, R.D., and Lundin, R.F., Mississippian Conodont zones of southeastern Arizona (Abs): Am. Assoc. Petroleum Geologists Bull., v. 56, p. 642.  
 Norby, R.D., and Avcin, M.J., 1972, Reevaluation of conodont assemblages, Modesto Formation (Abs): Geol. Soc. America Abstracts with Programs, v. 4, p. 308.  
 Collinson, C.W., and Norby, R.D., et al. 1972, Pennsylvanian conodont assemblages from LaSalle County, northern Illinois: Ill. Geol. Survey Guidebook Ser. 10, 37 p.  
 Norby, R.D., and Kolata, D.J., In Press, Preservation of paleontological collecting sites in Monroe and St. Clair Counties: Ill. Geol. Survey Environ. Geol. Note.

Also, three other abstracts not listed.



PLEASE PLACE MY NAME IN THE NEXT ANNUAL NEWSLETTER WITH THE FOLLOWING DATA:  
(Write your news on the back of this form)

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PLEASE SEND ME THE CURRENT ADDRESS(ES) FOR THE FOLLOWING ALUMNI AND/OR  
STAFF MEMBERS:

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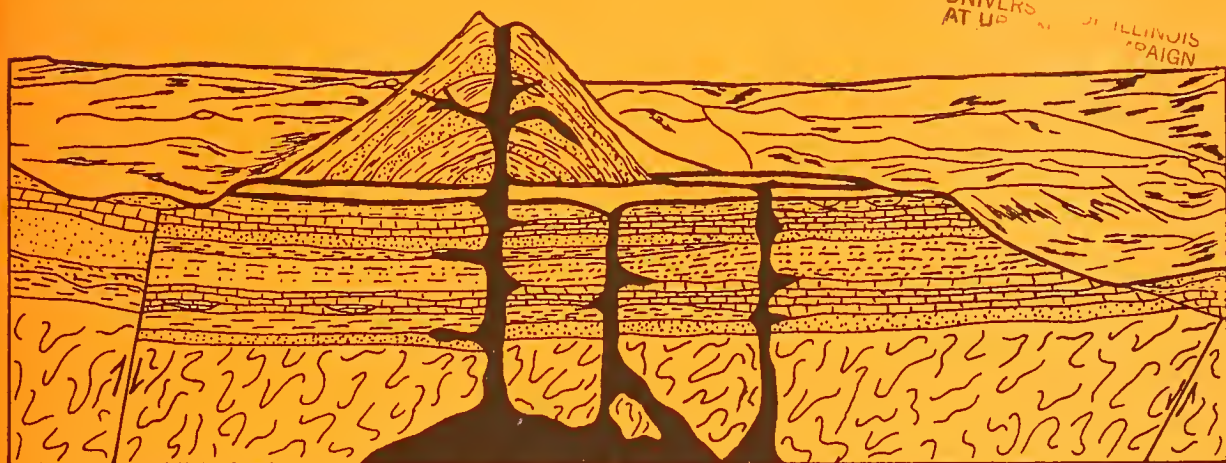




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1979/80

# TWENTY-FIFTH ANNUAL NEWSLETTER

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## DEPARTMENT of GEOLOGY

University of Illinois  
at  
Urbana - Champaign

1979 - 80



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August 1980

Dear Alumni and Friends:

After a long absence, we are pleased to mail the 25th Annual Newsletter. As you can see, we have returned to the format used in the 1st (1948-1949) through the 24th (1973-1974) Annual Newsletters, and we will try to follow this style for each annual addition. As you may recall, the last four issues of the Newsletter used a four-page format. (The publication dates for these were: Spring 1976, Fall 1976, Fall 1977, and the last, Winter 1978.) Because the four-page newsletters were not published on an annual basis and the last annual issue was the 24th, we have numbered this issue the 25th Annual.

When you read through the Newsletter, you will see items describing the current structure of the department and its activities; you will also see accounts of the continuing activities of the alumni as they make many strides in their professions.

I wish to thank the alumni and members of the department who contributed news items for this addition. Special thanks go to Ms. Laura Harbison, the undergraduate secretary, and Mrs. Carol Sanderson, the graduate secretary, for their help in collecting most of the information contained in the Student News section. Thanks also go to Dr. George White, whose continued interest in and knowledge of alumni activities are largely responsible for the information contained in the Alumni News section. Without the help and cooperation provided by all, this issue would not have been completed.

We need your input to make the Newsletter a continuing success. We are always interested in our alumni, and it gives us great pride to include information concerning our former students. Remember, the Newsletter is primarily for you, the alumni. Please keep us up to date concerning your activities and, of course, any address changes. (Address changes can be made by using the form on the last page.) Information should be addressed to me, and comments and suggestions are always welcome.

We look forward to your continued interest and support.

Sincerely,



Ellen L. Abell  
Secretary & Editor



August 1980

Dear Alumni and Friends:

As you can see by going through this Newsletter, a number of changes have taken place in the department over the last couple of years. After Fred Donath's resignation as head, Phil Sandberg took over for the academic year 1977-78 and I arrived in the fall of 1978. Several faculty changes have taken place since that time. Fred Donath left the University in August (1980) to spend full time with his consulting firm. Les Fruth also resigned to go with the firm. Albert Hsui, whose field is geophysical fluid dynamics, came to the department in January 1980.

As you might imagine with the high demand for geologists these days, our student population has increased rapidly over the past several years. Undergraduate majors are double what they were in 1975; graduate enrollment is limited at around 70 by the facilities available in the Natural History Building. Our field programs are straining at the seams and struggling with the combination of high demand and (very) high cost of transportation.

We have been very successful in obtaining and constructing important research instrumentation. The efforts of Dave Anderson and Phil Sandberg have brought two electron microprobes into the department. A new x-ray diffractometer and an automated mass spectrometer were acquired by grants to Dennis Eberl and Tom Anderson. The machine shop completed work on two membrane presses of Don Graf's design. More about all this in the body of the Newsletter.

Remember the ISGS/Geology Department cocktail party at the GSA meeting to celebrate the Survey's 75th Anniversary and please try to make it.

Sincerely,

A handwritten signature in black ink that reads "John Hower". The signature is written in a cursive, flowing style.

John Hower  
Head





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FACULTY

- DAVID E. ANDERSON (PhD, Sydney) - Metamorphic and theoretical petrology
- THOMAS F. ANDERSON (PhD, Columbia) - Stable isotope geochemistry; oceanography
- DANIEL B. BLAKE (PhD, California-Berkeley) - Invertebrate paleontology; biostratigraphy
- ALBERT V. CAROZZI (PhD, Geneva) - Sedimentology; sedimentary petrology; petroleum geology
- PATRICK A. DOMENICO (PhD, Nevada) - Hydrogeology
- DENNIS D. EBERL (PhD, Case Western Reserve) - Clay mineralogy; sedimentary geochemistry
- DONALD L. GRAF (PhD, Columbia) - Sedimentary geochemistry; mineralogy
- DONALD M. HENDERSON (PhD, Harvard) - Mineralogy; crystallography
- JON T. HOLDER (PhD, Illinois) - Geophysics and solid state geophysics
- JOHN HOWER (PhD, Washington-St. Louis) - Diagenesis; clay mineralogy
- ALBERT T. HSUI (PhD, Cornell) - Geophysics, mathematical modeling, geodynamics and planetary interiors
- W. HILTON JOHNSON (PhD, Illinois) - Quaternary stratigraphy; glacial geology; geomorphology
- R. JAMES KIRKPATRICK (PhD, Illinois) - Igneous and experimental petrology
- GEORGE deVRIES KLEIN (PhD, Yale) - Sedimentology; marine geology; sandstone petrology and diagenesis; petroleum geology of clastic reservoirs
- RALPH L. LANGENHEIM, JR. (PhD, Minnesota) - Stratigraphy; paleontology; field geology; geology of energy, coal
- C. JOHN MANN (PhD, Wisconsin) - Mathematical geology; stratigraphy
- ALBERTO S. NIETO (PhD, Illinois) - Engineering geology; applied rock mechanics
- V. VICTOR PALCIAUSKAS (PhD, Illinois) - Theoretical geophysics; transport processes
- PHILIP A. SANDBERG (PhD, Stockholm) - Carbonate sedimentology; micropaleontology
- DENNIS S. WOOD (PhD, Leeds) - Structural geology; geotectonics

ADJUNCT FACULTY

- LEON F. FOLLMER (PhD, Illinois) - Paleopedology, soil geomorphology, quaternary geology [Illinois State Geological Survey, Urbana]
- JAMES E. KING (PhD, Arizona) - Quaternary palynology and paleoecology [Illinois State Museum, Springfield]
- JACK A. SIMON (MS, Illinois) - Coal geology [Chief, Illinois State Geological Survey, Urbana]

RESEARCH ASSOCIATES

LINDA CHAPMAN (BS [Chemistry], Missouri) - Mass spectrometry

ITHAMAR PELLY (PhD, The Hebrew Univ. of Jerusalem) - Experimental petrology; mineralogy

EMERITUS FACULTY

CARLETON A. CHAPMAN  
RALPH E. GRIM

ARTHUR F. HAGNER

HAROLD W. SCOTT  
GEORGE W. WHITE

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1980-81 COMMITTEES

ADMISSIONS: Jon Holder, Jim Kirkpatrick, Phil Sandberg (Chm.), Don Henderson (ex of.)

ADVISORY: Pat Domenico, Hilt Johnson, Ralph Langenheim, Don Henderson (ex of.)

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UNDERGRADUATE: Dan Blake (Chm.), Denny Eberl, Alberto Nieto, Don Henderson (ex of.)

FACULTY NEWSProfilesDavid E. Anderson, Associate Professor

Dr. Anderson spent a great deal of time the last half of the year completing the automation of the JEOL 50A microprobe. Controlled by a small computer, the new system allows rapid analysis and reduction of data. More importantly, however, the automation has greatly enhanced the accuracy and reliability of the data collected. In addition to this, Dr. Anderson (along with Dr. Graf) continued work on the diffusion in aqueous electrolytes. Methods for estimating diffusion coefficients over a wide range of concentration have been significantly improved.

Dr. Anderson has also continued deciphering the history of metamorphic garnets from the Moine Schists of Scotland and the rocks in and near the orebody at Ducktown, Tennessee. Four weeks were spent collecting and mapping in the Morar region of Scotland last summer. The combination of petrographic and microprobe analysis, and theoretical modeling provides a very powerful, new tool for determining the time-temperature curve of metamorphism and the relationship between metamorphism and deformation.

Thomas F. Anderson, Associate Professor

Dr. Anderson has several research projects underway. One involves the isotopic, mineralogic and elemental composition of permineralized peat zones known as coal balls. The isotopic analysis will provide information on the temperature of formation and the source of the inorganic constituents. This information will be integrated with available geologic information to develop a more comprehensive model of coal ball formation and, consequently, aid in the understanding of the depositional environment of coal seams where coal balls occur. Another project involves the study of the isotopic content of the different sulfur components in Illinois coal. By analyzing the sulfurs (organic, pyrite, sulfates) separately, Dr. Anderson will be better able to understand depositional origins and resultant formation of sulfur in coal.

Besides these major research projects, Dr. Anderson is in charge of a geochemical lab designed for isotopic analysis of C, N, O, S, and H/D. He also attended the meetings of the International Geological Congress in France where he has been able to exchange views and ideas with European colleagues.

Daniel B. Blake, Professor

Dr. Blake is continuing his research on both bryozoans and sea stars. He has recently completed a study of homeomorphy among Paleozoic bryozoans and plans to begin research on biostratigraphy and paleobiology of certain Pennsylvanian bryozoans of the Great Basin. Dr. Blake is in the midst of efforts to analyze feeding habits prevalent in ancient sea stars. Two graduate students are working on dissertations involving Mississippian and Pennsylvanian bryozoans, and a third is studying an unusual echinoderm fauna from the Middle Ordovician of Tennessee.

Albert V. Carozzi, Professor

In the academic field, Dr. Carozzi developed a new course, Geology 444, entitled "Depositional Models for Petroleum and Mineral Deposit Exploration," in which he discusses exploration techniques in clastic and carbonate rocks based largely on his consulting activities.

Petróleo Brasileiro SA PETROBRAS renewed for another three-year period its grant for study of the experimental development of porosity in carbonate rocks. The research program is expanding with several students working on a variety of carbonate microfacies. Two new geologists from PETROBRAS have just arrived on campus to undertake doctoral degrees on aspects of this experimental research.

Dr. Carozzi began a new consulting venture with Yacimientos Petroliferos Fiscales (YPF), the National Oil Company of Argentina, being their first foreign consultant to develop an exploration and training program in clastic and carbonate rocks. Short courses on petrography and depositional models were given and a series of basin evaluation projects are being undertaken in the producing Cretaceous of the Mendoza and Neuquén basins.

Carleton A. Chapman, Professor Emeritus

Perhaps the most exciting experience of the past year for Dr. Chapman was a trip to Great Britain, where he and Thelma spent two months (September–November), accompanied by beautiful weather, in the charming and peaceful countryside of Scotland, England, and Wales. A little time was reserved for the large, bustling, but essentially tourist-free cities of London, Sheffield, and Manchester. Travel was largely by rented auto on secondary and back country roads where the scenery was superb, traffic light, and gasoline plentiful, but expensive (about \$2 per US gallon).

Their drive provided visits to numerous relatives and many localities of historic, archeologic, and geologic interest, among them the North York Moors, Cheviot Hills, Siccarr Point Unconformity, volcanic plugs around Edinburg, Welsh Border country, and the Scottish Northwest Highlands and north coast from Cape Wrath to John O'Groats.

Most memorable, according to Dr. Chapman, was their journey to Durham, England, for a highly enjoyable visit with Kingsley and Margaret Dunham. The Dunhams (now Sir Kingsley and Lady Dunham), as some of you know, lived in Urbana in 1956 while Kingsley Dunham was a UI Miller Visiting Professor of Geology. In addition, the Chapmans toured Durham Cathedral, guided by Professor Dunham, and thought it was a most delightful and educational experience.

Linda M. Chapman, Research Associate

Linda Chapman came to the University in November to work for Dr. Thomas Anderson as an assistant geochemist. Since that time, she has been involved with two major activities. The first is operating and maintaining the newly acquired Isotope Mass Spectrometer and in instructing and assisting graduate students in its operation. Several graduate students are using the instrument to obtain carbon and oxygen isotopic values for their individual research and thesis studies. Ms. Chapman has also been involved teaching graduate students extraction techniques of carbonate samples for isotopic analysis.

Ms. Chapman's other responsibility is coal research. The Illinois Mining and Mineral Resources Research Institute (Department of Interior, Office of Surface Mining) has funded a program to study sulfur isotopes

in Illinois coal. Therefore, the major thrust of Ms. Chapman's research will involve separating the sulfur-bearing components (pyrite, sulfates, organic sulfur) from Illinois coals and determining their isotopic composition. This information should lead to a better understanding of the depositional and diagenetic behavior of sulfur in coal.

Patrick A. Domenico, Professor

For the past few years, Pat Domenico has been involved in research on microfracture development in compacting shales. This work has resulted in two recently published papers (with V. V. Palciauskas) and invited discussions with Mobil Exploration and Production Services in Dallas. Other invited talks on this subject were given at Case Western Reserve and the University of Texas at Austin. Extensions of this work with V. V. Palciauskas are currently underway, and include development of pore pressure due to mineral phase transformations, both in the compacting sediment environment and as a result of heat generation associated with high-level radioactive waste storage.

Current research interests of students in the hydrogeology program (four PhD's; three MS's) include salt water intrusion in Indonesia; mass and energy transport in the unsaturated zone--an application to radioactive waste storage; contaminant transport in sanitary landfills; groundwater quality in strip mined reclaimed land; and the hydrology of dry valley regions in Antarctica.

Dr. Domenico has served on the Hydrology Overview Committee for Radioactive Waste Storage in Nevada, and is currently chairman of the Hydrology Overview Committee at the Basalt Radioactive Waste Isolation Program at Hanford, Washington. (See also the item entitled "1979 Meinzer Award.")

Dennis D. Eberl, Assistant Professor

Dr. Eberl is currently working on the following projects: (1) theoretical studies of ion fixation and selectivity by clay minerals; (2) hydrothermal synthesis of clay minerals; and (3) studies of hydrothermal alteration zones around ore deposits in Colorado and New Mexico. He continues to serve as an associate editor for the Journal of Sedimentary Petrology and Clays and Clay Minerals.

Donald L. Graf, Professor

Donald L. Graf is working with several graduate students measuring the salt rejection and differential cation rejection that resulted when (Na,Ca)Cl brines move through smectite layers under diagenetic temperatures and pressures. He presented an invited talk about the role of electrolyte diffusion, shale membrane ultrafiltration, and mineral dehydration in deep-basin hydrology, at an International Association of Scientific Hydrologists session in Paris, France, this past July.

Dr. Graf has also been supervising thesis research on minor-element distribution in Lake Michigan sediments, the source and distribution of epigenetic sphalerite veinlets in Illinois Basin coals, and the correlation of alteration mineralogy at Tintic, Utah, with satellite and aircraft imagery.

Ralph E. Grim, Professor Emeritus

Dr. Grim was an invited attendant at a conference in Helsinki, Finland, sponsored by the International Atomic Energy Agency. Over 20

countries, including the USA and the USSR, presented papers describing their intended procedures for the disposal of waste material from atomic energy facilities. Dr. Grim later spent a week in Sweden visiting a laboratory, where research on atomic waste disposal was in progress, and an underground mine, where a pilot plant disposal operation is planned. A particular kind of clay (bentonite) is being considered as an adsorbent and sealing agent in the disposal process. Dr. Grim has for many years investigated the occurrence and properties of bentonites and, in 1978, published a volume on this subject. His activities in atomic waste disposal are concerned with the possibilities of taking advantage of the properties of bentonite in devising a plan for final, safe disposal of the waste.

Dr. Grim has continued his long-time study of kaolin clays used extensively in filling and coating paper. He is currently engaged in a detailed microscopic study of a series of kaolins to determine the fundamental reasons for the variation in their properties.

#### Donald M. Henderson, Professor

Dr. Henderson continues to look after our undergraduate and graduate students as well as other (ill- and well-) assorted educational matters. He's also gotten a new perspective on education by teaching a beginning course for the first time--Geology 107--in the fall semesters with Dr. Kirkpatrick. In July 1980, Dr. Henderson attended the International Mineralogical Association meetings in Orléans and the International Geological Congress in Paris.

#### Jon T. Holder, Associate Professor

Dr. Holder's recent activities have included: (1) Continuation of work (with graduate student Joe Schrodt) on the microscopic nature of deformation mechanisms in rock based on laboratory measurements of mechanical behavior during high pressure triaxial testing; (2) continuation of the work and duties involved as assistant director of the Materials Research Lab; and (3) taught (with the assistance from Dr. Paul Heigold of the Illinois State Geological Survey) an introductory survey course on geophysical exploration techniques.

#### John Hower, Professor and Head

Dr. Hower spent his pre-college life in the Panama Canal Zone; received a BS at Syracuse University in 1952 and a PhD from Washington University (St. Louis) in 1955. He came to Illinois in the fall of 1978, after having spent two and a half years as Geochemistry Program Director at the National Science Foundation. Dr. Hower's professional experience before that included two years as a research engineer at the (now) Amoco Research Center in Tulsa and teaching at the University of Montana, MIT, and Case Western Reserve University. His research and teaching interests are in the diagenesis of clastic sediments, clay mineralogy, and the radiometric dating of sedimentary rocks.

#### Albert T. Hsui, Assistant Professor

Dr. Hsui's research interests are generally concerned with the physics of the solid earth and the interior of other planetary objects. The three main topics of his current investigations are the following:

(1) Mathematical modeling of surface tectonic processes: Plate tectonics is a fascinating subject, and, although the large-scale



surface motions and their gross geological consequences are well understood, the detailed knowledge of many phenomena remains obscure. The generation of island arc magmatism is one of the unresolved problems. The source of magma in these areas has not yet been agreed upon, and the heating mechanism is also in dispute. What Dr. Hsui and co-workers are trying to do is to carry out theoretical calculations to determine the necessary physical conditions for magma generation in these environments.

(2) Evolution of planetary objects: Until the successful Voyager mission last year, we were content that the Earth is the only geologically active body within our solar system. Voyager I changed this concept suddenly and drastically. To our fascination and excitement, we found volcanic eruptions on Io--one of the Galilean satellites of Jupiter. It turns out that volcanism on Io is even more active and more intense than that observed on Earth. Io is not the only surprise that we found. Other Galilean satellites also show surface features that have not yet been observed on any other objects. Therefore, it is of great interest to study the evolution of these satellites to understand the causes of these strange features.

(3) Thermal evolution of sedimentary basins: Besides being scientifically interesting, this study can also lead to direct economic application to oil and gas exploration. The idea of this project is simple. It is an attempt, based on the present-day geophysical data, to reconstruct in detail an evolution history of a sedimentary basin. Once we determine the thermal and pressure conditions of a basin as a function of time and utilizing appropriate petroleum windows, we can predict the likelihood of petroleum generation of the basin.

#### W. Hilton Johnson, Associate Professor

Dr. Johnson directed the Wyoming Field Camp last summer. After field camp he spent a week in the Canadian Arctic visiting graduate student Rod Klassen in his field area. It was a memorable trip as Klassen is working on the Quaternary geology of Bylot Island, located off the northernmost coast of Baffin Island. Over half of the island is still covered by ice. Travel by helicopter over the glaciers and the surrounding tundra landscape was a tremendous experience. Klassen's work is being supported by the Geological Survey of Canada and Hilt was a guest of the Survey in Klassen's camp.

During the fall semester, Dr. Johnson joined with new adjunct staff members Jim King of the Illinois State Museum and Leon Follmer of the Illinois Geological Survey in offering a graduate seminar in Quaternary geology. The presence of King and Follmer on the staff greatly enhances our programs related to the study of the Quaternary. Several graduate students, with support from the Illinois Survey, are currently involved with theses dealing with stratigraphic problems of the Illinoian. Other areas of student research concern the sedimentology and stratigraphy of a slack-water lake in southern Illinois and a sedimentologic study of Precambrian rhythmic sediments (varves) in the British Isles (in cooperation with Dennis Wood). Dr. Johnson continues his study of several relict landforms of probable periglacial origin in Illinois.

Dr. Johnson attended the annual GSA meeting at San Diego; the Midwest AGU meeting in Columbus, Ohio; the North-Central GSA meeting at Bloomington, Indiana; and the Midwest Friends of the Pleistocene Field Conference in Burlington, Iowa. As a member of the Quaternary Advisory

Group for revision of the American Stratigraphic Code, he attended several meetings as the group worked to complete its report to the Code Committee. Later this summer, Dr. Johnson plans to attend the American Quaternary Association meeting in Maine.

#### James E. King, Adjunct Associate Professor

In addition to fulfilling his normal duties as a curator and head of scientific sections at the Illinois State Museum, Springfield, Dr. King has been working on several aspects of Quaternary palynology in Illinois and the adjacent Midwest. A major piece of research on the development of the Late Quaternary vegetation of Illinois, particularly the history of the Prairie Peninsula, was completed and is now in press in Ecology.

Research continues on understanding Altonian and Farmdalian environments and vegetation in central Illinois in conjunction with Dr. W. Hilton Johnson. Dr. King is also doing palynological work at the Sangamonian/Wisconsinan section, exposed in a stone quarry near Athens, Illinois. This work is being done with Dr. Leon Follmer.

#### R. James Kirkpatrick, Assistant Professor

During the past year, Dr. Kirkpatrick worked on many projects including: (1) NSF-supported research on the processes of nucleation and growth crystals in igneous rocks; (2) studying crystallization kinetics in the system  $MgO-SiO_2$  with visiting research associate, Dr. Ithamar Pelly; (3) began experiments studying the rate controlling process for crystal growth of plagioclase feldspars; and (4) continued work on the Iceland Research Drilling Project samples and presented two papers at the IRDP symposium in Reykjavik, Iceland. In addition to these, Dr. Kirkpatrick presented a paper at the GSA annual meeting in San Diego and gave an invited lecture at the Gordon Research Conference on inorganic geochemistry.

#### George deVries Klein, Professor

Dr. Klein spent this past year as a CIC Visiting Exchange Professor at the University of Chicago. He completed the final revision of the second edition of "Sandstone Depositional Models for Exploration for Fossil Fuels" which will be published by Burgess in the fall. He also polished off the last synthesis chapters and other editorial duties of the Leg 58 volume of the Deep Sea Drilling Project. During April and May 1980, Dr. Klein went to Korea to start a project on the dynamics of sedimentation of subtidal, tide-dominated sand bodies in the Yellow Sea, the only Holocene analog of an epicontinental sea such as presumably covered Illinois and the upper Midwest in the Paleozoic. Results of this research are to be presented at the fall meeting of the American Geophysical Union.

During the first half of 1980, Dr. Klein was the recipient of three awards. They are election to Fellowship in the American Association of Advancement of Science, listing in Who's Who in the Middle West for 1980-81, and the Erasmus Haworth Distinguished Alumni Award of the Geology Department of the University of Kansas (where Dr. Klein received a master's degree in 1957).

Dr. Klein continues to serve the profession on a variety of committees and panels. This year he continued as associate editor, Geological Society of America Bulletin; as chief advisory editor for geology for Burgess Publishing Company; as consulting editor for the McGraw-Hill

Encyclopedia of Science and Yearbook; as chairman of the Committee on Long-Range Plans for the Panel on Sedimentary Petrology and Physical Properties of JOI, Inc.; as chairman of the SEPM Committee on Committees; and as a member of the DSDP Panel on Sedimentary Petrology and Physical Properties; and the SEPM Committee on Professional Relations. In addition, Dr. Klein has served this past year as a continuing education lecturer for the Society of Exploration Geophysics. In short, a busy year is coming to a close, and another busy year is ahead.

#### Ralph L. Langenheim, Jr., Professor

Dr. Ralph L. Langenheim completed a busy year. He was recently elected president of the Illinois Geological Society for 1980-81, after serving as vice-president and as secretary-treasurer during 1979-80 and 1978-79, respectively. Dr. Langenheim was appointed corresponding editor for Newsletters on Stratigraphy Spring 1980, and has been active as corresponding member of the IUGS Subcommittee on Carboniferous Stratigraphy and as member of the AAPG Committee on Stratigraphic Correlations.

Dr. Langenheim finished service as treasurer for the International Association for the Study of Fossil Cnidaria, publishers of the Cnidaria Newsletter, and was heavily involved in the Ninth International Congress of Carboniferous Stratigraphy and Geology (serving on the Student Personnel Subcommittee of the local Organizing Committee; co-authoring two papers presented at the Congress; co-authoring the chapter on Nevada for USGS Professional Paper 1110, "Carboniferous Systems in the United States;" and contributing to the guidebook and leadership of the post-Congress field trip to the Grand Canyon area).

In addition to maintaining his usual teaching and research, Dr. Langenheim has devoted considerable effort to organizing a graduate course in Coal Stratigraphy and an introductory course in the Geology of Energy. Both of these courses, and student research in the same general area, have been developed in the past few years--since the last Newsletter--and probably will continue to expand.

After three years summer work with the University of Kentucky Geology Field Camp at Crested Butte, Colorado, Dr. Langenheim has returned to the University of Illinois Sheridan Camp for the 1980 season.

#### C. John Mann, Associate Professor

Dr. Mann has been busy with the normal yearly activities of teaching courses in General Geology II, Stratigraphy and Late Cenozoic Geology, and advising graduate students. Two doctorate students finished and a new master's student started field work in Ecuador. Six papers and abstracts were published and five different papers were presented at Halifax, Morgantown, Syracuse, and Paris during the year. During the spring semester, Ellen Abell assisted Dr. Mann in assembling and editing a Directory of North American Geoscientists engaged in Mathematics, Statistics, and Computer Applications which was published by the Mathematical Geologists of the United States.

Presently Drs. Langenheim and Mann are engaged in preparing a field trip guide for the North-Central SEPM annual fall field meeting. The trip will study basal Pennsylvanian strata south, east, and west of Danville in late September.

Alberto S. Nieto, Assistant Professor

Dr. Nieto has continued the study of modes of mining-induced subsidence. One doctoral dissertation (S. Hunt) and two master's theses (D. Stump and W. Wildanger) have been completed on this subject. Dr. Nieto is nearing the completion of a finite-element study on the stress distribution in direct shear testing. In October 1979, Dr. Nieto was invited to deliver a paper on the geotechnics of mining at the Tenth Ohio River Valley Soils Conference. In December 1979, he participated as a panel member (USA) at the main session on Rock and Soil Mechanics Problems in Mining at the Sixth Panamerican Conference in Soil Mechanics and Foundation Engineering in Lima.

Last spring, Dr. Nieto did field work in Kentucky in connection with the development of a karstic model for carbonate-rich outwash deposits. He has organized and is the technical advisor of the UIUC student chapter of the American Association of Engineering Geologists. Dr. Nieto continues his involvement, on a limited basis, with consulting boards for federal and industrial organizations.

V. Victor Palciauskas, Associate Professor

During the past few years, V. V. Palciauskas has continued his research on the high pressure and temperature properties of materials and the application of transport equations in modeling various geophysical processes. This work has led to several publications on the melting of minerals at high pressure, the thermal state of the earth's interior and to two recently published papers (with P. A. Domenico) on microfracture development in compacting sediments.

Present research has been oriented towards a theoretical description of the response of porous media to various conditions of thermal loading such as might be encountered due to burial, an igneous intrusion or near a radioactive waste disposal site. These model studies will consider the various thermally induced mineral transformations and the evolution of the pore fluid pressure and state of stress of the system. In the preceding years, Dr. Palciauskas has presented papers at the annual meetings of the American Geophysical Society, the American Physical Society and at the Assembly of the International Association of Seismology and Physics of the Earth's Interior.

Philip A. Sandberg, Professor

Dr. Sandberg is continuing his studies of diagenesis of skeletal and non-skeletal carbonates and of the genesis of ooids. He was awarded the 1975 SEPM Award for the Best Paper in the Journal of Paleontology for a paper entitled: "Bryozoan Diagenesis-bearing on the Nature of the Original Mineralogy of Rugose Corals." Supported by the National Science Foundation and the Petroleum Research Fund of the American Chemical Society, he and Dr. Thomas Anderson have begun a joint project investigating the textural properties and isotopic and elemental composition of individual constituents of limestones. The study seeks to differentiate original depositional and subsequent diagenetic effects on the present state of those constituents.

During the 1980 Intersession, Dr. Sandberg led a group of 11 students on a field course (Modern Marine Carbonate Environments) in Florida. At the June meeting of SEPM in Denver, he assumed the office and responsibilities of vice-president of that society.

Harold W. Scott, Professor Emeritus

Dr. and Mrs. Scott took an interesting trip through Poland, Hungary, Austria and Czechoslovakia in September and October. The salt mines of Krakow, Poland, were the highlight of the trip. In addition, the Scotts spent some time in Ohio, Wisconsin, the southeast coastal zone and Guatamala. Most of Dr. Scott's time has been spent in writing on energy problems and lecturing on that topic to audiences in universities and civic clubs over most of the country. Writing has included a book manuscript on the history and current status of world energy.

Dr. and Mrs. Scott would like to take this opportunity to extend greetings to a host of former students. They are aware of your progress and "enjoyed hearing of the promotion of one of you to the presidency of your company this last year."

Jack A. Simon, Adjunct Professor

For several years, Mr. Simon's principal activities have related to directing (as chief) about 200 research and support staff at the Illinois State Geological Survey (ISGS) and dealing with a broad spectrum of related problems. The ISGS was co-host with the UI for the Ninth International Congress of Carboniferous Stratigraphy and Geology held May 1979 in Urbana. Mr. Simon was the local chairman for this Congress.

During the year, Mr. Simon has served on the Council of GSA and the Executive Committee, and as chairman of the Budget Committee. He was elected vice president of Section E (Geology and Geography) of the AAAS and served on a number of committees with AAPG, AIPG, the Illinois Energy Resources Commission, Illinois Mining Institute, and the American Association of State Geologists. In University affairs, Mr. Simon is a member of the Executive Committee of the Water Resources Center and the Executive Committee of the Institute of Mining and Mineral Resources Research, Southern Illinois University at Carbondale. He also served on the Tykociner Lecture Committee at the Urbana campus.

In addition to his regular responsibilities and committee assignments, Mr. Simon served on the Federal Coal Rights Advisory Committee of the Congressional Office of Technology Assessment, the Geosciences Advisory Panel at Los Alamos Scientific Laboratory and on the NAS-NRC Committee on Disposal of Excess Spoils, and completed preparations for celebrating the 75th Anniversary of the Illinois State Geological Survey in 1980.

George W. White, Research Professor Emeritus

Dr. White continues to be as busy as ever. He has completed several publications including: (1) "Glacial Geology of Ashtabula County, Ohio" (with accompanying large color maps), Report of Investigations 112, published by the Ohio Geological Survey and co-authored with Dr. Stanley Totten (PhD, 1962) of Hanover College. (2) "Extent of Till Sheets and Ice Margins in Northeastern Ohio," Geologic Note No. 6, Ohio Geological Survey. The latter is a series of maps with text which is actually a part of a monograph on the glacial geology of northeastern Ohio (now being edited). The monograph is the result of work on Ohio done by Dr. White and his associates--particularly Dr. Totten--over the past 30 plus years. Three additional county bulletins and maps are currently in press or being edited.

Dr. White had the privilege of presenting Dr. Patrick Domenico and Dr. John Sharp (PhD, 1974) for the O. E. Meinzer Award at the GSA Hydrogeology Divisional meeting in San Diego last November. In addition, in

honor of the US Geological Survey's Centennial celebration, the Geological Society of America arranged a program, including a symposium on G. K. Gilbert's work, at the San Diego meeting. Dr. White presented a paper on Gilbert's work on glacial geology. The volume of papers is now in press as GSA Special Paper 183.

Dr. White presented a paper on "Andrew Ellicott's Geological Observations in the Mississippi Valley and Around Florida in 1796-1800" at a symposium on "Geology in the Antebellum South" at the Southeastern Section of the GSA in March 1980, in Birmingham, Alabama. The papers will be published as a volume by the University of Alabama Press.

In early June, Dr. and Mrs. White were at the University of New Hampshire as special guests for the 50th Reunion of the Class of 1930. Dr. White joined the staff of UNH in 1926, the year the 1930 class entered and has kept in contact through the years with members of that class. Dr. and Mrs. White were made honorary members of the Class of 1930. The class presented an anniversary gift of \$202,000 to UNH for scholarships. (Dr. White was already an honorary alumnus of UNH, having received an honorary ScD in 1951.)

#### CIC Visiting Exchange Professorship

The CIC (Committee for Institutional Cooperation) consists of the University of Chicago and the Big Ten Universities, and over the years has fostered several interinstitutional cooperative efforts. The best known ones include student exchanges (with tuition exchange rebates), the CIC Geology field camp at Park City, Utah (Wisconsin, Minnesota, Iowa), and some joint activities in marine sciences with the University of Miami.

In 1975, the CIC Deans of Liberal Arts and Sciences established a system of faculty exchanges, making it possible for faculty from one member institution to serve as a visiting professor at another member institution. Exchanges are not directly reciprocal (i.e., a French professor from Michigan may go for the year to Iowa, which in turn sends a physics professor to Northwestern, which in turn sends a biologist to Michigan, and so on). Thus, the exchanges are not one for one.

During the 1979-80 academic year, Dr. George deVries Klein served as a Visiting CIC Exchange Professor of Geophysical Sciences at the University of Chicago. While there, he taught two courses jointly and one solo. Joint courses included "Sedimentary Rocks" (with R. C. Aller and A. M. Ziegler), and "Field Seminar in Ancient Sediment Environments" (with A. M. Ziegler) which included seminar reports on the geology of the Ozarks and the Ouachitas, followed by a two-week field trip to those areas (a trip jointly led by Drs. Klein and Ziegler). In addition, Dr. Klein taught a quarter course in sedimentology. He also completed a book manuscript, several papers, and because he only taught during two out of the three academic year quarters (as is traditional at Chicago), he was able to undertake a field research program in Korea in April and early May. In addition, it brought him in contact with people working in areas such as crustal geophysics, paleogeography, geochemistry, atmospheric sciences and petrology. Lastly, it enabled Dr. Klein to enjoy a reunion with his "urban roots" after ten and a half years in the corn and soybean fields of east-central Illinois.

### 1979 Meinzer Award

The 1979 O. E. Meinzer Award for the Geological Society of America was given to a faculty member and an alumnus of the University. The award was presented to Drs. Patrick A. Domenico (UIUC) and John M. Sharp, Jr. (University of Missouri) on November 6, 1979, at the GSA's annual meeting in San Diego. Dr. Sharp did his graduate research with Dr. Domenico, receiving the PhD degree from Illinois in 1974.

The award "to the author or authors of a published paper of distinction advancing the science of hydrogeology" was given to Drs. Domenico and Sharp in recognition of their article "Energy Transportation in Thick Sequences of Compacting Sediment." The article, discussing pressures and temperatures in deeply buried strata in the Gulf of Mexico (factors which are related to the origin of oil), appeared in the March 1976 GSA Bulletin.

Of the 21 persons selected for the Meinzer Award since 1965, eight have been connected with the University of Illinois: two as faculty members, four as graduate students, and two as undergraduates.

### Two Books Recently Published

Bentonite, Geology, Mineralogy, Properties and Uses  
(Elsevier Scientific Publishing Company, 256 p., 1978)

Dr. Grim, with Dr. Güven of Texas Tech University, published this book, which describes the mode of occurrence of substantially all of the major bentonite deposits throughout the world. Much of the information was obtained by Dr. Grim on personal visits to the deposits. The origin of the Bentonites by in situ alteration of volcanic ash and other igneous materials is also described. The properties of bentonites and their commercial use in oil well drilling muds, foundry molding sands, decolorizing and catalytic agents, etc., is considered in some detail.

The mineral composition using selected area x-ray diffraction and morphology of the clay mineral components as revealed by electron microscopy is described for all of the major bentonite deposits. A special chapter for which Dr. Güven (formerly a member of the Geology Department) was solely responsible is devoted to "Selection Area Electron Diffraction Studies on Muscovite, Beidellite, and Montmorillonite."

Essays on History of Geology

This is a collection of 25 essays written over the past 25 years by Dr. George White, and was published by Arno Press in 1978.

Although Dr. White's professional field, and that of his students, has been in economic glacial geology, an interest in the history of geology was also developed while he was a graduate student at Ohio State University. According to Dr. White, "The present is an exciting time for history of geology, which is a field in which geologists and historians can assist each other."

DEPARTMENTAL NEWSColloquium Program

During the 1978-79 and 1979-80 academic years we continued the tradition of having many distinguished and stimulating speakers for our Colloquium Program. Our thanks go to the various members of the department who suggested speakers. Special thanks go to Drs. George Klein (who served as the 1978-79 colloquium coordinator), and to Dennis Wood and Jim Kirkpatrick (colloquium coordinators for the Fall and Spring Semesters, 1979-80, respectively). Their efforts have made this program successful.

1978-79 Colloquium Program

- September 15: MS. JEAN KULLA (PhD candidate), "Experimental Oxygen Isotope Fractionation between Kaolinite and Water." [Ms. Kulla has since received the PhD degree and is a research geologist with Exxon Production and Research Company in Houston, Texas.]
- September 22: DR. ROBERT C. REYNOLDS, JR. (Department of Earth Sciences, Dartmouth College), "Alpine Chemical Weathering." [Dr. Reynolds was the Ralph E. Grim Lecturer.]
- September 29: DR. R. JAMES KIRKPATRICK (faculty member), "Leg 55 Deep Sea Drilling Project: Testing of the Hot-Spot Theory in the Hawaii-Emperor Seamount Chain."
- October 6: DR. WILLIAM BACK (US Geological Survey, Reston, Virginia), "Environmental Problems Related to Chemistry of Groundwater in Limestone Areas." [Dr. Back (BS, 1948) was the 1978 Birdsall Distinguished Lecturer in Hydrogeology.]
- October 13: DR. HERMAN E. ROBERSON (Department of Geology, State University of New York at Binghamton), "Montmorillonite-Illite Transformation Rate: Effects of Solution Chemistry."
- October 20: DR. HANI N. KHOURY (PhD candidate), "Mineralogy and Chemistry of Some Unusual Clay Deposits in the Amargosa Desert, Southern Nevada." [Mr. Khoury received the PhD degree in January 1979.]
- October 27: DR. HSUEH-WEN YEH (Department of Oceanography, University of Hawaii at Manoa), "Stable Isotopes of Silicon in Meteorites and Terrestrial Materials."
- November 3: DR. ROBERT L. BRENNER (Department of Geology, University of Iowa), "Process-Response Models for Ancient Epicontinental Seaway Depositional Systems."
- November 10: DR. RODEY BATIZA (Department of Earth and Planetary Sciences, Washington University-St. Louis), "Geology/Geochemistry of the East Pacific Rise at 8°N."
- December 8: DR. JAMES L. KING (Illinois State Museum, Springfield), "Late Quaternary Vegetational Development of Illinois."



- February 2: DR. GEORGE W. WHITE (Research Professor Emeritus), "Foundations of American Geology." [This talk was the annual George Sarton Memorial Lecture at the 1979 AAAS meeting in Houston.]
- February 9: DR. CHARLES W. BYERS (Department of Geology and Geophysics, University of Wisconsin at Madison), "The Early Cretaceous Mowry Seaway of the Western Interior."
- February 16: DR. GORDON S. FRASER (Department of Geology, Indiana University, and Indiana State Geological Survey), "Role of Transgressions in Forming Stratigraphic Sequences."
- February 23: DR. ARTHUR A. MEYERHOFF (consulting petroleum geologist, Tulsa, Oklahoma), "Tests of Plate Tectonics."
- March 2: DR. ROSCOE G. JACKSON, II (Northwestern University), "Some Problems in the Flood Dynamics and Energetics of Sedimentation."
- March 9: MR. TED KOELSCH (PhD candidate), "Acoustic Emission Study of the Deformation Mechanisms in Marble." [Mr. Koelsch received the PhD degree in May 1979 and is research geologist with Exxon Production and Research Company in Houston, Texas.]
- March 30: DR. A. T. CROSS (Department of Geology, Michigan State University and Visiting Scientist, Illinois State Geological Survey), "Environment of Coal Deposition in the Colorado Plateau."
- April 6: DR. ERIC J. ESSENE (Department of Geology and Mineralogy, University of Michigan), "Grenville Metamorphism in the Adirondacks."
- April 9: DR. D. NAHON (Laboratoire de Petrologie de Surface, Universite de Poitiers, France), "Calcareous Crusts (Calcretes) in West Africa: Morphology, Petrography, and Mineralogy."
- April 10: DR. D. NAHON, "Iron Crusts (Ferricretes) on Sandstones in Western Senegal: Petrographic Evolution."
- April 13: DR. ROSSMAN GIESE (Department of Geological Sciences, State University of New York at Buffalo), "Structure, Bonding and Properties of Phyllosilicates." [Dr. Giese was a Ralph E. Grim Lecturer.]
- April 20: DR. JOHN S. SCHLEE (Branch of Marine Geology, US Geological Survey), "Structure, Stratigraphy and Development of Western North Atlantic Continental Margin." [This was a US Geological Survey Centenary Lecture.]
- April 25: CHRISTOPHER MAURER (Department of Ceramic Engineering, UIUC), "ESR (Electron Spin Resonance) Spectroscopy: Dating and Other Geological Applications."
- April 27: DR. ROBERT H. DOTT, JR. (Department of Geology and Geophysics, University of Wisconsin at Madison), "Plate Tectonics and Sedimentation of the Southeast Andes and South Georgia."

- April 30: DR. R. S. DIETZ (Department of Geology, Arizona State University), "Sun, Sand and Sahara: Search for Impact Structures in Algeria."
- May 1: DR. ALBERT T. HSUI (Department of Earth and Planetary Sciences, Massachusetts Institute of Technology), "The Thermal Structure in the Plate Subduction Area." [Dr. Hsui is now a faculty member in this department.]
- May 3: DR. C. PRASADA RAO (Department of Geology, University of Tasmania, Hobart, Tasmania, Australia), "Ancient Cold Water Carbonates."
- May 4: DR. TIMOTHY HOPWOOD (George A. Miller Visiting Professor in Economic Geology), "Future Supplies of Mineral Resources: Saudi Arabia." [Dr. Hopwood is a consulting geologist from Australia.]

#### 1979-80 Colloquium Program

- September 21: DR. DENNIS S. WOOD (faculty member), "The Heroic Age of Geology and the Industrial Revolution."
- September 28: DR. THOMAS M. SCHOPF (Department of Geophysical Sciences, University of Chicago), "Permo-Triassic Extinctions."
- October 12: DR. JOHN HOWER (department head), "Laramide Thrusting in the Disturbed Belt of Montana: Subthrust Metamorphism and Radiometric Dating of Structural Movement."
- October 19: DR. COLIN THORN (Department of Geography, UIUC), "Geomorphic Processes on the Alpine Tundra, Colorado Front Range."
- October 26: DR. THOMAS F. ANDERSON (faculty member), "Oxygen Isotope Evidence for the Low-Temperature Alteration of Oceanic Basalts."
- November 16: DR. James C. Briden (Geophysics, University of Leeds, England), "Precambrian Paleomagnetism: Cratons and Mobile Belts."
- December 4: DR. WILFORD WEEKS (US Army Cold Regions Research Laboratory, Dartmouth, New Hampshire), "Structural and Statistical Properties of Sea Ice."
- December 7: DR. KEENE SWETT (University of Iowa), "The Cambro-Ordovician Succession in Northeastern Spitsbergen and its Bearing on Proto-Atlantic Sedimentation and Tectonics."
- December 14: DR. MARK CLOOS (University of California at Los Angeles), "Recent Work on the Melanges and Metamorphism of the Franciscan of California."
- February 8: DR. NICHOLAS RAST (University of Kentucky), "The Avalon Continent and the Early History of the North Atlantic Region."
- February 20: DR. DAVID WALKER (Department of Geological Sciences, Harvard University), "Magma Mixing and the Origin of Mid-Ocean Ridge Basalts."

- February 22: DR. A. T. ANDERSON (Department of Geophysical Sciences, University of Chicago), "Hornblende Andesites and Continental Crust."
- February 29: DR. GRAHAM THOMPSON (Department of Geology, University of Montana), "Tertiary Climates of the Western United States."
- March 7: DR. NORMAN SMITH (Department of Geology, University of Illinois, Chicago Circle), "Sedimentological Controls of Gold and Uranium Deposition in the Witwatersrand System, South Africa."
- March 14: DR. ROBERT McCALLISTER (Department of Geosciences, Purdue University, "Pyroxene Exsolution, Intrusion of Kimberlites, and Exploration for Diamonds."
- April 11: DR. MARTIN FLOWER (University of Illinois, Chicago Circle), "Processes at Constructive Plate Margins - Evidence from Deep Sea Drilling."
- April 28: DR. BRUCE H. WILKINSON (University of Michigan, Ann Arbor), "Facies Compositions and Distributions in Temperate Region Marl Lake Systems."
- April 29: DR. K. C. LOHMAN (University of Michigan, Ann Arbor), "Diagenesis of Metastable Carbonate Cements."
- May 2: DR. HEINZ DAMBERGER (Head, Coal Section, Illinois State Geological Survey), "Reflections on Significant Advances in Pennsylvanian Geology in Illinois during the 1970's."

#### Geology Summer Field Camp, Wyoming

The department continues to run the field camp out of the facilities of Sheridan College at Sheridan, Wyoming. Hilt Johnson has directed the camp for the past four summers and Ralph Langenheim directed the camp this summer. Sheridan College has increased its facilities and we now use classrooms and work areas in a new Technical Center Building. Ranchers in the area and the local townspeople continue to cooperate and welcome our group to the area each summer.

The field camp program has undergone some change, mainly in an attempt to economize for the benefit of both students and the department. The length of the program has been shortened a few days and the size of the camp reduced in an effort to hold the line on costs. Although this has caused some modification of the academic program, these have been minor and all significant aspects of the field training have been retained. We have continued to stress and increase the amount of individual field work to the extent possible.

Another change has been in the proportion of Illinois students to non-Illinois students. With the increased enrollment of undergraduates within the department, the field camp enrollment has evolved to the point where it is almost all Illinois students. This is one development the department regrets because we have always felt a mix of students from several schools at field camp was good for the program, our students, and the department. In the past four years we have had students from Southern Methodist University, St. Joseph College, Franklin and

Marshall College, University of Michigan, Oberlin College, Augustana College, Knox College, Rutgers University, Harvard University, Bradley University, California State College at Sonoma, College of Wooster, Wellesley College, Washington University in St. Louis, Brown University, Bryn Mawr College, University of Northern Colorado, Cornell University, Carleton College, Lawrence University, Virginia Institute of Technology, DePauw University, and Denison University.

Other staff members who have served on the staff in recent years include Dave Anderson, Denny Eberl, Ron Kern (PhD, 1977), and George Klein. Recent graduate students serving on the staff have included Mark Reinbold (MS, 1977), Steve Tissue (MS, 1977), Bob Babb (PhD candidate), Jim Miller (BS, 1978), and Pius Weibel (PhD candidate). In addition, John Palmquist of Lawrence University has served on the staff the past five years. This year, in addition to Langenheim, Palmquist, Babb and Weibel, Dave Bieler (PhD candidate) and Rich Kent (undergraduate major) served on the staff.

### Gifts

Both the department and the University as a whole continue to face serious budget pressures each fiscal year and the prospect is dim for any significant relief in the near future. There has been, however, a continued growth in the research funding obtained through foundations and other federal agencies. In FY80, for instance, the Geology Department received more than double the amount of research funding typically received in the last few years, and five times that received in FY76. Several of these recent awards were used to acquire major items of research equipment which are discussed elsewhere in this Newsletter. The success of our faculty in obtaining outside support for their research projects is an important factor in the department's ability to maintain quality research programs.

In recent years the department has benefited from unrestricted gifts received from Atlantic Richfield Company, Exxon Foundation, Marathon Oil Company, Mobil Oil Company, and several individual contributions from alumni. In particular, we continue to receive an annual gift of \$1,000 from someone who wishes to be identified only as a "Friend of the Department." These unrestricted gifts are very important to the department because of the flexibility which they provide in the support of activities/projects for which funding would normally be unavailable.

The Shell Companies Foundation, through its Shell Graduate Aids program has continued to be a major source of support for various graduate programs. These funds are intended for the unrestricted use of the department for graduate-level programs and specifically for those activities for which routinely state-appropriated funds are not available. Typically these funds are used to support the thesis research of a few of our graduate students and also provide the financial support of our weekly department colloquium. We are indeed grateful for Shell's continued support and especially for their recent 50-percent increase in the amount of the award.

The Department of Geology sincerely appreciates the support provided by the various agencies, foundations, individuals and other organizations. Their generous support ensures the continued excellence and quality of our programs. Below is a listing of individuals and agencies providing

support for the departmental programs (which includes sources of grants in support of research):

Allen F. Agnew  
 American Association of Petroleum Geologists  
 American Chemical Society, Petroleum Research Fund  
 Atlantic Richfield Company  
 Exxon Foundation  
 "Friend of the Department"  
 Geological Society of America  
 Illinois Mining and Mineral Research Institute  
 Suzanne M. Kay  
 Marathon Oil Company  
 Mobil Oil Company  
 National Science Foundation  
 PETROBRAS  
 Shell Companies Foundation  
 Sigma Xi  
 Richard J. Trefz  
 US Army Cold Regions Research Engineering Lab  
 US Army Research Office  
 US Department of Interior, Bureau of Mines  
 US Geological Survey  
 Virgil D. Winkler

#### Ralph E. Grim Lecture Series

The Ralph E. Grim Lecture Series is supported by a speakers fund which was established at the University of Illinois by the former students of Dr. Ralph E. Grim upon his retirement. The fund is used to bring outstanding clay scientists to the Urbana campus to lecture about clays and related subjects, and to meet informally with faculty and students.

Dr. Robert C. Reynolds, Jr., professor in the Department of Earth Sciences, Dartmouth College, was the first Ralph Grim Lecturer. (See photo on the inside of the back cover.) Dr. Reynolds came to the University for the week of September 18, 1978. His lecturers included "Computer Modeling of X-ray Diffraction Patterns of Clays," "Matrix Correction in X-ray Fluorescence Analysis by Compton Scattering," "Calcite Precipitation Kinetics and Polyphenol Inhibition," and "Problems in Clay Mineralogy." Dr. Haydn Murray, chairman of the Department of Geology at Indiana University and former Grim student, was present at the final lecture, as was Dr. Grim. Dr. Murray presented Dr. Grim with an x-ray film reader "of an early design" that was used in the good old days.

Dr. Rossman F. Giese, associate professor in the Department of Geological Sciences, State University of New York at Buffalo, was the second Grim Lecturer. He came the week of April 9, 1979, and offered a mini-course on "Electrostatic Calculations for Minerals." His talks were entitled "Bonding Energy Calculations in Mineralogy, Electrostatic Energy Calculations for Minerals," "Computer Programs for Calculating Lattice Energies," and "Applications of Electrostatic Calculations to Phyllosilicates." His computer program was put into the Illinois computer and debugged before his visit so that Dr. Giese's methods of calculation could be practiced during the course.

An International Congress Held in Urbana-Champaign

For the first time in its history, the International Congress of Carboniferous Stratigraphy and Geology held its sessions in the United States (May 18-June 2, 1979). At the Closing Plenary session of the Eighth Congress in Moscow in 1975, the US National Committee on Geology extended an invitation to host the Ninth International Congress in the United States in 1979 as part of the celebration of the centennial year of the US Geological Survey. The invitation was accepted, and IX-ICC, as the Ninth Congress was to be called, became the first scheduled event of the Survey's Centennial. Throughout the 44 months between the Eighth and Ninth Congresses, the Survey provided extensive support for IX-ICC.

The University of Illinois at Urbana-Champaign and the Illinois State Geological Survey were selected to serve as co-hosts for the technical sessions of IX-ICC, with the Opening Plenary session scheduled for Washington, DC, prior to the technical sessions. The technical sessions were held May 19-26, with most Congress members arriving in Urbana on Sunday (May 20) of graduation and occupying dormitory space just vacated by departing seniors.

Much of the activity, including registration, was concentrated in the Illini Union. Technical sessions were held in the Union as well as classrooms and lecture halls in surrounding buildings. In all, 79 technical sessions were held on campus, and 525 abstracts published. Session arrangements consisted of three major symposia in the mornings and numerous, smaller, specialized symposia in the afternoon. The final technical session was a lecture on the Carboniferous geology of China presented on Friday night by Yang Shih-fu, one of the Congress members from the People's Republic of China. The Closing Plenary session on Saturday morning was held in Smith Music Hall; there, the Congress voted to accept the invitation to hold the Tenth Congress in Spain.

Supporting the technical presentations were a film theater, poster sessions and commercial displays, all in the Illini Union. A daily newsletter, the Cyclothem, was issued. A copy of the new US Geological Survey Professional Paper 1110a, "The Mississippian and Pennsylvanian (Carboniferous) Systems in the United States," was provided to each member as a part of the registration package.

Evening activities were varied. An informal reception was held Sunday night; a barbecue picnic, with dancing and country music, took place Monday night in Illini Grove; Tuesday evening, members saw a performance of Kabuki Theater at the Krannert Center for the Performing Arts; Wednesday was open, but there were parties and discussion sessions all over town; a formal reception and buffet was held in and around the Levis Faculty Center on Thursday night. The program for accompanying members consisted of short courses and lectures. Although organizers feared rain or heat, the weather was unusually cool--inconvenient for outdoor activities at night, but ideal for comfort during the technical sessions.

Many Congress participants also took advantage of the 12 longer field excursions and the seven shorter trips organized by geologists from many institutions. The six major excursions held prior to the technical sessions in Urbana emphasized Carboniferous geology in the eastern and east-central part of the United States and covered much of the Appalachian region and areas to the west. Excursions after the sessions stressed the Carboniferous geology of the central and western United States. The longer trips included studies of the Pennsylvanian Stratotype and the type

Mississippian, as well as a visit to the Grand Canyon and surrounding areas. Shorter trips originated in Urbana and other parts of Illinois and provided opportunities to study the Carboniferous of the Middle West. These trips included visits to both surface and subsurface coal mines as well as a trip to the sites of the famous Maxon Creek viota.

Many groups, individuals and organizations contributed to the success of IX-ICC. Mailing lists and publicity were provided by a number of professional organizations, whereas the Field Museum in Chicago, the Illinois State Museum in Springfield and Southern Illinois University all provided varied support, and the University of Illinois Office of Conferences and Institutes handled housing, registration and many other arrangements.

Faculty members from the Department of Geology at the University were involved in a variety of ways, from presenting papers and organizing technical sessions and field trips to organization of work for the Urbana-Champaign portions of the Congress. Graduate and undergraduate students from the department, aided by a contingent from Southern Illinois, worked as projectionists and did other chores for the Congress. The students not only saw to it that the standard equipment, such as screens and projectors, were where they were needed when needed, but they also proved to be excellent trouble-shooters, finding extension cords or lecturn lights on brief notice, and insuring that the core of any scientific meeting, the technical sessions, ran smoothly. Without exception, the students did a fine job, but perhaps the most impressive performance was that of Ibrahima Diaby (MS candidate) who, with no preparation, was called upon to sight translate a paper from the French language into English.

On June 2, the last field trip delivered its passengers to an airport, thus closing the Congress. The only parallel to IX-ICC in the history of American geology was the 1933 International Geological Congress, so all involved with IX-ICC were pleased and proud that the Congress had proved to be a professionally profitable and personally rewarding experience for the participants.

#### Geology Intersession Field Course

During the interval between Spring and Summer terms 1980, Dr. Philip Sandberg led a group of 11 students on a field course in Florida entitled "Modern Marine Carbonate Environments." The course began with a look at Tertiary sections in West Florida (Tallahassee to Fort Myers). Four days were spent in the Miami area looking at the Miami Oolite and modern environments in Biscayne Bay and the reef tract. Using both large vessels (commercial and from the Rosenstiel School of Marine and Atmospheric Sciences, University of Miami) and small boats, the group spent a week on field studies and coring and sediment collection in a range of environments from the outer reef to the mud banks of the Florida Bay. Insights gained during study of modern carbonates were then applied to interpretation of the limestones which compose the Keys. It is hoped that the course can be re-offered next year.

### Mass Spectrometer for Isotope Geochemistry

A new isotope-ratio mass spectrometer has been added to the isotope geochemistry laboratory in the Department of Geology. This instrument, a MAT Varian 250 system, is equipped with a highly efficient ion source, an ion optical system which provides unusually high dispersion of the ion beams, and two separate ion collector systems in a single analyzer tube. The double collector system is used for hydrogen isotope ratio measurements on H<sub>2</sub> gas. The triple collector system is designed for isotope ratio analysis of carbon, nitrogen, oxygen, and sulfur in low molecular-weight gases. Precise determinations of isotopic ratios on all of the geochemically-important light elements can now be obtained. This facility has led to the development of several new research projects in the department and at the Illinois State Geological Survey.

The introduction of sample gases and the evaluation and print-out of analytical data are controlled by a programmable calculator. The automated features of this instrument provide for rapid and precise measurements, even by relatively inexperienced operators.

This instrument was acquired by grants to Dr. T. F. Anderson and Dr. D. D. Coleman of the Illinois State Geological Survey from the National Science Foundation, the University of Illinois Research Board, and the Office of the Vice-Chancellor for Academic Affairs, as well as by funds from various other units on campus.

### Microprobe Facilities in Geology

The Department of Geology now houses and operates two electron microprobes in cooperation with the Materials Research Laboratory (MRL) and the Center for Electron Microscopy. These electron beam instruments provide accurate elemental analyses by means of x-ray emission spectra from selected points in a polished specimen surface, such as a petrographic section. The volume analyzed is very small, a few cubic microns at most.

Until recently, microprobes have supplied quantitative data only by means of wave-length dispersive x-ray emission, which requires rather high electron beam energies. Among geologic materials, the relative more stable silicates have been most successfully analyzed by that technique. Other materials, such as carbonates and sulfides, which are more susceptible to beam damage, may now be accurately quantitatively analyzed by means of energy dispersive x-ray data acquired with the assistance of an on-line computer.

The computer may also be used for automation of the specimen stage, the data acquisition system and the x-ray goniometers, primarily. Such a computer-based automated system is being added to one of the microprobes (a JEOL JXA-50A). That equipment was acquired with funds generated by grants to Drs. P. A. Sandberg and D. E. Anderson from the National Science Foundation, the University of Illinois Research Board, and the Office of the Vice-Chancellor for Academic Affairs. Additional funds were supplied by various units on campus: College of Engineering, Materials Research Lab, School of Life Sciences, and the Departments of Mining and Metallurgy, Mechanical Engineering, Ceramics, Civil Engineering, and Dairy Science and Agronomy.



### George A. Miller Visiting Professorship

The department has been very fortunate in having distinguished people give lectures and colloquia: a three-week mini-course by Dr. Holland, the Ralph Grim Lectures, the lecture by the 1978 Birdsall Distinguished Lecturer in Hydrogeology, and our speakers for the department colloquium. In addition to these, the department was honored to have Dr. Timothy Hopwood teach Spring Semester 1978-79 as a George A. Miller Visiting Professor. Dr. Hopwood, from Adelaide, Australia, is internationally known for his work in exploration geology.

Dr. Hopwood's activities in the department included presentation, with the collaboration of Dr. R. J. Kirkpatrick, of the mineral deposits course (Geology 443). In that course, Dr. Hopwood lectured on geological environments of ore deposition and structural control of mineralization. In addition, he conferred with and advised thesis students working in areas of structural and economic geology. Dr. Hopwood also presented a number of general seminars for the benefit of students, particularly undergraduate majors not able to participate in the mineral deposits course. A series of lectures on origins of metal ore deposits, political implications of global distribution of metal resources, the economics of metal resources, and aspects of mineral exploration of interest to social geography were also presented by Dr. Hopwood for the general University community.

### Mini-Course by Dr. H. D. Holland

Dr. Holland, professor in the Department of Geological Sciences, Harvard University, was on campus Fall Semester 1978-79 as a visiting professor to present a three-week mini-course in the department on atmosphere-hydrosphere evolution. In addition to the course lectures, Dr. Holland presented four special colloquia during his stay at UIUC. On September 5, 1978: "Geology and the Origin of Life," under the auspices of the Departments of Genetics and Development and Botany; September 7, 1978: "Trace Metals in Black Shales," under the auspices of the Illinois State Geological Survey; September 8, 1978: "Sea Water Cycling Through Mid-Ocean Ridges," under the auspices of our department; and September 14, 1978: "The Effects of Micro-Organisms on Marine Sediments," under the auspices of the Department of Microbiology.

### 75th Anniversary of the Illinois State Geological Survey

This year the Illinois State Geological Survey is celebrating its 75th Anniversary. Among the events planned in its honor are a Symposium on "Perspectives in Geology," to be held in Urbana on October 9-10, 1980, and a combined Department of Geology/Illinois State Geological Survey cocktail party during the national GSA meeting in Atlanta in November.

Speakers at the Symposium will include: Dr. Allen F. Agnew, Senior Specialist for mining and mineral resources, Congressional Research Service, Library of Congress (Non-fuel Minerals); Mr. George H. David, assistant director, Mineral and Water Resources, United States

Geological Survey (Hydrogeology); Dr. John C. Frye, executive director, the Geological Society of America (Geology and Society); Dr. Harold J. Gluskoter, Exxon Production and Research Company (Coal); Professor Heinz A. Lowenstam, Division of Geology and Planetary Sciences, California Institute of Technology (Paleontology); Mr. Richard F. Mast, chief, Branch of Oil and Gas Resources, United States Geological Survey (Oil and Gas); Professor Gordon W. Prescott, Department of Geoscience, Purdue University (Engineering Geology); Professor Raymond Siever, chairman, Geology Department, Harvard University (Geochemistry of Sediments); and Professor Paul A. Witherspoon, University of California (Geology and Technology). The chairmen for the session are: Professor Larry L. Sloss, Department of Geology, Northwestern University, and Professor John Hower, head, Department of Geology, University of Illinois.

#### White Honored for Library Contributions

George W. White, research professor emeritus and former head, was presented a bronze plaque at a luncheon at the Levis Faculty Center on November 16, 1979. The plaque has been installed on the wall just outside the Geology Library and reads, "Dedicated to GEORGE W. WHITE in recognition of over thirty years of inspired leadership in the creation of this GEOLOGY LIBRARY, presented by the Department of Geology, November 16, 1979." Mrs. White, who was sworn to secrecy during the planning stages of this event, was presented with a dozen red roses.

Invited guests included Dr. and Mrs. White, the academic and non-academic staff, current and retired University administrators, Dr. Robert B. Downs (retired director of the University Library), and Harriet E. Wallace (retired geology librarian). Out-of-town guests included Dr. Paul R. Shaffer (long-time staff member) and Mrs. Shaffer, now of Marysville, Ohio; Rosa Nickell (retired senior secretary), now of Brookfield, Missouri; Professor and Mrs. Aurele LaRoque of Ohio State; Mrs. Dorothy Smith (Miss Nickell's successor) and Mr. Smith, now of Mason City, Illinois; and Dr. Stanley Totten of Hanover College, Indiana (long-time friend, associate, and co-author with Dr. White on many publications). Also present was Dr. Lionel Miles of Urbana (long-time friend of the Whites).

LIBRARY NEWSHarriet Wallace Retires

On August 20, 1979, Ms. Harriet E. Wallace retired from her position as geology librarian and professor of library administration in the Geology Library. She had served as geology librarian since 1962, and as professor of library administration since 1977.

Ms. Wallace was born in New York City. She received the BS degree in Geology at Northwestern University. She undertook post-graduate work at the University of California (Berkeley). Ms. Wallace received the MA degree from Columbia University, Teachers College, and the MS degree in Library Science from the University of Illinois. Ms. Wallace's professional experience includes: assistant geologist for General Chemical Division of Allied Chemical and Dye Corporation, instructor in geology at the University of Tennessee (Knoxville), geologist for the Corps of Engineers (Little Rock, Arkansas), assistant geologist at the Illinois State Geological Survey, and geologist with Carl A. Bays and Associates.

Ms. Wallace is a member of many organizations, including the American Library Association, the Association of Geoscientists for International Development, American Association of University Women, Champaign County Genealogical Society, Illinois State Genealogical Society, and the Prairie Gem and Geological Society (serving as secretary in 1979). Ms. Wallace was instrumental in the organization of the Geoscience Information Society and has continued to be an active member (serving as secretary in 1966 and president in 1967).

Ms. Wallace has not lounged around since her retirement. Because of her many varied interests, Ms. Wallace has had a full schedule of work. Included in these interests are sewing and needle work, genealogy, traveling, gardening, among others. Immediately after retiring, she and Daisy (her dog) traveled to the mining areas of northern Ontario. (See photo on the inside of the back cover.)

Status of the Geology Library

The Geology collection continues to grow, despite limited space and budgets. As of June 30, 1980, we have a total of 77,322 volumes including 2,432 serial titles. In addition, there are 1,647 microforms and 33,640 cataloged geologic maps (including 524 map series and 21,870 uncataloged topographic maps).

The Library has undergone a few personnel changes during the past two years. Ms. Harriet E. Wallace retired on August 20, 1979, after 17 years of dedicated service to the geology community. James A. Coombs, who came to the Library on September 11, 1978, as assistant geology librarian on a two-year post-MLS internship, became acting geology librarian upon Ms. Wallace's retirement. Dederick Ward, who has been geology librarian at the University of Colorado, will become the new University of Illinois Geology Librarian on August 21, 1980. Mr. Coombs, who specializes in map librarianship, has accepted a position as map librarian at Southwest Missouri State University starting August 18, 1980.

Reference work continues to be a large and important portion of the work performed by all members of the library staff, and the variety of

questions is infinite. Questions were received by telephone and by mail and answered for individuals and libraries in all parts of the country and in academic, governmental, or industrial organizations, as well as from patrons in the University community.

The University Library activated its automated circulation system (LCS or Library Computer System) during the 1978-79 academic year. Starting in December 1978, monographs were charged out on-line rather than manually, and on-line circulation of serials began in June 1979. Records of maps are also on-line, but until the Library receives an LCS terminal for the map room, maps will continue to be circulated manually. Through LCS it is possible to determine whether a particular volume is held by the library system and in which departmental library it is located.

Circulation of geology library materials through interlibrary loan increased 25 percent last year, due in part to the implementation of the OCLC Interlibrary Loan Subsystem (part of a nation-wide on-line library system). The total on-campus circulation stayed about the same, even though LCS has made access to books much simpler.

The three highest priorities for the future are: (1) improvement of the Library's environmental conditions; (2) acquiring additional space for books and maps; and (3) acquiring a larger staff, especially on the para-professional level.

STUDENT NEWSCurrent Graduate Students

ALTANER, STEPHEN P. - BA, Colgate University  
 BABB, ROBERT F. - BS, Rensselaer Polytechnic Institute  
 BAKUSH, SADEG H. - BS, University of Tripoli; MS, Ohio University  
 BANAEI, JILA - BS, University of Tehran  
 BAUER, ROBERT A. - BS, University of Illinois, Chicago Circle  
 BENZEL, WILLIAM M. - BA, Oberlin College; MS, University of Illinois  
 BERTANI, RENATO T. - BS, University Federal do Rio Grande do Sul  
 BIELER, DAVID - AB, Oberlin College; AM, Dartmouth College  
 BOWDEN, PHILIP R. - BA, Augustana College  
 CAHILL, RICHARD A. - BA, Montclair State College; MS, University of Maryland; MS, University of Illinois  
 \*CARDINELL, ALEX P. - BS, University of Illinois, Chicago Circle  
 CHAPMAN, LINDA M. - BS, University of Missouri  
 CLUFF, ROBERT H. - BS, University of California; MS, University of Wisconsin  
 \*COBB, JAMES C. - BS, University of Illinois; MS, Eastern Kentucky University  
 COLTEN, VIRGINIA A. - BA, DePauw University  
 DAWSON, WILLIAM C. - BS, University of Illinois; MS, University of Texas  
 DEMIR, ILHAM - BS, Hacettepe University  
 DIABY, IBRAHIMA - BS, Oregon State University  
 DICKERSON, GRETA - BA, Albion College  
 ELSBREE, HOPE C. - BA, Smith College  
 FALKENHEIN, FRANK U. - BS, Escola de Minas de Ouro Preto; MS, University of Illinois  
 FEITZNIK, SADAT - BS, University of Tehran  
 FLEEGER, GARY M. - BS, Bucknell University  
 FRANKE, MILTON R. - BS, Universidade Federal do Rio Grande do Sul; MS, University of Illinois  
 FRITZ, JEFFREY L. - BS, University of Illinois  
 FRYER, KAREN H. - BA, Wellesley College  
 GUENSBURG, THOMAS E. - BA & MS, Southern Illinois University  
 HARRIS, HENRY J. H. - BA, Haverford College  
 HARTLINE, LAURIE E. - BS, University of Wisconsin  
 HASKIN, MARK A. - BA, Florida Institute of Technology  
 HAYDON, PAUL R. - BA, UCLA; MS, San Diego State University  
 \*HEINRICH, PAUL V. - BS, Louisiana State University  
 HORTON, DUANE G. - BS & MS, Western Washington State College  
 HUTASOIT, LAMBOK M. - BS, Institute of Technology Bandung  
 IBARRA, JORGE A. - BS, Instituto Politecnico Nacional  
 JOHNSON, THOMAS A. - BS, Augustana College; MS, University of Wisconsin  
 \*KETTLES, INEX M. - BS, University of Guelph  
 \*KLASSEN, RODNEY A. - BS & MS, Queen's University  
 KNOWLTON, POLLY L. - BS, University of Massachusetts  
 KUO, LONG-CHUAN - BS, National Taiwan University; MS, University of Illinois  
 LASEMI, ZAKARIA - BS, Pahlavi University  
 LAUBACH, STEPHEN E. - BS, Tufts University  
 LEE, CHUNG I. - BS, College of Chinese Culture

- LEPZELTER, CAROL G. - BA, SUNY Queens College  
 LIPMAN, ERIC W. - BA, University of Pennsylvania  
 MARSAGLIA, KATHLEEN M. - BS, University of Illinois  
 MATTHEWS, PETER K. - BS, Washington State University  
 McHONE, JOHN F., JR. - BS & MS, Old Dominion University  
 \*MOORE, DAVID W. - BA, College of Wooster; MS, University of North  
 Carolina  
 OESTRIKE, RICHARD, JR. - AB, Franklin and Marshall  
 OKHRAVI, RASOOL - BS & MS, University of Tehran  
 OWEN, MICHAEL R. - BA, Earlham College; MS, University of Illinois  
 PEARSON, CORINNE D. - BA, Smith College  
 \*POLLOCK, DAVID W. - BS, University of Illinois; MS, University of Min-  
 nesota  
 POPP, BRIAN N. - BS, University of Michigan  
 RIVA-PALACIO, RICHARDO J. - BS, Universidad Nacional Autonoma de Mexico  
 ROJSTACZER, STUART A. - BS, University of Wisconsin  
 SCHRÖDT, JOSEPH K. - BA, University of Missouri  
 SHEPARD, JOHN L. - BA, University of South Florida  
 SIVON, PAUL A. - BA, Wittenberg University; MS, University of Wisconsin  
 SNYDER, EDWARD M. - BA & MS, Eastern Washington State College  
 STERNBERG, ANN C. - BS, University of Wisconsin  
 \*STYLES, THOMAS R. - AB, Augustana College  
 VAIDEN, ROBERT C. - BA, Rockford College  
 WEIBEL, CARL P. - BS, University of Wisconsin  
 \*WESOLOWSKI, LOUIS J. - BS, St. Lawrence University  
 WILDANGER, EDWARD G. - BS, University of California  
 WOLFF, BRENO - BS, Universidade Federal do Rio Grande do Sul

#### Non-degree Students

- BERESKY, NANCY A. - BS, University of Illinois  
 WICKHAM, SUE SPECHT - BS, Denison University; MS, University of Illinois

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\*Off campus.

#### Cyclothem Club

##### 1978-1979

The Cyclothem Club initiated the 1978-79 school year by electing Pete Hetherington, president; Mike Kirby, vice-president; Doug Friedman, secretary-treasurer; and Dave Gallaher, field trip chairman. Club activities during the school year consisted of biweekly meetings and special events. Normal meetings ranged in content from an informal one held in a nearby, popular campus beer cellar in which students attending the 1978 summer field camp in Wyoming showed slides to more technical presentations by local and visiting students and professional geologists.

An extremely well received Cyclothem Club activity was the participation for the first time in an annual rock show held by the Prairie Gem and Geological Society at a local shopping center in October. Club members prepared a display of rocks, minerals, and fossils which was a big hit with local collectors. In addition, the students' geological knowledge was continuously being tapped by other exhibitors and visitors to the rock show. The Club was asked immediately to participate again in next year's exhibition.

The Christmas Caroling activity (traditionally calling on nearby professors' homes just before the holiday break) had its largest group in recent years and probably the best group of singers the Club has ever assembled. As one professor commented, "I did not know that geologists could sing so excellently!" Dave Bieler (PhD candidate) was ad hoc organizer, choir director, and song selector for this event.

The high point of Club activities for most members this year was reached during the spring break in March when nine days were spent on an exciting, fun-filled field trip to Big Bend National Park via Carlsbad Caverns and other geological localities. It was the first visit for many students to this part of our country. The Big Bend trip was a repeat by popular demand of a similar, equally successful trip held two years earlier.

Many Cyclothem members accepted a rare opportunity to participate as student aides in the International Carboniferous Congress which was held late in May on the campus after the end of the Spring Semester. This was also the first time the Carboniferous Congress had been held outside of Europe and European Asia. Students provided projection services, speakers' accommodations, manned information and registration booths, served as guides and gofers, as well as provided other impromptu services. Their excellent work was well received by Congress participants and contributed significantly toward a successful meeting. In addition, the students had the opportunity to freely attend technical and social activities associated with the meetings and to meet well-known, international geologists.

#### 1979-1980

Elected officers for the 1979-80 school year were: Carl Steffensen, president; Tom Butler, vice-president, and Julie Bills, secretary-treasurer. The meetings were held on an irregular basis, but ranged from summer camp photos at a local beer hall to a Paleopornography lecture by a professor and technical talks by professional geologists in industry.

Because of the Club's well-received participation in last year's Prairie Gem and Geological Society annual rock show, the Club members again provided a display of rocks, minerals, and fossils. The success of the Club member's participation prompted the Society to once again request their participation for the 1980-81 exhibition.

The traditional Christmas Caroling activity was continued by Club members. Dave Bieler, who led last year's group, did so again for this year's caroling. Dave is quite active in events pertaining to vocal music, and his expertise was appreciated by all.

Unfortunately, due to the increased cost of fuel and the lack of private cars available for transportation, the members did not organize a field trip during Spring Break. Hopefully the situation will be better next year to allow such a trip.

Julie Bills was elected president for the 1980-81 school year, giving continuity to next year's officers. The remaining officers will, of course, be elected after school begins this fall. Two activities for the 1980-81 year have already been planned. They are: (1) Assisting in the annual SEPM field trip for the Great Lakes area in late September. The trip will examine basal Pennsylvanian strata in Danville-Turkey Run areas of east-central Illinois and west-central Indiana. (2) Providing an educational display for the Prairie Gem and Geological Society annual

show in November. Additional activities will be discussed at future meetings to be held after the start of the Fall Semester.

Degrees Granted (October 1974 to June 1980)

Bachelors

- ANDERSON, Garth (Jan. 1976)  
 BAUNBACH, Martin (Aug. 1975)  
 BERESKY, Nancy A. (Jan. 1978)  
 BLIEFNICK, Debbie (May 1975) - *Biostratigraphy of the Glen Dean and Pennington Units, Newman Group (Chesterian) Northeastern Kentucky* (Blake)  
 BORGHESE, Jane V. (Jan. 1980)  
 BOSTROM, Lowell (Aug. 1975)  
 BRADFORD, Susan Carol (Jan. 1980) - *Comparative Analysis of Deformational Modes in Experimentally Deformed Limestones from the Inferior Oolite Series* (Wood)  
 BRANDT, Danita (Jan. 1978)  
 BROCKETT, Kathy L. (May 1978) - *Correlation of Finite Strain and Structural Style Across the British Caldeonides* (Wood)  
 BROWN, Vernon (May 1975)  
 BUTLER, Craig E. (Aug. 1976)  
 BUTLER, Thomas H. (May 1980) - *The Stratigraphy, Paleontology, and Paleoenvironment of the Middle Ordovician Lower Carters Limestone from the Central Basin, Tennessee* (Blake)  
 CARDOTT, Brian J. (May 1977)  
 CHENOWETH, Cheri A. (Oct. 1979)  
 CHRISTENSON, Scott (May 1975)  
 CLOOS, Mark P. (Aug. 1976) - *Petrology of the Lester River Intrusion, Duluth, Minnesota* (D. Anderson)  
 DIRST, Gordon Edward (May 1979)  
 DOBSON, Richard E. (Jan. 1978)  
 EDWARDS, Martin (Jan. 1977) - *Analysis of Lithologic and Structural Patterns in the Energy Shale at the Orient #6 Mine, Jefferson County, Illinois* (Langenheim)  
 ESSER, Robert J. (Oct. 1978)  
 EVANS, Betty Jo (Aug. 1978)  
 EVANS, Robert D., Jr. (Jan. 1980)  
 FELDMAN, Kenneth T. (May 1980)  
 FINLEY, Mark Edward (May 1979)  
 FITZANKO, Ronald (Jan. 1976)  
 FRANCIS, John J. (Jan. 1979)  
 FRANCZYK, Karen J. (May 1978) - *A Microscopic Study of Metamorphic and Deformational Features in Metasediments from Ducktown, Tennessee* (Wood)  
 FRITZ, Jeffrey L. (Aug. 1978)  
 GAGER, Barry (Jan. 1977) - *Depositional Environment of the Livingston Limestone Member of the Bond Formation Near Fairmount, Vermilion County, Illinois* (Langenheim)  
 GALLAHER, David W. (Aug. 1979)  
 GRAVES, Leslie (Jan. 1977)  
 HANSMAN, Mary R. (May 1977)  
 HARRIS, Janet M. (May 1979)



- HELPER, Mark A. (May 1978) - *Structural and Petrographic Study of the Monian Rocks of the Rhoscolyn District, Holy Island, Anglesey, North Wales, United Kingdom* (Wood)
- HETHERINGTON, Peter A. (May 1979)
- HETTLINGER, Christine (Aug. 1975) - *Paleoenvironment of Syringoporoids (Missourian, Virgilian) of Arrow Canyon, Clark County, Nevada* (Langenheim)
- HICKS, Brian Douglas (May 1979)
- HILL, Alan (Jan. 1977)
- HOUCK, Karen J. (Aug. 1979) - *Syringoporid Paleocology in the Dawn and Anchor Limestones, Lower Mississippian, Arrow Canyon Range, Nevada* (Langenheim)
- JAKES, Mary Clare (May 1977)
- JENKINS, John E. (May 1980)
- JOHNSON, Bruce Alan (May 1979)
- JOHNSON, Rex J. E. (Aug. 1978)
- JONES, Wilma (Aug. 1975)
- JOST, Toni Felizitas (May 1979)
- KAELIN, Roy A. (Jan. 1978) - *Areal Geology of Part of the Arrow Canyon and Moapa Quadrangle, Clark County, Nevada* (Langenheim)
- KAUCHAK, Martin P. (Aug. 1976)
- KIRBY, Michael Joseph (May 1979)
- KRUMPOLZ, Bradley J. (May 1978)
- LARSON, David (May 1975) - *Stratigraphy and Environment of Deposition of the Morehead Member, Tygarts Creek Formation (Chesterian) of North-eastern Kentucky* (Blake)
- LEEDS, Alena L. (May 1977)
- LINDBERG, Floyd Alan (Aug. 1979)
- LOTTMAN, Linda K. (May 1977)
- LUHR, James (May 1975) - *Unusual Compositional Relations in the Lester River Intrusion, Duluth, Minnesota* (Henderson)
- MAAS, Patricia J. (May 1977)
- MARSAGLIA, Kathleen M. (May 1979) - *A Statistical and Chemical Study of Inclusion Patterns in Garnets from the Monar Area of Scotland* (D. Anderson)
- MATEK, Joel E. (Aug. 1979)
- MEYER, Gary (May 1975)
- MILLER, James D. (Jan. 1978)
- MITCHLER, John D. (May 1978)
- MOORE, James P. (May 1977)
- MORRONE, John Frank (May 1979)
- MUROWCHICK, James (Jan. 1976)
- NAPOLEONI, Lynn L. (Jan. 1980)
- NEELEY, Don Hitt (Jan. 1980)
- NOBLE, Robert P. (May 1980)
- NOEL, Brian D. (May 1977)
- NOWBILSKI, Michael (May 1975)
- O'CONNOR, James P. (Jan. 1978)
- PATTERSON, Gary (Jan. 1976)
- POLLOCK, David (May 1975)
- RAHTZ, David E. (May 1980)
- REEDER, Richard (May 1975) - *Origin and Diagenesis of the Micrite Matrix, Key Largo Limestone (Pleistocene), South Florida* (Sandberg)

- RICHMAN, Ronald L. (May 1980)  
 RIDLEY, Richard B. (May 1977)  
 RORIG, Elizabeth A. (Jan. 1979)  
 RYNOTT, Tim L. (Aug. 1979)  
 SCHEEVEL, Jay Roger (May 1979) - *Carbonate Fabric and Fold Morphology of a Drag Fold in the Bird Spring Group (Lower Pennsylvanian), in Battleship Wash, Nevada* (Langenheim)  
 SCHUSTER, Robyn C. (May 1980)  
 SCHWINN, Beverly (May 1975)  
 SHIRLEY, Fred R. (Oct. 1978)  
 SIMONS, Janet (May 1975)  
 SIPPEL, Roger (May 1975)  
 SOPKIN, Sandra M. (May 1980)  
 STAVNES, Sandra A. (Oct. 1977)  
 STEFFENSEN, Carl K. (May 1980) - *A Study of Crystal Growth in the System Diopside-Anorthite* (Kirkpatrick)  
 THOMAS, Marilyn Jean (May 1979)  
 THOMPSON, Clark (Jan. 1979)  
 VALENTI, Gerard L. (May 1977)  
 WU, Lawrence (Aug. 1979)

#### Bachelors - Teaching of Earth Science

- CREASMAN, Nancy (May 1976)  
 HORN, Beryl A. (May 1977) - *Stratigraphy and Depositional Environments of the Eureka Quartzite, Southeastern Nevada* (Langenheim)  
 KLEIN, Irene Traub (Jan. 1975)  
 LEHMANN, Terry A. (May 1977)  
 OMEARA, Terrance J. (Jan. 1975)  
 TUREK, Tally (May 1976)

#### Masters

- BARNARD, Robert S. (May 1977) - no thesis  
 BENZEL, William M. (May 1978) - *Cation Exchange Properties of Montmorillonite at Temperatures Simulating Subsurface Environments* (Graf)  
 BOURQUE, Michael W. (Jan. 1978) - *Stratigraphy of the Upper Pennsylvanian-Lower Permian Portion of the Bird Spring Group, Battleship Wash, Arrow Canyon Range, Clark County, Nevada* (Langenheim)  
 BRENNEKE, James C. (Jan. 1976) - no thesis  
 BROWNLEE, Mary E. (Aug. 1975) - *Stable Carbon and Oxygen Isotopes of Carbonate Coal Balls and Associated Carbonates of the Illinois Basin* (T. Anderson)  
 BUSCH, William H. (Jan. 1977) - *Dish Structures in Some Ancient Subaqueous Sandy Debris Flow Deposits* (Klein)  
 CAHILL, Richard A. (June 1980) - *Geochemistry of Recent Lake Michigan Surficial Sediments* (Graf)  
 CALDERON, C. Alfonso (May 1976) - no thesis  
 CARROLL, Michael Timothy (Aug. 1979) - *A Model for Karst-Like Development in Calcareous Outwash Deposits* (Nieto)  
 CHIU, Jessie J. (Jan. 1980) - no thesis  
 COLE, Sally Ann (Oct. 1974) - *The Effect of Thermal Stress Conditions on Benthic Foraminifera in Biscayne Bay, Florida* (Blake)  
 DREIFUSS, Sophie M. (May 1977) - *Textural and Compositional Changes During Diagenesis of High-Mg Calcite Skeletons* (Sandberg)

- FORESTER, Elizabeth B. (Jan. 1977) - *A Systematic and Biostratigraphic Study of the Ostracodes from the Monmouth Formation (Upper Cretaceous; Maestrichtian) of the Western Shore of Maryland (Sandberg)*
- GERBER, Murry S. (May 1978) - *Carbonate Microfacies of the Burlington Crinoidal Limestone (Middle Mississippian), Western Illinois, Southeastern Iowa, and Northeastern Missouri (Carozzi)*
- HERBERT, Glenn P. (May 1978) - *Value of Quasifunctional Equations in Determination of Depositional Environment Relationships and Classification of Carbonate Units (Mann)*
- HENDRIX, Gary G. (May 1977) - *Structural and Chemical Changes Across Greenschists Facies Rocks in the Ocoee Gorge, Tennessee (Wood)*
- HILL, Alan T. (May 1978) - *Systematics, Biostratigraphy, and Paleoenvironments of Late Virgilian and Early Wolfcampian Corals, Bird Spring Group, Arrow Canyon Quadrangle, Clark County, Nevada (Langenheim)*
- HISELER, Robert G. (May 1977) - *Variables Controlling Permeability of Oolitic Calcareenites of the Ste. Genevieve Limestone (Mississippian), Southern Illinois (Carozzi)*
- HOLM, Paul E. (Oct. 1977) - no thesis
- HUNT, Stephen R. (Jan. 1975) - *Bedrock Stratigraphy as a Tool in Regional Slope Evaluation, Upper Illinois River Valley (Johnson)*
- JORGENSEN, Ronald W. (Aug. 1977) - no thesis
- JOHNSON, Peter Roy (Aug. 1979) - *Petrology and Environments of Deposition of the Herrin (No. 6) Coal Member, Carbondale Formation, at the Old Ben Coal Company Mine No. 24, Franklin County, Illinois (Langenheim)*
- KEMMIS, Timothy J. (Jan. 1979) - *Properties and Origin of the Yorkville Till Member at the National Accelerator Laboratory Site, Northeast Illinois (Johnson)*
- KEYS, John N. (May 1978) - *An Analysis of the Rend Lake Fault System in Southern Illinois (Wood)*
- KOELSCH, Theodore A. (May 1977) - no thesis
- KULLA, Jean B. (May 1975) - no thesis
- KUO, Lung-Chuan J. (June 1980) - *Morphology and Zoning Patterns of Plagioclases in Phyrlic Basalts from DSDP Legs 45 and 46, Mid-Atlantic Ridge (Kirkpatrick)*
- MA, Tso-An (Oct. 1975) - *Models of Carbon Isotope Equilibrium in Aqueous Carbon Systems (T. Anderson)*
- MARURI, Raul D. (Oct. 1977) - *Geological Investigations for Dam Foundations (Nieto)*
- MCKAY, E. Donald, III (Jan. 1975) - *Stratigraphy of Glacial Till in the Gibson City Reentrant, Central Illinois (Johnson)*
- MILLER, Donald David (Aug. 1979) - *A Study of Transverse Anisotropy in a Devonian Shale (Wood)*
- OLIMPIO, Julio C. (Oct. 1976) - *The Compositional Variation in Zoned Garnets from South Morar, Inverness-shire, Scotland (D. Anderson)*
- OWEN, Michael R. (June 1980) - *Sedimentology of Thinly Laminated Rhythmites of the Port Askaig Tillite (Late Precambrian), Southwest Scotland (Johnson & Wood)*
- READE, Michael T. (June 1980) - no thesis
- REINBOLD, Mark L. (May 1977) - *Late Devonian Conodont Biostratigraphy, Las Vegas Range, Clark County, Nevada (Langenheim)*
- RICH, David W. (May 1977) - no thesis
- RINGLER, Robert (Aug. 1975) - *Sphalerite Geobarometry at the Calloway Mine, Ducktown, Tennessee (D. Anderson)*

- ROGERS, Leah Lucille (Aug. 1979) - *A Cross-Sectional Groundwater Flow Model of the Sheffield Illinois Low Level Radioactive Waste Site* (Domenico)
- ROOT, Robert W. (May 1975) - no thesis
- RUSSELL, Suzanne J. (Oct. 1975) - *Physical, Chemical, and Petrographic Properties Affecting the Skid Resistance of Carbonate Aggregates in Illinois Class III Bituminous Concrete Pavements* (Johnson)
- SANTOGROSSI, Patricia A. (Jan. 1977) - *Environmental Analysis of a Lithostrotionid Biostrome, Yellowpine Limestone, Arrow Canyon, Clark County, Nevada* (Langenheim)
- SCHEIBEL, Larry L. (May 1977) - no thesis
- SCHEIHING, Mark H. (Oct. 1978) - *A Paleoenvironmental Analysis of the Shumway Cyclothem (Virginal), Effingham County, Illinois* (Langenheim)
- SCHMIDT, Alan (May 1979) - *The Nitrogen - Phosphorous Hydrochemistry of Las Vegas Wash, Las Vegas, Nevada* (Domenico)
- SCHUSTER, David D. (Oct. 1977) - no thesis
- SPITZER, Roy H. (May 1977) - no thesis
- STEINMETZ, John C. (Oct. 1975) - *The Character, Identification, and Ultrastructure of Selected Serpulid (Annelid Polychaete) Tubes from South Florida and the Bahamas* (Sandberg)
- STEPUSIN, Susan M. (May 1978) - *Vertical Variations in the Mineralogical and Chemical Composition of the Underclay of the Herrin (No. 6) Coal in Southwestern Illinois* (Eberl)
- STUMP, David (June 1980) - *A Hypothesis for Sink Development Above Solution-Mine Brine Cavities in the Detroit Area* (Nieto)
- SUCHOMEL, Thomas J. (Oct. 1976) - *Geology and Mineralogy of the Harding Pegmatite, Taos County, New Mexico* (Chapman)
- TILLS, Linda A. (Jan. 1977) - *Suspended Sediment Transport in Four Midwestern Rivers* (Klein)
- TISSUE, Jeffrey S. (May 1977) - *A Paleoenvironmental Analysis of the Middle Devonian Sandstones in the Upper Mississippi Valley* (Langenheim)
- TOLLEFSON, Linda Sindelar (Jan. 1979) - *Paleoenvironmental Analysis of the Kokomo and Kenneth Limestone Members of the Salina Formation in the Vicinity of Logansport, Indiana* (Langenheim)
- VON RHEE, Robert W. (Aug. 1977) - *Mode of Deposition of Batestown Till in East-Central Illinois* (Johnson)
- WALKER, Jerome (Aug. 1975) - *Sedimentology of the Medina and Clinton Groups (Lower and Middle Silurian) of Western and Central New York* (Klein)
- WELSH, Rikki L. (Jan. 1978) - no thesis
- WHITEHEAD, Neil H. (Jan. 1976) - *The Stratigraphy, Sedimentology, and Conodont Paleontology of the Floyds Knob Bed and Edwardsville Member of the Muldraugh Formation (Valmeyerian), Southern Indiana and North-Central Kentucky* (Collinson)
- WICKHAM, Jerry T. (Oct. 1976) - *Glacial Geology of North-Central and Western Champaign County, Illinois* (Johnson)
- WICKHAM, Susan Specht (May 1979) - *The Tiskilwa Till Member, Wedron Formation; A Regional Study in Northeastern Illinois* (Johnson)
- WITEK, Bonita M. (May 1976) - no thesis
- WUNDER, Susan J. (Oct. 1974) - *Diagenetic Features and Inferred Diagenetic Processes in Partially Altered Corals from the Key Largo Limestone (Pleistocene), South Florida* (Sandberg)

Doctorals

- ANDREWS, Robert W. (Jan. 1979) - *The Digital Simulation of Areal Salt Transport to Evaluate Water Management Proposals in a Coastal Aquifer* (Domenico)
- BAILEY, Jack B. (May 1975) - *Systematics, Functional Morphology, and Ecology of Middle Devonian Bivalves from the Solsville Member (Marcellus Formation), Chenango Valley, New York* (Blake)
- BUCKLEY, Susan Bosworth (Jan. 1975) - *Study of Post-Pleistocene Ostracode Distribution in the Soft Sediments of Southern Lake Michigan* (Collinson)
- CASTLE, James W. (Oct. 1978) - *Comparative Sedimentology of Some Modern Pacific Trenches and the Caples Group (Permo-Triassic?)*, New Zealand (Klein)
- CHAMBERLIN, Thomas L. (Oct. 1975) - *Stratigraphy of the Ordovician Ely Springs Dolomite in the Southeastern Great Basin, Utah and Nevada* (Langenheim)
- CHIA, Yee-Ping (June 1980) - *Digital Simulation of Compaction in Sedimentary Sequences* (Domenico)
- COLEMAN, Dennis D. (May 1976) - *Isotopic Characterization of Illinois Natural Gas* (T. Anderson)
- ETTENSohn, Frank R. (Oct. 1975) - *Stratigraphic and Paleoenvironmental Aspects of Upper Mississippian Rock (Upper Newman Group), East-Central Kentucky* (Blake)
- FORESTER, Richard M. (Oct. 1975) - *Concepts of Fossil and Modern Ostracode Abundance, Distribution, and Diversity Patterns Portrayed by Probabilistic Methodology* (Sandberg)
- GANOW, Harold C. (Oct. 1975) - *A Geotechnical Study of the Squeeze Problem Association with the Underground Mining of Coal* (Donath)
- GRAF, Julia B. (Oct. 1975) - *Nearshore Sediment Distribution, Southwestern Lake Michigan* (Wood)
- HANSEN, Michael W. (Oct. 1975) - *Carbonate Microfacies of the Monte Cristo Group (Mississippian), Arrow Canyon Range, Clark County, Nevada* (Carozzi)
- HOLM, Paul E. (June 1980) - *Strain Rate and Temperature Controls on Strain Heterogeneity: Its Significance for Deformational Concepts* (Wood)
- HUNT, Stephen R. (Jan. 1980) - *Subsidence Due to Coal Mining in Illinois* (Nieto)
- JACKSON, Roscoe G., II (May 1975) - *A Depositional Model of Point Bars in the Lower Wabash River* (Klein)
- KERN, Ronald A. (Oct. 1977) - *A Systematic Field Test of Growth and Diffusion Models of Chemical Zoning in Garnet* (D. Anderson)
- KHAWLIE, Mohamad R. (Oct. 1975) - *Microfacies and Geochemistry of the Brereton Limestone (Middle Pennsylvanian) of Southwestern Illinois* (Carozzi)
- KHOURY, Hani N. (Jan. 1979) - *Mineralogy and Chemistry of Some Unusual Clay Deposits in the Amargosa Desert, Southern Nevada* (Eberl)
- KOELSCH, Theodore A. (May 1979) - *Relationship of Acoustic Emission and Ultrasonic Velocity to Deformation Mechanisms and Dilatancy During the Ductile Deformation of Marble* (Holder)
- KUHNEHENN, Gary L. (Oct. 1976) - *Carbonate Microfacies of the Platteville Group (Middle Ordovician), Lee and LaSalle Counties, Illinois* (Carozzi)
- KULLA, Jean B. (Jan. 1979) - *Oxygen and Hydrogen Isotopic Fractionation Factors Determined in Experimental Clay-Water Systems* (T. Anderson)

- LAHANN, Richard W. (Oct. 1975) - *Molybdenum Transport Mechanisms in Fresh Water Environments* (Graf)
- LASEMI, Yaghoob (Jan. 1980) - *Carbonate Microfacies and Depositional Environments of the Kinkaid Formation (Upper Mississippian) of the Illinois Basin* (Carozzi)
- LAWSON, Daniel E. (Oct. 1977) - *Sedimentation in the Terminus Region of the Matanuska Glacier, Alaska* (Klein)
- LEE, Sekyung (Jan. 1979) - *Limiting Mechanisms of Dislocation Motion in Ice* (Holder)
- LINK, Regina L. (Oct. 1975) - *Computer Analysis of Normal Pore Distribution in Selected Cytheracean Ostracoda* (Sandberg)
- MAHAR, James W. (May 1977) - *The Effect of Geology in Construction on Behavior of a Large, Shallow, Underground Opening in Rock* (Donath)
- McKAY, Edward D., III (May 1977) - *Stratigraphy and Zonation of Wisconsinan Loesses in Southwestern Illinois* (Johnson)
- MOSHER, Sharon (Oct. 1978) - *Pressure Solution as a Deformation Mechanism* (Wood)
- NIETO-PRESCETTO, Alberto Santiago (Oct. 1974) - *Experimental Study of the Shear Stress-Strain Behavior of Clay Seams in Rock Masses* (Donath)
- NORBY, Rodney D. (May 1976) - *Conodont Apparatuses from Chesterian (Mississippian) Strata of Montana and Illinois* (Collinson)
- OLIMPIO, Julio C. (Oct. 1979) - *The Chemical Study of Garnet Growth in the Moine Rocks of Western Scotland: Evidence of the Spatial Extent of Equilibrium* (D. Anderson)
- PALOMINO-CARDENAS, Jack R. (May 1976) - *Sedimentological and Environmental Study of the Fluvio-Deltaic Cabo Blanco Sandstone Member, Echinocyanus Formation, Lower Eocene, Talara Basin, N.W. Peru* (Carozzi)
- RICH, David W. (Jan. 1980) - *Porosity in Oolitic Limestones* (Carozzi)
- RISATTI, James B. (Jan. 1978) - *Geochemical and Microbial Aspects of Volo Bog, Lake County, Illinois* (Blake)
- SCHUSTER, David D. (June 1980) - *The Nature and Origin of the Late Precambrian GWA Melange North Wales, United Kingdom* (Wood)
- SETO, Herbert G. (Oct. 1977) - *Synthesis and Characterization of Stable Kaolin Intercalation Complexes: A Possible Means of Valorization and Diversification of Kaolin Clay Minerals* (Graf)
- SHARP, John Malcolm, Jr. (Oct. 1974) - *An Investigation of Energy Transport in Thick Sequences of Compacting Sediments* (Domenico)
- SWEENEY, Jerry J. (Jan. 1980) - *A Study of Acoustic Velocity and Dielectric Permittivity Anisotropy in Relation to Finite Strain in Deformed Rock* (Wood)
- WHITNEY, Carroll G. (Oct. 1979) - *The Paragenesis of Synthetic Phyllosilicates on the Talc-Phlogopite Join* (Eberl)
- ZANBAK, Caner (Jan. 1978) - *Experimental Evaluation of Stability Analysis Methods for Some Rock Slopes by a Physical Model* (Nieto)
- [NOTE: Correction of any error in the above listing would be greatly appreciated.]

Outstanding Senior Awards for 1979 and 1980

1979

Jay R. Scheevel, whose home is in Western Springs, Illinois, was chosen Outstanding Senior for the 1979 graduating class. Jay's senior

thesis, done under the direction of Dr. Langenheim, is titled "Carbonate Fabric and Fold Morphology of a Drag Fold in the Bird Spring Group (Lower Pennsylvanian), Battleship Wash, Nevada." He spent the summer of 1979 with the US Geological Survey and is now a graduate student at Texas A&M. Jay's main geological interests are in sedimentology and structural geology and his professional preference is toward industrial research and exploration.

#### 1980

Thomas P. Murphy, Salem, Illinois, received the traditional Brunton compass as Outstanding Senior in the Class of 1980. Tom's special interests lie in the direction of structural geology and tectonics. A highlight of his undergraduate experience was a year abroad in 1977-78 at University College, London. He is in Britain again this summer, taking Dr. Wood's summer field course in the British Isles (Geology 315B). Tom plans to do his graduate work at the University of California-Davis.

#### Ed Snyder: Winner of Best Student Paper Award

Mr. Edward Snyder, a PhD candidate working with Dr. Blake, was recently selected as the winner of an award for the best student paper presentation at the recent North-Central Section of the GSA meeting in Bloomington, Indiana, by the Paleontological Society. Ed's paper was entitled "Bryozoan Assemblages and Inferred Ecologic Succession in the Warsaw Formation (Middle Valmeyeran), Western Illinois Basin."

ALUMNI NEWS

WILLIAM BACK (BS, 1948), J. D. BREDEHOEFT (MS, 1957; PhD, 1962), GEORGE H. DAVID (BS, 1942), G. F. PINDER (PhD, 1968), and PAUL A. WITHER-SPOON (PhD, 1957) were awarded miniature engraved replicas of the Meinzer Bowl, in recognition of their scientific achievement.

WILLIAM BACK (BS, 1948), hydrogeologist with the US Geological Survey, Reston, Virginia, was the 1978 Birdsall Distinguished Lecturer in Hydrogeology (Geological Society of America). His itinerary included lectures at the University of Alabama, Alabama Geological Survey; the Universities of South Florida, Missouri, New Hampshire; Texas Tech; the Universities of Waterloo and Massachusetts; in addition to the University of Illinois. His lecture here, entitled "Hydrology, Archaeology, and Mythology in Ancient America," was given October 5, 1978.

J. BOWMAN BAILEY (PhD, 1975), assistant professor of geology, Western Illinois University, was presented the WIU Presidential Merit Award. The award recognizes the recipient's instructional activities, scholarly and creative achievements, and service to their profession and the university. Bailey joined the WIU faculty in 1976.

JAMES R. BAROFFIO (PhD, 1964) has been elected president of Chevron Oil Field Research Company, La Habra, California, effective September 1, 1980. Baroffio joined the Standard Oil Company of California in 1961 and has served in various technical and management positions in its operating companies since that time. His most recent assignment has been as vice president, Exploration Research Department, for COFRC in La Habra.

EDWIN F. BUSHMAN (BS, 1941) was named the Society of Plastics Engineers, Inc., Member of the Month in April 1978, for his work in thermoplastics, thermosets, elastomers and fibers and composites. He holds eight plastics patents and has authored some three dozen technical articles and studies.

Also, Bushman wrote an article entitled "Weeds, Wood and Waste" in the June 1978 issue of SPE News. In this article he states that weed planting and harvest may be a way toward saving the oil-dependent energy, petrochemical and synthetic polymer industries. Valuable products, such as resins, rubber, gasoline and methane, can be produced from these once considered worthless plants. Weeds, timber and kelp in addition to wastes from grains, manure, etc., are proving increasingly feasible as sources of fuel.

TOM CHAMBERLIN (PhD, 1975) is now with Petroleum, Inc., Denver, Colorado. He and his wife are parents of a son, Scott Thomas, now a bit over one year old.

LEE CLAYTON (PhD, 1965) has joined DR. MERIDETH OSTROM's (MS, 1954; PhD, 1959) staff of the Wisconsin Geological Survey in Madison.

SUE WILBORN CORDON (BS, 1965) is now living in O'Fallon, Illinois, with her husband, Ray, and two children, Matthew and Heather. She is employed at O'Fallon Township High School through a Title IVc, ESEA grant. Through the grant, she has written a geology text and lab book for high school use, which is being used by ten other high schools.



- ROBERT DAVID (BS, 1949), of the US Geological Survey, Reston, Virginia, was promoted from deputy chief geologist for operations to chief of the office of scientific publications.
- EDWARD L. DILLON (BS, 1947; MS, 1949) joined the American Trading Production Corporation as district manager for the company's West Texas-New Mexico operations, with headquarters in Midland, Texas. Dillon is supervisor for all of the corporation's production and exploration activities in the Permian Basin, Eastern Shelf and Southeast New Mexico.
- WILLIAM W. DUDLEY, JR. (MS, 1962; PhD, 1967) was appointed the US Geological Survey's top water-resources official in Wyoming. He is directing the Survey's \$2.7 million annual water-investigations and data-collection program in the state. Dr. Dudley has been with the Survey for 13 years and was named Wyoming District chief of the USGS Water Resources Division after spending his first dozen years with the Survey at its regional field center and headquarters in Denver, Colorado.
- GORDON S. FRASER (BS, 1969; MS, 1970; PhD, 1973) became, in 1978, geologist with the Indiana Geological Survey, and since fall 1979, as adjunct assistant professor of geology at Indiana University. Fraser (with the help of ROSCOE JACKSON (PhD, 1975), R. L. Langenheim, and C. J. Mann) will be organizing the 1980 field meeting of the Great Lakes Section of the SEPM, to be held September 26-28, 1980, out of Danville, Illinois. Fraser and Jackson will be leading a trip dealing with Pleistocene and recent stream sediments of the Wabash Valley. Langenheim and Mann's trip will deal with the Pennsylvanian stratigraphy, sedimentology and mythology of the area. The trip will essentially be a UI alumni meeting.
- GEORGE FRIES (BS, 1952) was recently on campus, visiting with Dr. George White. After graduation, for ten years, Mr. Fries was with an engineering consulting firm in Chicago. He left Chicago for a position as engineer and geologist for the Bureau of Indian Affairs, and since 1965, Mr. Fries has been with the Indian Health Service in building hospitals. He is currently residing in Albuquerque, New Mexico.
- PAUL D. FULLAGAR (PhD, 1963) was named chairman of the Department of Geology at the University of North Carolina at Chapel Hill, where he has been a member of the faculty since 1967. Fullagar, whose research focuses on determining the ages of rock units and the dates of various geologic events, is studying the geologic evolution of the southern Appalachians with funds from the National Science Foundation. He also is working on an NSF-funded study searching for clues in southern India as to what the earth's earliest crust formation was like.
- HENRI E. GAUDETTE (MS, 1962; PhD, 1963) was promoted in 1978 to professor of earth sciences at the University of New Hampshire.
- ROBERT N. GINSBURG (BA, 1948) was elected as a Councilor for GSA (1978-1980). He received the MA and PhD degrees from the University of Chicago in 1950 and 1953, respectively. Since 1970, Dr. Ginsburg has been professor of sedimentology at the Comparative Sedimentology Lab at the University of Miami.

- ALAN D. GRAY (MA, 1978) was married to the former Debra Lynn Lachenmyer. Mr. Gray received a bachelor's degree from Southern Illinois University, Edwardsville. He is a transportation planner for Memphis and Shelby County Office of Planning and Development, Memphis, Tennessee.
- CHARLES E. GREENWOOD (BS, 1949), McCulloch Oil Exploration, Inc., Houston, Texas, was recently elected president of that company.
- WALLACE W. HAGAN (BS, 1935; MS, 1936; PhD, 1942), director of the Kentucky Geological Survey, University of Kentucky, Lexington, has completed a 17-year geologic mapping program begun in 1960 depicting every foot of Kentucky's land surface. The project, in cooperation with the US and Kentucky Geological Surveys, was cited by the director of the US office as "clearly a milestone in the history of American geology." Hagan is now retired, but has been director of the Kentucky part of this cooperative program since its inception.
- MIKE HANSEN (PhD, 1975) is now with Anadarko Production Company, Denver, Colorado. He also is a member of the editorial board of the Rocky Mountain Association of Geologists and would dearly love to receive manuscripts suitable for the Mountain Geologist.
- WILLIAM W. HAY (MS, 1958) was recently named president of the Joint Oceanographic Institutions, Inc. (JOI), based in Washington, DC. JOI is a consortium of ten academic oceanographic institutions formed to bring their collective capabilities to bear on deep-sea oceanographic research projects. Hay was dean of the School of Marine and Atmospheric Sciences, University of Miami, and was a UI staff member from 1960-1973.
- ALAN T. HILL (MS, 1978) is now employed by Shell Oil Company in Houston. At last report, Shell is keeping him busy in the Williston Basin.
- WILLIAM C. IRVIN (BS, 1947; MS, 1948) retired from his position as professor of geology at California State University, Sacramento, on June 28, 1980.
- ROSCOE G. JACKSON (PhD, 1975) is now assistant professor of geology at the University of Michigan. (See additional information under Gordon Fraser.)
- JOSEPH MICHAEL JAKUPCAK (BS, 1972) and his wife, Janet (BS in General Biology, 1972; MD, UI-Chicago, 1979) are the parents of a baby girl. Elanor Grace was born on March 9, 1979. Mr. Jakupcak received the MED degree in science education from the University of Missouri-Columbia in 1974. He is currently teaching physics and physical science at Hales Franciscan High School, Chicago. Janet began her three-year Family Practice Residency at St. Joseph Hospital, Chicago, on June 29, 1979.
- STEVE JAMRISKO (BS, 1971), at last report, was a lieutenant on active duty in the Navy and anticipated the completion of the MS degree in Petroleum Management at the University of Kansas in the fall of 1978. Upon completion of the degree, Jamrisko was to be assigned as director of the fuel department, US Naval Supply Depot, Guam.
- JOHN D. KIEFER (MS, 1965; PhD, 1970) is now on the staff of the Kentucky Geological Survey in Lexington.

- DANIEL E. LAWSON (PhD, 1977) is presently a research sedimentologist at the Cold Regions Research Engineering Labs of the US Army in Hanover, New Hampshire.
- MARGARET S. LEINEN (BS, 1969) completed the PhD degree in Oceanography at the University of Rhode Island in 1979, and is presently a research associate there. Margaret also served on various marine science panels, including DSDP Panel on Inorganic Geochemistry and recently chaired the special session on Paleoceanography at AGU in Toronto.
- FLOYD ALAN LINDBERG (BS, 1979) was married to the former Cheryl Lynn Corn on December 29, 1979.
- CHARLES F. METZGER (MS, 1964; PhD, 1965) was named regional representative for the Department of Energy (DOE). The appointment, which became effective May 15, 1978, makes Metzger the senior spokesman for the DOE in the six-state area of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming, with headquarters at Lakewood, Colorado. He will coordinate the DOE's dealings with the public and with state and local governments in the region. A native of Buffalo, New York, Metzger received the BS degree in geology from the State University of New York at Buffalo in 1961.
- ALBERT D. PERNICHELLE (BS, 1960) has been admitted to partnership in the Dames & Moore, engineering and environmental consultants, Salt Lake City office. Pernichelle, a senior member of the geological engineering staff, is one of seven partners Dames & Moore named in April 1978. Since joining the firm in 1973, he has directed a variety of geological studies for the development of mineral and energy resources, industrial facilities, and projects for the US government. Pernichelle received the MS degree from the University of North Dakota at Grand Forks.
- PAUL T. PRESTHOLT (BS, 1956) was named a senior geophysicist in the Dames & Moore's Cranford, New Jersey office in 1978. Prestholt has over 20 years of professional experience in engineering-, mining- and petroleum-related geophysical studies and has directed geophysical investigations throughout the world during his career. Since joining Dames & Moore in 1973, he has participated on a number of geotechnical studies for proposed fossil fuel and nuclear power plants in the eastern United States, Spain and Iran.
- ROBERT ROGERS (MS, 1948) is currently assistant to the division manager, Exploration Division, Getty Oil Company in Tulsa, Oklahoma. He was in the department last fall to interview MS candidates for possible employment with Getty Oil.
- MARK H. SCHEIHING (MS, 1978) is now a doctoral candidate working with Hermann Pfefferkorn at the University of Pennsylvania. Scheihing will be spending the summer of 1980 doing field work on the taphonomy of plants in the Orinoco Delta, Venezuela.
- PAUL R. SCHLUGER (PhD, 1972) is presently manager, AGAT, Inc., Denver, Colorado (a Canadian-based consulting research firm in the petroleum business).
- JOHN M. SHARP, JR. (PhD, 1974), professor at the University of Missouri, and Patrick A. Domenico were recipients of the 1979 O. E. Meinzer

Award given on November 6 at the GSA's annual meeting in San Diego. Drs. Domenico and Sharp were recognized for their article, "Energy Transportation in Thick Sequences of Compacting Sediment." This article appeared in the March 1976 GSA Bulletin and discussed pressures and temperatures in sediments under the water of the Gulf of Mexico.

LINDA SINDELAR-TOLLEFSON (MS, 1978) is now living in Houston with her husband, Jack, and is employed by Amoco.

WILLIAM B. SIZE (PhD, 1971) was promoted to associate professor of geology in Emory College of Emory University. Size received the BS and MS degrees from Northern Illinois University.

RICHARD A. SMOSNA (PhD, 1973) is now on the staff of West Virginia University. Richard received the Lovorson Award for the best paper presented at the previous meeting of the 1979 meeting of the Eastern Section, AAPG, held in Morgantown. The award was for his paper entitled "Siluro-Devonian Embayment into Appalachia," co-authored with Douglas Patchen. Smosna also is author of a paper on Niagaran Bioherms and Interbiohermal Deposits of Western West Virginia, appearing in the May 1980 issue of the AAPG Bulletin.

DAVID A. STEPHENSON (PhD, 1965), formerly a professor at Wisconsin, joined Woodward-Clyde Consultants, San Francisco, California, on July 1, 1979, as chief of the Water Resources Section.

ALAN C. SWANSON (BS, 1959), lieutenant colonel, USAF, received the second award of the Meritorious Service Medal at Rhein-Main AB, Germany. He was cited for outstanding duty performance as commander of the 90th Transportation Squadron at Francis E. Warren AFB, Wyoming. His superior ability to identify requirements, coupled with exceptional management capabilities, were instrumental in developing many important programs and procedures. As of the last report, Swanson was serving at Rhein-Main as commander of the 7405th Operations Squadron, a part of the US Air Forces in Europe.

RICHARD C. WEART (PhD, 1950), manager of Exploration Research and Development of Sunmark Exploration Company, Dallas, Texas, was one of the speakers at the Institute for the Study of Earth & Man second symposium on unconventional methods in exploration for petroleum and natural gas. The symposium was held at the Dallas Hilton Inn on September 13 and 14, 1979. Weart related Sunmark Exploration's experimentation with radiometric prospecting for hydrocarbons, stating that radiometric exploration is a useful and economical tool in a company's overall exploration program.

WILFORD F. WEEKS (BS, 1951; MS, 1953) was honored for his research with election to membership by the National Academy of Sciences. He is a research glaciologist at the US Army Cold Regions Research and Engineering Laboratory in Hanover, New Hampshire. After completing a doctorate in geochemistry at the University of Chicago in 1956 and after a tour of duty in the Air Force as a staff member at Cambridge Research Center, Cambridge, Massachusetts, he joined the faculty of Washington University in St. Louis. Five years later he moved to the staff of the Cold Regions Research and Engineering Laboratory and his intensive studies on ice. He is an expert on the properties of ice. His work has been a great aid to the

military during arctic maneuvers and also to industries attempting to tap the resources of the vast arctic regions.

Geology Alumnus Caught in Volcano Blast

David A. Johnston (BS, 1971) was among those missing after the eruption on May 18, 1980, of Mount St. Helens Volcano. Johnston was a field volcanologist with the US Geological Survey and was at the Coldwater 2 Observation Post, six miles from the north summit. He was a native of Oak Lawn, Illinois, receiving a bachelor's degree here and a doctorate at the University of Washington. Johnston was an expert on volcanic gases. He was based in Menlo Park, California, and traveled to volcano sites around the world.

A special technical program, "David Johnston Symposium on Mount St. Helens," is dedicated to Johnston and will be held at the 1980 Annual Meeting of the GSA. The most recent data on the volcanic activity at Mount St. Helens will be presented. The program conveners are Samuel E. Swanson and E. Wesley Hildreth.

IN MEMORIAM

- MARGARET FULLER BOOS, a well-known consulting geologist, died suddenly on April 21, 1978, at her home in Denver, Colorado. Dr. Boos was visiting professor of structural geology here in 1948-49. Her work as consulting geologist was mainly in economic geology. Her husband, Mr. C. Maynard Boos, a well-known petroleum geologist, survives.
- ROBERT KENDALL (KEN) FAHNESTOCK (BS, 1954) was killed in a plane crash just outside of Fort Collins, Colorado, on April 20, 1980. Fahnestock, of Fredonia, New York, was a professor of geology at State University of New York at Fredonia. He is survived by his parents of Urbana; his wife, Ann Marie; and two sons, Maurice and Mark, both at home. Fahnestock received a doctorate degree from Cornell University in 1960. He was named an assistant professor at SUNY at Fredonia in 1967 and became a full professor in 1974.
- DAVID A. JOHNSTON (BS, 1971) was among the missing and presumed killed by the eruption of the Mount St. Helens volcano on May 18, 1980. (See "Geology Alumnus Caught in Volcano Blast" on page 43 for more details.)
- BERNHARD KUMMEL, professor of geology, Harvard University, died on July 3, 1980. Professor Kummel was a member of the faculty here from 1948 until 1952 when he went to Harvard. There was no funeral service, but a memorial service will be held at 11 AM, September 12, 1980, in the Geological Lecture Room, Geological Museum, Harvard University. He is survived by his wife.
- DAVID MARCEL LARRABEE (MS, 1936), a geologist and former University of Illinois dean of freshmen, died May 3, 1979, at his home in Chevy Chase, Maryland. He was married to Kate Putnam, who survives. Larrabee retired as a scientist with the US Geological Survey in 1970. He was regarded as an expert in non-metallic and industrial minerals. A 1932 graduate of Dartmouth College, Larrabee was appointed UI dean of freshmen that same year while he worked on a master's degree in geological studies.
- JOHN L. LESTER (BS, 1937; MS, 1939) died at his home in Centralia, Illinois, on July 23, 1977. A memorial to Lester was published in the May 1978 AAPG Bulletin (Volume 62).
- LOUIS C. McCABE (BS, 1931; MS, 1933; PhD, 1937), a geologist and engineer, died November 9, 1978, in Washington, DC. Prior to World War II he was on the staff of the Illinois State Geological Survey in Urbana. He served in Washington and as the war drew to a close was an Army colonel in charge of the coal mines in Belgium, the Ruhr and the Saar. Dr. McCabe served as chief of the office of air and stream pollution and of the fuel and explosives division, US Bureau of Mines. He was married to Catherine Hesselschwerdt, a 1935 UI graduate, who survives.
- JAMES M. SCHOPF (MS, 1932; PhD, 1937), Ohio State University professor of geology and mineralogy since 1950, died September 15, 1978. An internationally-known paleobotanist and coal geologist, he had been honored by several scientific organizations for his research contributions. He was a geologist in the US Geological Survey's Coal Geology Laboratory at OSU from 1949-1977. Dr. Schopf is survived by his wife, Esther N. Schopf, and his sons, Thomas J. M. and J. William.

GRACE R. WANLESS died November 4, 1979, in Urbana. She was very active in Girl Scouts and was a member of the Girl Scouts Council. Mrs. Wanless' husband (Harold R.) was a professor of geology here, beginning in 1923. Professor Wanless retired from the University in 1967. On November 8, 1969, the Wanless Room was dedicated in his honor (Room 247 Natural History Building). Professor Wanless died in June 1970. Mrs. Wanless is survived by a son, Harold R., a sedimentologist at the Rosenstiel School of Marine and Atmospheric Sciences, University of Miami.





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The first Ralph Grim Lecturer was Dr. Robert C. Reynolds (center) of Dartmouth College. Picture with Dr. Reynolds are Dr. John Hower (left), department head, and Dr. Haydn Murray (right), chairman of the Geology Department, Indiana University, and former Grim student.



The faculty had a retirement party for Ms. Harriet Wallace on August 26, 1979. Ms. Wallace is wearing a jade necklace given to her by the faculty, and presented by Dr. Ralph Langenheim.



The Geology Department purchased a used school bus several years ago to help reduce transportation costs for local field trips. The bus has been used on numerous departmental field trips, and has been "loaned" out to various groups. These pictures were taken by Dr. George White during a Pleistocene field trip in 1978. (As shown, the bus was used not only for transportation, but also as a make-shift bridge.)

















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