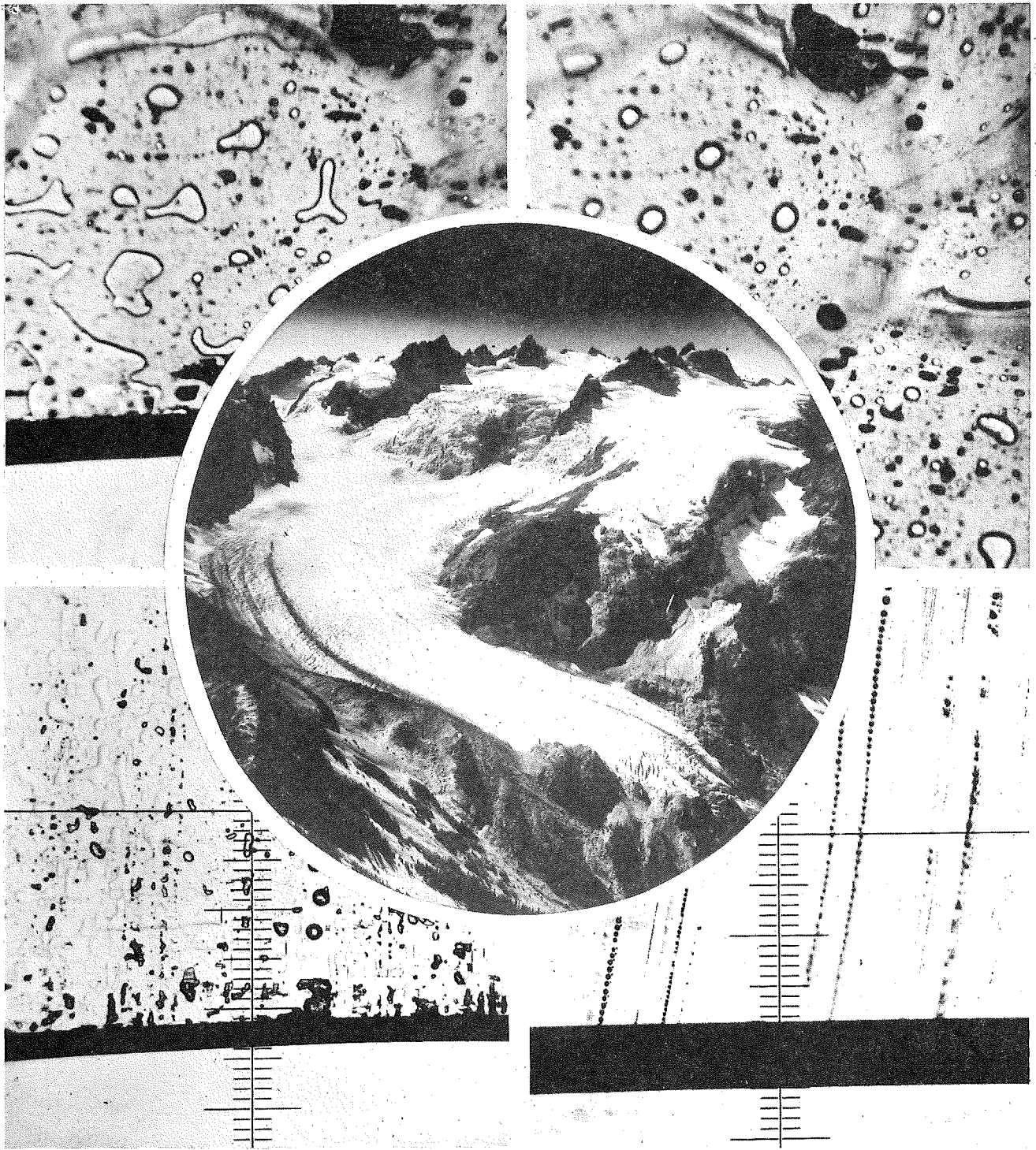


1973



UCLA
GEOLOGY DEPARTMENT
NEWSLETTER

THE COVER

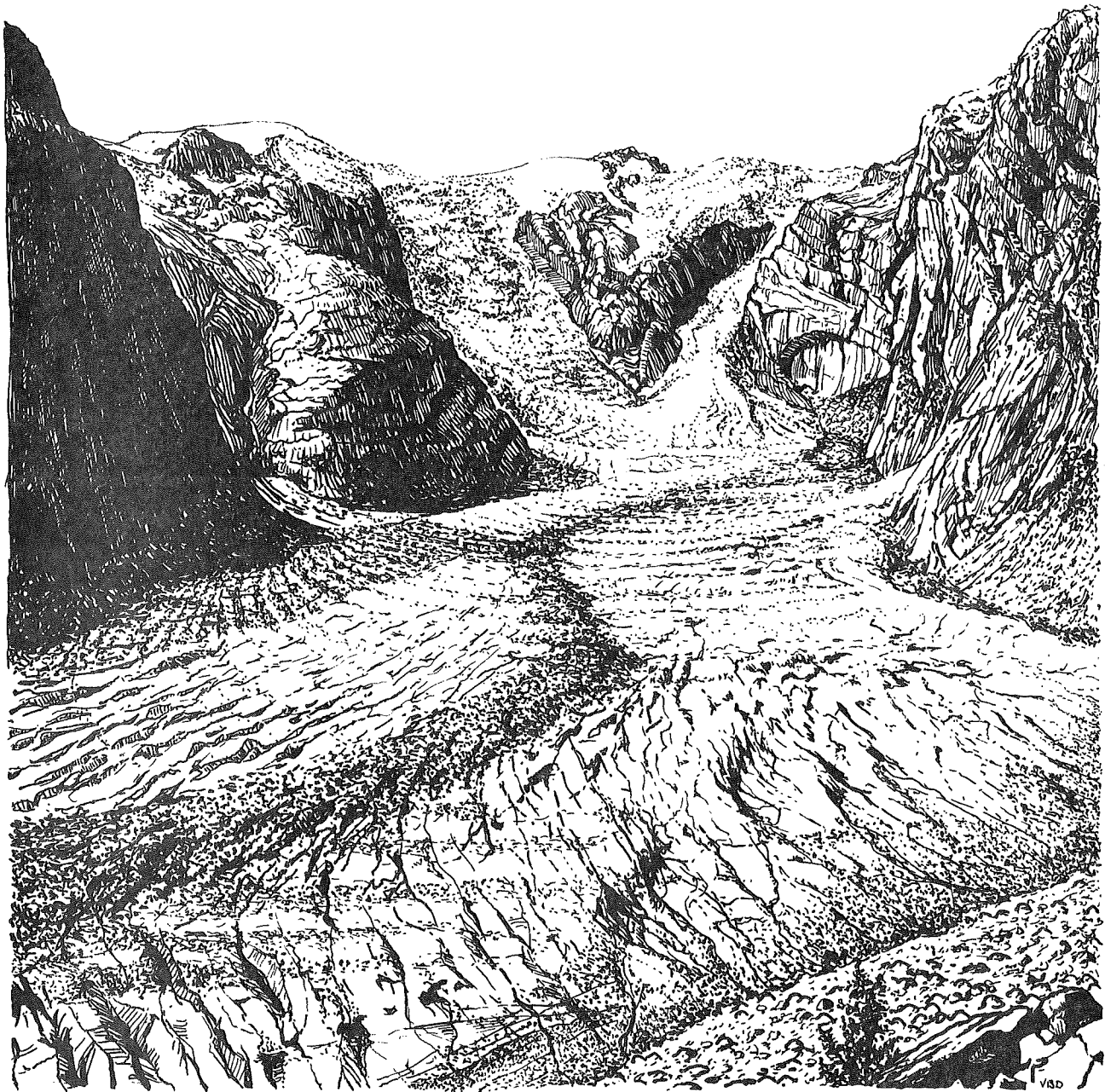
The cover of this Newsletter is a collage of photographs from R. L. Shreve and L. D. Drake and represents some of their work on pressure melting and regelation of ice (published this year in the Proceedings of the Royal Society of London, Ser. A, vol. 332).

Center: Blue Glacier, Mount Olympus, about 100 km west of Seattle, Washington, Elevation of highest peak is 2424 m. Height of ice falls is 300 m, and width of glacier at bend is 1 km. Like most other glaciers outside the polar regions, the Blue Glacier moves by both flowing and sliding. The sliding process, which contributes about half the total motion of the glacier, is in turn a combination of two mechanisms: plastic flow around the larger obstacles on the valley floor and pressure melting and regelation around the smaller ones. The higher pressure at the front of the obstacle causes the ice there to melt and the resulting melt water to flow in a thin layer around to the rear, where it refreezes. Because increased pressure lowers the melting point of ice, the temperature at the front is lower than at the rear; therefore, the heat released by the refreezing, or regelation, at the rear flows forward through the rock and the ice to supply the heat required for the pressure melting at the front.

The four pictures around the center one show the effects of pressure melting and regelation around fine wires pulled through ice blocks in a laboratory investigation carried out by Lon Drake (M.S., 1965) at UCLA. Upper left: Wires of high thermal conductivity (in this case copper 0.165 mm in diameter moving about 0.01 mm s^{-1}) leave behind irregular bubbles of liquid water (light outlines) and water vapor (black areas). Shad-owy polygonal outlines are crystal boundaries in the ice. Upper right: Same as upper left but 4 minutes later. Water bubbles have become almost spherical, whereas vapor bubbles are practically unchanged. Lower left: Illumination adjusted to show structure of vapor bubbles (dark outlines) more clearly. Lower right: Wires of intermediate thermal conductivity (in this case Chromel 0.123 mm in diameter moving about 0.005 mm s^{-1}) leave behind a medial tabular layer of water flanked by parallel trains of bubbles that originate at flaws on the wire. Wires of low conductivity (such as nylon) leave behind only the medial layer of water. Approximate magnification: upper figures, X 45; lower left, X 30; lower right, X 90).

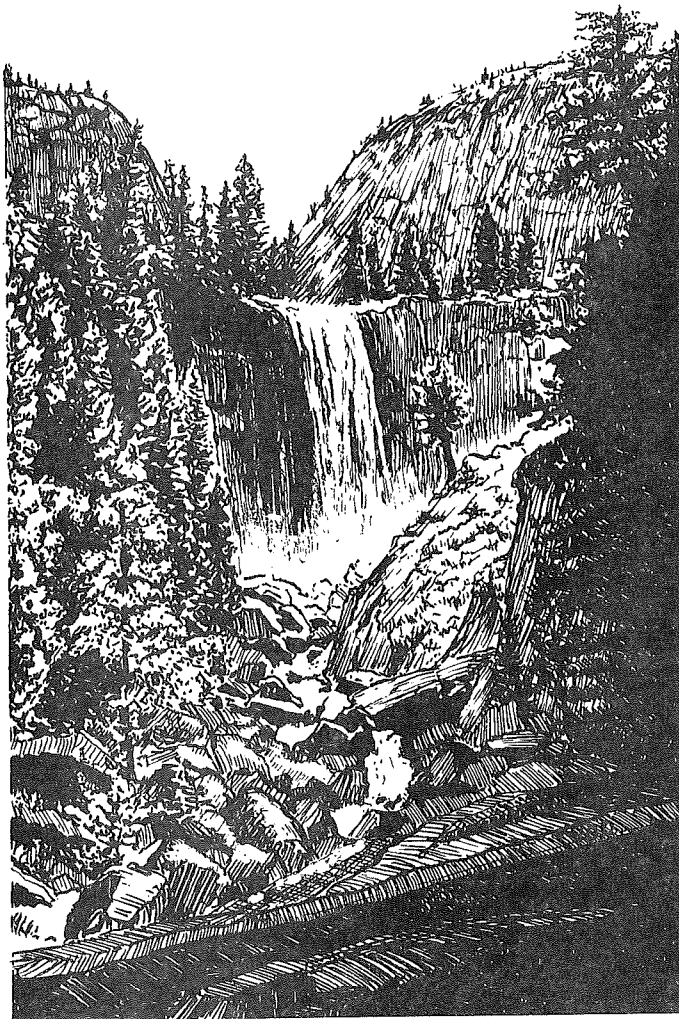
These and other results of Drake's investigation show that pressure melting and regelation is much more than the simple linear process long pictured in elementary physics textbooks.

Acknowledgements--We are once again indebted to Chevron Oil Field Research Company, La Habra, California, for reproducing the Newsletter. Drafting and illustrations (sketched from photographs by Jerry Treiman, Tony Finnerty, Bill Holman, Ron Shreve, and from illustrations in the Chicago Natural History Museum and The Origin of Birds by G. Heilman) were by Jeanie Martinez and Vicki Doyle. Various sections of the Newsletter were written by Skip Stoddard, Alice Campbell, Vicki Doyle, and Helen Loeblich; we would also like to thank all faculty, staff, students, and alumni who supplied the information which makes the Newsletter possible.



Austerdal Glacier, Norway

THE GEOLOGY DEPARTMENT



has completed an eventful year, with increasing enrollment, changes in faculty, new course offerings, assorted awards to students, staff and faculty, and initiation of a Careers Day and a UCLA Geology Alumni Fund.

In spite of the predicted decrease in university students suggested in articles, the news media, and by assorted soothsayers, fall enrollment in the University of California system reached its highest level in history during the fall quarter with a total of 113,427 on the various campuses together. UCLA again topped all the campuses in total enrollment with a record enrollment in the fall of 1972 of 29,661 (of which 18,969 were undergraduates and 10,692 enrolled at the graduate or professional level). This was an increase of 1,700 at UCLA over the previous year fall quarter.

Geology enrollment also increased, as by the spring quarter there were 72 undergraduate geology majors and 56 enrolled graduate students (exclusive of 14 more on leave of absence or those merely completing theses and not enrolled in courses). About one third of the graduate students have the master's degree as their goal, the remaining two-thirds are proceeding toward the doctorate. Total enrollment in Geology service courses (Geology 1 and 100) for the year was 637 (compared with 584 in the

previous year), enrollment for lower division courses for geology majors was 205 (versus 163 the previous year); for upper division courses it was 441 (versus 306), and for graduate courses, 288 (versus 237 last year). This is a total enrollment in all geology courses over the year of 1,571, the highest figure since 1959-1960.

New faculty include Dr. Walter Reed, who joined the Department in January, as announced in the last Newsletter; for the coming year Dr. Susan Werner Kieffer, formerly an honorary Research Fellow in Geology at UCLA, and Dr. Douglas Lorenz of the Smithsonian Institution have been appointed as Assistant Professors. Dr. Alfred R. Loeblich Jr. has spent his first year with the Department as an Adjunct Professor, teaching courses in Paleobiology of Plant Microorganisms and a Seminar in Paleontology. Dr. Sam Ben-Yaakov has been appointed as an Associate Professor in Residence for the next two years and will teach a Seminar in Sedimentology in the fall quarter. Dr. Timothy Loomis will spend half-time as an Acting Assistant Professor and the remainder as a post-doctoral fellow for the next two years and will teach some of the undergraduate Mineralogy-Petrology courses.

Other faculty changes are mentioned with regret, for Dr. Gary Lane has decided to return to the Land of the Crinoids to teach at the University of Indiana, after some fifteen years here at UCLA. He will be sorely missed by all the paleontologists and by many students across the campus who can never forget his distinctive teaching methods in Introductory Paleontology, which made it one of the most popular courses in the Department.

We were also very sorry that Dr. Douglas Rumble has decided to return to Washington, D.C., to the Carnegie Institution's Geophysical Laboratory there. We had hoped that southern California had won him from D.C. for good, but we just weren't successful. Needless to say, the Department and all its members wish both Gary and Doug the best of everything in their new locations and hope they will return to visit at least occasionally.

David Weide, after more than ten years with the Department as Museum Scientist and curator of rocks, minerals, maps, etc., is moving to the University of Nevada at Las Vegas to become a Professor of Geography and Geology. His former duties will be assumed by Phelps Freeborn.

During all or part of the past year, Wayne Dollase, Helen Loeblich, Gerhard Oertel, and Ken Watson were on sabbatical

leave, the last two beginning their leave in the spring and continuing on leave through the fall quarter.

During the past spring, the national AAPG and SEPM meetings were held in Anaheim, California, close enough that many of the faculty and students could attend part or all of the meetings, and the program was liberally sprinkled with contributions from UCLA faculty, present students, and alumni (I noted fourteen UCLAans in the program in a quick glance). In addition, the AAPG Outstanding Paper President's Award was presented to Dr. Mason L. Hill, Research Associate in Geology at UCLA, and the SEPM outstanding paper 1971 Journal of Paleontology Award was presented jointly to Dr. J. William Schopf of the Department faculty and his coauthor and former student, Jan M. Blacic (B.S., M.S., UCLA).

A Festschrift Volume, Flow and Fracture of Rocks, dedicated to Professor David Griggs of UCLA's Institute of Geophysics and Planetary Physics on the occasion of his 60th birthday, was published as Geophysical Monograph 16 of the American Geophysical Union late in 1972. Ten of the twenty-three included papers were by present or former UCLA faculty or alumni. Professor Griggs was also awarded the 1973 Arthur L. Day Medal of the GSA at the May meeting of the Council.

Bill Rubey was honored at a two-day conference, the "Rubey Conference on Crustal Evolution," in Santa Barbara, California on June 15 and 16. Limited to approximately 25 invitees, it was sponsored by the Carnegie Institution of Washington and was planned by Dr. Philip Abelson, President of Carnegie, Professors P. E. Cloud and John Crowell of U. C. Santa Barbara, and W. G. Ernst, Chairman of our Department.

The Department had a special Friday afternoon celebration on January 19 to honor John DeGrosse, Senior Laboratory Mechanician, for having completed 25 years of service with the University and the Geology Department. He was presented an official certificate, signed by President Hitch and Chancellor Young.

While on the subject of awards, three of the current graduate students received special awards this year. A Faculty Prize for Distinguished Teaching Assistants for 1972-1973, one of six such awards given for the entire campus, was awarded to Steven Lipshie. His award includes a certificate and a small stipend. Dorothy Zeller Oehler, doctoral candidate in geology, received one of the five Graduate Women of the Year awards given for the UCLA campus by the Association of Academic Women, and she was the single recipient from the Physical Sciences. This award also consists of a scroll and a small check. Graduate student

Robert Macdonald was awarded an American Federation of Mineralogical Societies scholarship for 1973-1974 and 1974-1975 upon the nomination of a former professor, H. Stanton Hill, Professor Emeritus at Pasadena City College.

The new GSA Special Paper 142, "Bibliography of Continental Drift and Plate Tectonics," was compiled by Tina Kasbeer while she was a member of the UCLA Geology Library staff. Although Tina has now moved to the UCLA Research Library, we are justly proud of her outstanding bibliographic work, which should be most helpful to anyone interested in this rapidly expanding field (isn't everybody?).

Unusual activity has been seen in the Department's Geology Museum in recent weeks. The Museum Committee (Vicki Doyle, Phelps Freeborn, Julie Guenther, Jeanie Martinez, Louella Saul, Takeo Susuki, and Glenn Waychunas), under the direction of Clem Nelson, has high hopes for a complete renovation of the displays, in spite of the fact that the Committee was told "not to spend any money...." The two largest of the proposed new displays will cover plate tectonics and the origin/evolution of life. A Grand Canyon display is almost completed, as is a display of fluorescent "black-light" minerals. There are also plans for a Topanga fossil exhibit, various mineralogy exhibits, a section devoted to the "making of a geologic map," and an eventual astrophysical display to replace the tired lunar geology niche. Drop in to see it when you have the opportunity.

Curriculum Changes

A few modifications have been made in the course offerings for the coming year. A new Engineering Geology (Bachelor of Science) major was approved by the Department, the curriculum for this involving both geology (and other physical sciences) and engineering courses, particularly their Introduction to Computing, Mechanics of Deformable Solids, Engineering Hydrology, Water Resources Engineering, and Principles of Soil Mechanics. The Introductory Sedimentology course has been changed from the graduate to undergraduate level (upper division). New courses added for the coming year include Geology 15, "Introduction to Oceanography;" Geology M119 (joint offering with the Department of Planetary and Space Science), "Continental Drift and Sea-floor Spreading," which is taught by two or three faculty representing the various aspects of this topic and is offered in alternate years. Geology M235, "Current Research in Geochemistry," is similarly offered jointly with Geophysics. Another new course, offered experimentally for the first time this coming year as Geology X, concerns the Natural History of California and will consist largely of field aspects of the biology, geology, and ecology of the Southern California region.

THE UCLA GEOLOGY ALUMNI FUND


As most of you know by now via Gary Ernst's recent missive to all, we have recently established the UCLA Geology Alumni Fund, "the purpose of which is to augment the educational program through support of undergraduate and graduate students by means of scholarships, grants-in-aid, purchase of educational equipment, and expenses for the visiting speaker program." As Gary also told you, the emphasis is to be placed on student aid, in view of the serious decrease in state and federal aid for student support. As everyone is also aware, living costs (and tuition) have increased; and as neither aptitude, ability, nor interests are necessarily correlative with personal wealth, it is important to be able to aid some of the best qualified students who might otherwise not be able to come to UCLA.

As of this writing (the end of July), the UCLA Geology Fund has received a total of \$1,366.10, representing thirty different contributors (alumni and faculty). Out of this amount, \$440.40 was used to purchase a Hewlett-Packard Pocket Calculator and security cradle, which was installed in Room 4687 of the Geology Building. Most of the remainder was awarded as a graduate scholarship for the 1973-1974 academic year.

As Gary also wrote, this most worthy cause is also tax deductible; so how about writing out another check to send to the Department as a Christmas gift before you have to pay next year's taxes? It will be worth perhaps twice as much to some student next year. Make the check out to the UCLA Foundation (Geology), and our thanks to all of you in advance.

The following page is our gold-starred, rose-strewn, laurel-wreathed list of contributors for 1972-1973. Let's see your name in print here next year.

UCLA GEOLOGY ALUMNI FUND CONTRIBUTORS

- 
- Mr. Donald O. Asquith (Ph.D., 1972, UCLA)
Mr. and Mrs. William K. Barry (B.A., 1943, UCLA)
Mr. and Mrs. Eugene Borax (M.A., 1942, UCLA)
Mr. Victor V. Botts, Jr. (B.A., 1956, UCLA)
Mr. and Mrs. Richard H. Daum (B.A., 1937, UCLA)
Mr. and Mrs. James C. Dawson (M.A., 1967, UCLA)
Mr. and Mrs. W. Gary Ernst (Faculty, UCLA)
Mr. Richard E. Faggioli (M. A., 1953, UCLA)
Mr. and Mrs. Donald L. Fernow (M.A., 1960, UCLA)
Mr. Walter S. Harris (M.A., 1958, UCLA)
Mr. and Mrs. Liang-Chi Hsu (Ph.D., 1966, UCLA)
Mr. and Mrs. Byron M. Ishkanian (B.A., 1957, UCLA)
Mr. and Mrs. George Lapins (Staff, UCLA)
Mr. and Mrs. Donald R. Lindsay (M.A., 1952, UCLA)
Mr. and Mrs. Juhn-Guang Liou (Ph.D., 1971, UCLA)
Mr. and Mrs. A. R. Loeblich, Jr. (Faculty, UCLA)
Mr. and Mrs. John T. McGill (B.A., Ph.D., 1951, UCLA)
Mr. Paul M. Merifield (A.B., M.A., 1958, UCLA)
Mr. Eugene D. Michael (M.A.; 1960, UCLA)
Mr. J. L. D. Morrison (Friend of the Department)
Mr. and Mrs. Clemens A. Nelson (Faculty, UCLA)
Mr. Robert Newton (B.A., M.A., 1958, UCLA)
Mr. and Mrs. John L. Rosenfeld (Faculty, UCLA)
Mr. Norman R. Rousselot (B.A., 1950, UCLA)
Mr. and Mrs. J. William Schopf (Faculty, UCLA)
Mr. Hyman Seiden (B.A., 1950, UCLA)
Mr. James B. Taylor (M.A., 1963, UCLA)

THE FIRST ANNUAL UCLA GEOLOGY CAREERS DAY

To bring students and faculty in contact with representatives of a variety of industrial and governmental organizations so that all could gain from the association, a new program was instituted. Our First Annual Geology Careers Day was held on Thursday, March 8, and was attended by about 100 representatives from the petroleum and mining industries, engineering geology firms, and federal, state, and local agencies that employ or consult geologists.

All met first in the Geology Department Museum for registration, coffee, and donuts from about 9:30 to 10:00 a.m. We then moved (would you believe in the rain!) to Kerckhoff Hall in the upstairs lounge, third floor, where the morning program consisted of a welcome by Gary Ernst (Chairman of the Department), and four talks by visiting representatives on the subject of "Prospects and Challenges in Earth Science." Speakers were J. E. McCall (Chevron), H. Fothergill (Union), D. V. Higgs (Shell), and J. D. Mancuso (EXXON Metals). The entire group moved to the Men's Lounge in the Student Union Building for a quick lunch and then listened to a continuation of the program, with speakers S. Muessig (Getty Minerals, S.E.G.), H. A. Spellman (Converse, Davis and Assoc.), D. Hodder (Rockwell International), and G. Miller (U.S.G.S.). After this part of the program, a short break consisted of a quick tour of the Department facilities, with small groups of the visitors led by various students. All then returned to Kerckhoff Hall, where some of the Department (faculty members W. E. Reed and J. W. Schopf, graduate student Roy Budnik) gave brief talks on their particular research interests as an example of ongoing projects at UCLA. As the hour by now was after 5:00, we moved to the Alumni Room of Kerckhoff Hall, where Ted Bear was host to a Happy Hour (courtesy of Bear & Kistler). A banquet in the Men's Lounge followed the Happy Hour, and this was topped off by an address on the national energy situation by J. E. Wilson (Shell), the President of the AAPG. Brief reports were then made about the UCLA Earth Science Program by C. A. Nelson (Undergraduate Advisor), S. Prior (alumnus and new graduate student), H. Loeblich (incoming Graduate Advisor), and P. M. Merifield (Lecturer in Engineering and Environmental Geology). Drawings were then held for two tickets to the UCLA-USC Basketball game, donated for the occasion.

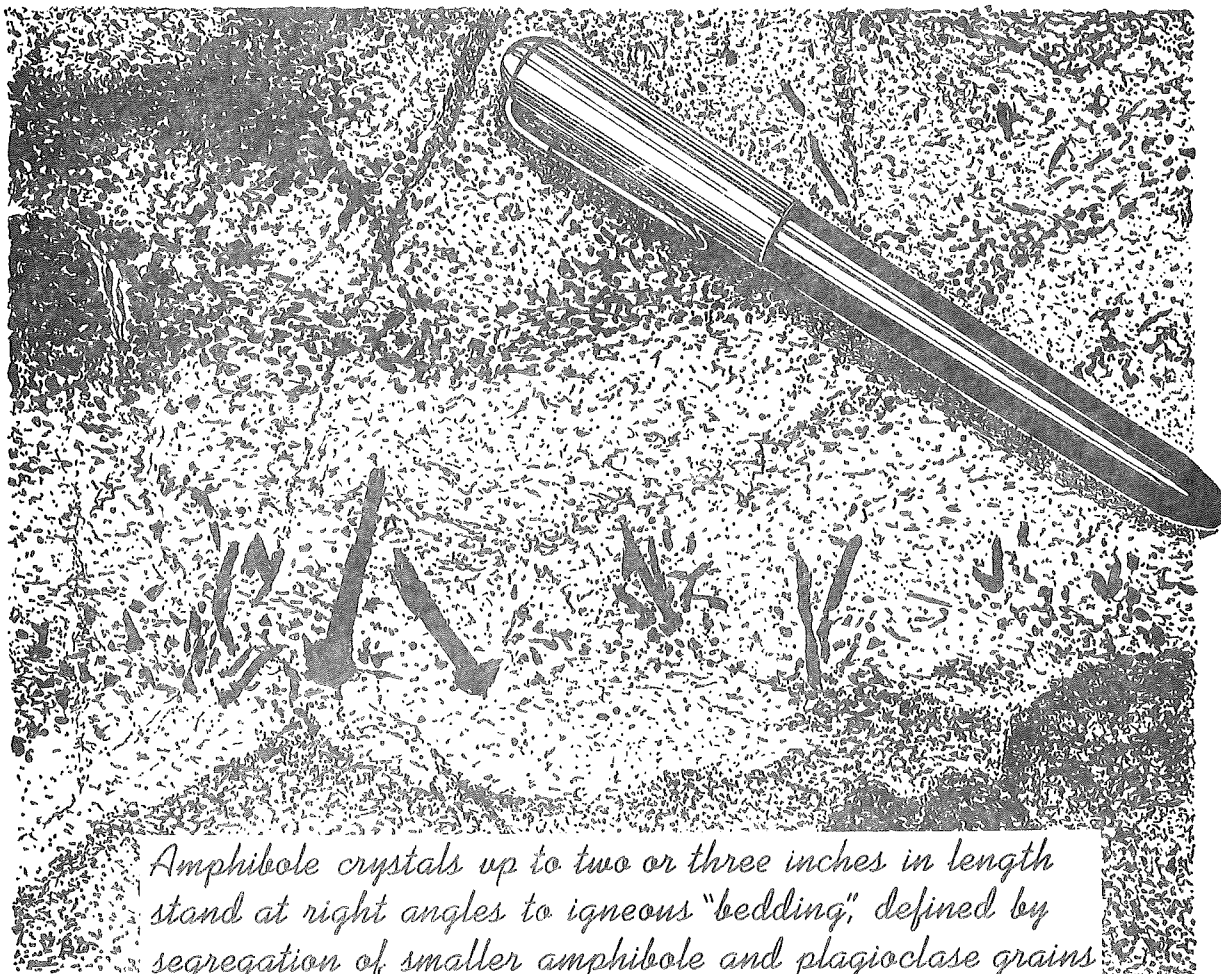
It was a rather long day, but we felt that everyone came away with a better understanding of the broad scope of geology and its importance to society. We believe it will be well worth establishing as a new tradition, and, in fact, there is another Careers Day scheduled for this November.

THE GEOLOGY/GEOPHYSICS LIBRARY

The branch library in the Geology Department contained, at the beginning of the just completed academic year, a total of nearly 63,000 volumes. It currently receives 1,921 serial publications. As is true of most other items at present, the price of journals, particularly foreign ones, has been rapidly increasing, whereas appropriations for the library have not. UCLA is thirteenth in size of library holdings of the 78 North American institutions belonging to the Association of Research Libraries, being exceeded by five state universities, six U.S. private ones, and that of the University of Toronto. In total volumes added during the previous year, however, UCLA is sixteenth, being exceeded by seven state universities, those of Texas, Indiana, Illinois, Utah, U.C. Berkeley, Michigan, and Ohio State, as well as three Canadian ones and five U.S. private universities. Because state support has not been able to keep abreast of the increasing costs, the geology library and all users greatly appreciate the generous gifts of books and journals during the past year from the following:

Margaret Bloomfield*	Willard Libby
John Christie	Helen Loeblich
Fred Davis	Joseph Murdoch
Gary Ernst	Clemens Nelson
David Griggs	Konstantine Paffengolts
John Hoyles	John Rosenfeld
Harry Johnson	William Rubey
Leon Knopoff	Ronald Shreve
Chevron Oil Field Research Company	
Getty Oil Company	
Humble Oil and Refining Company	

* Gift in memory of her late husband, George D. Bloomfield, B.S., 1934.



Amphibole crystals up to two or three inches in length stand at right angles to igneous "bedding", defined by segregation of smaller amphibole and plagioclase grains of the San Gabriel Anorthosite Complex.

THE GEOLOGICAL SOCIETY OF UCLA

Members of the Geology Department (faculty, staff, and students) had another fun year, and much of the credit should go to GSUCLA, our own Geological Society. GSUCLA again cosponsored the Guest Lecture Series, and the year's lecturers provided for abundant Thursday afternoon intellectual stimulation and occasional coffee and donuts.

What would the Geology Department of UCLA be without the continuing (in one form or another) tradition of Friday afternoon Phase Liquidus? Liquidus had a very successful year again due in some large part to the efforts of head Keeper-of-the-Refrigerator-Key, Frank Spear. Some have complained that the price of the liquid refreshment was a little steep--but be assured that Frank will have a very enjoyable summer this year!

In addition to perpetuating the Tuesday noon tradition of Instant Seminar (and the annual Santa Claus escapade), GSUCLA had the annual Fall Welcoming picnic (held in September at the Sunset Canyon Recreation Center) during which the only faculty versus student softball game of the year took place--ending in a score that the faculty would just as soon forget!

The annual Fall Field Trip, led by Tony Finnerty, was set to invade the San Gabriel Mountains, but had to be held in May because of a very snowy winter. The trip visited Precambrian igneous and metamorphic rocks in the San Gabriels, including the well-known anorthosites and gabbros. One of the highlights of Tony's trip was the visit to the Mill Creek igneous mass, a body of intrusive (?) and/or thrust (?) origin. Which is it, Tony?

Also held in May this year was the annual "Halloween" expedition to the Brown Bottle Room of the Schlitz Brewery. The theme of this year's party was "Renaissance Faire," and in addition to some intriguing costumes, there were contests including archery (Dr. Schopf actually had a glass of beer shot out of his hand), chess, and jousting (in which it was said that many tipplers were toppled). Highlight of that evening was the presentation of "This is Your Life, Gary Lane," a slide and talk show emceed by Tom Fairchild, which featured entertaining pictures of Dr. Lane's escapades (such as his novel approach to teaching the Paleontology 115 class and the "Mating Dance of the Crinoids").

The Spring Picnic for Department members, wives, and children was held on June 10 at Point Mugu State Park, was coordinated by Mike Garcia, and included a massive beach football game with some of the best looking and smallest linebackers ever assembled.

Some members of the Department, led by Mike Garcia, plan a Colorado River float trip with the company "Wilderness World" in late June. We're sure they'll have a great and exciting time--and of course we hope to see them all back next fall....

Perhaps one of the highlights of the year was the suspicion, reminiscent of certain national political affairs, which surrounded the election of the president of GSUCLA for 1973-1974. At the present time senate investigations and strong-arm tactics are underway in an attempt to resolve the problem, which centers around the apparent victory by one vote of John Barron over Mike Garcia. Officers for the year 1972-1973 were Roy Budnik, President; Reed Wicander, Vice President; Tom Fairchild, Treasurer; Skip Stoddard, Secretary; and Ken Crawford, G.S.A. Representative.

GSUCLA officers unambiguously elected for the 1973-74 academic year include:

Scott Prior, Vice-President
 Sara Jacobson, Treasurer
 Steve Alpert, Secretary
 Rick Hurst and Warren Wegner, sharing duties as the
 Graduate Students' Association Representatives.

-- Skip Stoddard, Secretary, GSUCLA

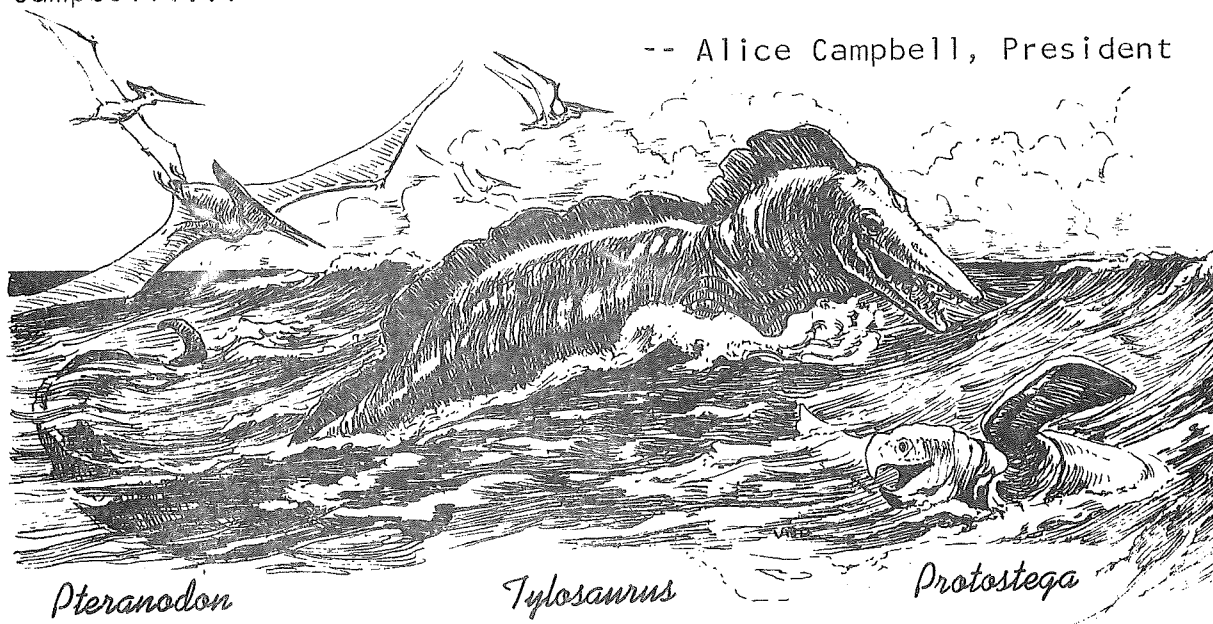
THE UCLA GAEOLOGICAL FORMATION, 1972-1973
 (Undergraduate version of GSUCLA)

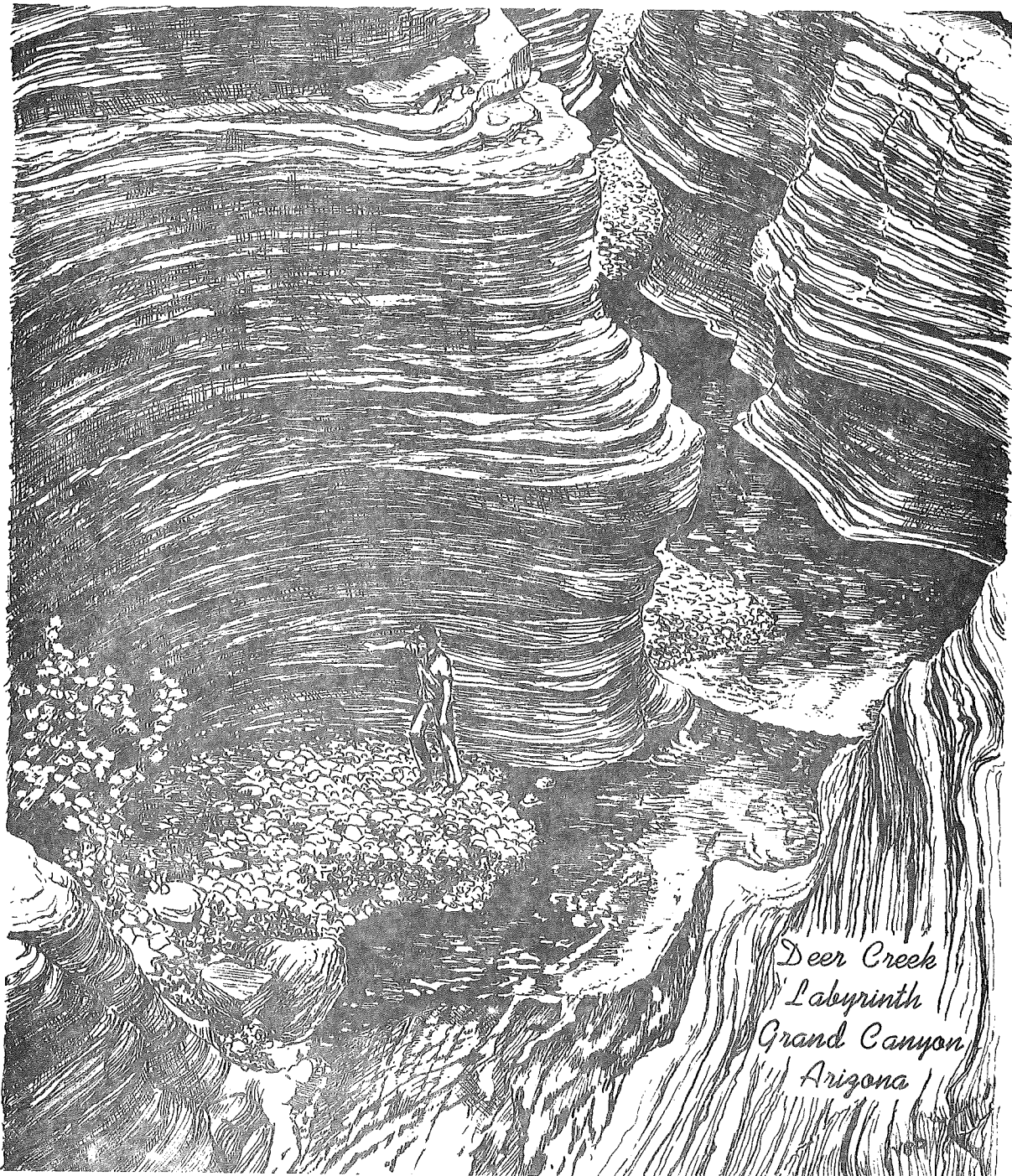
The Formation began the year with a torrent of activity, which declined to a trickle at its close. The fall quarter trip to Death Valley was initially enthusiastically acclaimed by the multitudes; four stalwart members finally arrived to tour the Valley. After four days hampered by snow and rain, but nonetheless highly instructive and inspiring, the trip ended on account of illness of three of the four stalwarts.

A rerun of the previous year's Grand Canyon trip was in the plans for spring break; however, it finally was defeated when the Grand Canyon lower campgrounds were reported filled, and the Havasupai Indians failed to confirm reservations. No summer trip was planned because most of the Formation's members were at Summer Field Camp in San Luis Obispo.

The next year promises a big comeback for the Formation under the peerless leadership (for the third time!) of Alice Campbell....

-- Alice Campbell, President





FACULTY NEWS

Ted L. Bear, B.A., UCLA. Lecturer in Geology

Geological consultant (Bear & Kistler), Ted teaches the course in Petroleum Geology. He is Secretary and Member of the Executive Committee for the American Association of Petroleum Geologists.

Sam Ben-Yaakov, Ph.D., Engineering, UCLA. Adjunct Associate Professor of Geology

Sam has held positions both in the Department of Engineering and the Department of Geology and has worked closely with faculty and students in geochemical and oceanophysical problems. He has designed and built an in situ carbonate staurometer for use to depths of 10 km, which provides a very accurate method for measuring saturation of calcium carbonate in the ocean and for attacking problems of pH buffering, carbonate compensation depth, etc. The instrument was used off the Atlantic coast of South America by the R. V. Knorr, as part of the I.D.O.E. chemical oceanography program (GEOSECS). Additional cooperative studies with Scripps Institution of Oceanography are planned to study carbonate solubility in the vicinity of the East Pacific Rise. Other research has involved models of ocean circulation patterns and measurements of diffusion coefficients of ions in mixed electrolytes.

He has articles in press on seawater composition influence on the carbonate system (Deep Sea Research), on pH buffering of recent anoxic marine sediments (Limnology and Oceanography) and concerning various types of instrumentation.

Donald Carlisle, Ph.D., Wisconsin. Professor; Associate Dean, Graduate Division

Following his sabbatical leave, Don spent only a short time in the field in British Columbia. In February he returned to Vancouver to give a paper on intravolcanic and intervalcanic carbonate facies of the Insular Belt. On the following weekend "showing off in some deep snow on Mount Whistler" he managed to sustain a compound fracture of his left leg--both bones--on a "rather poorly done right turn." He was still able to teach in the Spring quarter. After a long stint on crutches, he hopes to have his cast off by September.

He and Takeo Susuki have a paper accepted for publication in the Canadian Journal of Earth Sciences ("Emergent basalt and submergent carbonate-clastic sequences"). His contribution to northwestern Vancouver Island geology for the Geological Survey of Canada is complete, but his own report on northeastern Vancouver Island for the Survey has been somewhat delayed by his accident.

Don's duties in the Graduate Division still consume an inordinate amount of time, it seems, in spite of the fact that fellowship funding has declined--or perhaps because of it and the increasing attention that must be given to the more complex need-limited types of support.

John M. Christie, Ph.D., Edinburgh. Professor

John continued his research activities throughout the year on transmission electron microscopy of the lunar rocks with Professor David Griggs of the Institute of Geophysics and Planetary Physics and with his collaborators at U. S. Steel Research Laboratories in Monroeville, Pennsylvania, and at Case Western Reserve University in Cleveland. This entailed too many trips to Cleveland, he claims, but was nevertheless stimulating and productive. His experimental studies of rock deformation (with Professor Griggs, Gerry Dollinger, Keith Gordinier, Steve Kirby, John McCormick, Peter Vaughan, and Mary Wegner) have also progressed well, and Peter Vaughan and Gerry Dollinger will complete their M.S. and Ph.D. theses, respectively, this summer.

Griggs, Christie, Kirby, and Dollinger presented papers at the National Meetings of the American Geophysical Union in Washington in April. John also presented papers at the NATO Study Institute on the Feldspars at Manchester, England (July 1972), the Western Meetings of the A.G.U. in San Francisco (December 1972), and at the Fourth Lunar Science Conference in Houston (March 1973). He has been invited to present symposium papers on transmission electron microscopy of deformed minerals and rocks at the G.S.A. Annual Meetings at Dallas (November 1973) and at the Eighth International Congress on Electron Microscopy in Canberra, Australia (August 1974).

John's recent publications include "Deformation of lunar and terrestrial minerals," Proceedings of the Fifth International Materials Symposium, Berkeley, U. C. Press, 1972 (with D. T. Griggs, R. M. Fisher, J. S. Lally, A. H. Heuer, and S. V. Radcliffe); "Phase transformations and exsolution in lunar and terrestrial calcic plagioclases," Phil. Mag., vol. 26 (with Heuer, Lally, and Radcliffe); "Electron petrography of Apollo 14 and 15 rocks," Proceedings of the Third Lunar Science Conference, M.I.T. Press, 1972, vol. 1 (with Lally, Fisher, Griggs, Heuer, G. L. Nord, and Radcliffe); "High voltage electron petrographic study of Apollo 15 rocks," in Apollo 15 Lunar Samples, edited by Chamberlain and Watkins, 1972 (with the above coauthors); "Transmission electron microscopy of experimentally deformed olivine crystals," Geophysical Monograph 16, The Griggs Volume, American Geophysical Union, 1972 (with P. Phakey and G. Dollinger); and "Microstructures and preferred orientations of experimentally deformed quartzites," Geol. Soc. America Bull., vol. 84, 1973 (with J. A. Tullis and D. T. Griggs).

Wayne A. Dollase, Ph.D., Massachusetts Institute of Technology.
Professor

After a reasonably productive summer spent in interpreting the Mössbauer spectra of epidotes and pyroxenes, Wayne set

off on an eleven-month sabbatical leave to the Department of Geology and Geophysics at the University of Wisconsin, Madison. Most of his time was spent on research efforts, including resolution limits of computer-simulated Mössbauer spectra, atomistic point-defect models of simple, ionic compounds, and writing of computer programs to characterize crystal-structural polyhedral distortion parameters.

In addition to his research, Wayne renewed old acquaintances and turned over some new ideas through discussion with the University of Wisconsin faculty and students, especially Professor Sturges Bailey. He gave a few lectures and made a field trip (after being delayed by an April blizzard) to the Precambrian of northern Wisconsin. Any of his spare time was devoured by a new job as Associate Editor of the American Mineralogist, a job which began on the first of the year.

W. Gary Ernst, Ph.D., Johns Hopkins. Professor of Geology and Geophysics; Chairman, Department of Geology

Gary participated in two Penrose conferences in late 1972, a field conference on ophiolites (September 15-24) in Oregon and California and a conference on continental margins at Warrenton, Virginia (December 12-17). He attended the G.S.A. national meeting at Minneapolis and the A.G.U. western national meeting at San Francisco and spent three weeks on geologic field trips in Chile during March and April of 1973. He presented lectures at U. C. Riverside, the Coast Geological Society (Ventura), U. C. Santa Cruz, U. C. San Diego, Stanford, the University of Santiago (three lectures), and Cal Tech.

He published two joint papers, "Preliminary phase relations for andradite and hedenbergite," in the Reports of the Eighth Symposium on Experimental and Technical Mineralogy and Petrography, Nauka, U.S.S.R. (with W. I. Gustafson); and "Zeolite equilibria in the system $\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 - \text{SiO}_2 - \text{H}_2\text{O}$, the stabilities of wairakite and laumontite," in the same publication (with J. G. Liou). "Ca-amphibole parageneses in the Shirataki District, central Shikoku, Japan" appeared in the Gruner Volume of the Geol. Soc. America (Memoir 135). Gary's journal articles for 1972 and 1973 include: "Occurrence and mineralogic evolution of blueschist belts with time," American Journal of Science, vol. 272; "Possible Permian oceanic crust and plate junction in central Shikoku," Tectonophysics, vol. 15; "Blueschist metamorphism and P-T regimes in active subduction zones," Tectonophysics, vol. 17, and "Interpretive synthesis of metamorphism in the Alps," Geol. Soc. America Bull., vol. 84. "Petrology and Plate Tectonics" was published as Chapter 10 in the next textbook Geology Today (CRM Books, Del Mar, California).

Gary is serving a three-year term as President of the Volcanology, Geochemistry, and Petrology Section of the A.G.U. (he was president-elect last year) and was a member of the G.S.A. committee on nominations.

Last year was spent principally in trying to maintain and, if possible, augment departmental strength in terms of faculty and staff personnel. Gary helped to organize (and was largely responsible for) the first annual UCLA Geology Careers Day--an attempt to bring students, faculty, and industrial representatives together in a learning situation in which the job challenges could be explored. He taught elementary mineralogy (51A), phase equilibria (234), the senior seminar (190), and elementary geology (M-1). During the summer he aided Clarence Hall in teaching the six-week UCLA summer geology field course in the area near San Luis Obispo.

Postdoctoral fellows Dick Grauch (general geology and high-grade metamorphism in the Venezuelan Andes) and Colin Graham (amphibolite facies metamorphism in Scotland and the western Alps) are working with Gary, as are graduate students Phelps Freeborn (experimental fractionation of Fe-Mg in olivines + clinopyroxenes), Tony Finnerty (trace element partitioning in olivine + orthopyroxene pairs), Frank Spear (experimental oceanic crust metamorphism), Ken Crawford (Franciscan tectonics and metamorphism), Roy Budnik (Mesozoic graywacke trench mélangé, south-central Alaska), and Terry Kato (low-grade metamorphism in the coastal Cordillera, Chile).

Clarence A. Hall, Jr., Ph.D., Stanford University. Professor

Clarence's years of mapping in the San Luis Obispo area are now down on paper--he recently published the "Geologic Map of the Morro Bay South and Port San Luis quadrangles, San Luis Obispo County, California" (U. S. Geological Survey MF-511); the "Geology of the Arroyo Grande quadrangle, San Luis Obispo County, California" is in press as Geology Map Sheet 24 of the California Division of Mines and Geology; and "Geology of the Cambria, Cypress Mountain, Cayucos, and York Mountain quadrangles" is in final stages of preparation for the U.S.G.S. MF map series.

Clarence will offer a new course entitled "Natural History of Southern California" next spring. It will be almost entirely field oriented with emphases on geology and botany. Field trips will be to the central Coast Ranges, the Sierra Nevada, Marble Mountains, upper Newport Bay salt marshes, Palm Springs-Colorado Desert area, and the Santa Monica Mountains University Reserve. This experimental course with limited enrollment is designed to make students aware of the total environment, to see relationships

between geology and plant distribution, recognize the importance of engineering and environmental geology, and gain an understanding of undisturbed natural environments.

Clarence was in charge of the UCLA Summer Geology Field program in 1973. Sixteen students and two instructors (the other being W. G. Ernst) were involved in the program this year. Work was undertaken in the San Luis Obispo quadrangle with a primary interest in the nature and extent of the West Huasna fault, the structure and understanding of the Franciscan rocks, and distribution of pyroclastic and volcanic rocks in the San Luis Obispo area.

Graduate student Scott Prior will be working on the middle Miocene biostratigraphy between Cambria and Santa Maria this summer. His ultimate goal is an understanding of the middle Miocene paleogeography and paleoecology of that area and the construction of palinspastic maps that will take into account several major faults with possible or probable strike-slip separation.

Isaac R. Kaplan, Ph.D., University of Southern California.
Professor of Geology and Geochemistry

Kaplan's group has had a busy year during 1972-1973. The classes taught by Ian include a seminar in Continental Drift and Ocean Floor Spreading (taught in tandem with D. Jackson, J. Christie, and G. Wetherill); Ian also taught Marine Geology, Principles of Earth Science, and a Seminar in Sedimentology during the year.

Ian was instrumental in organizing two meetings dealing with the current energy crisis: one, a symposium held at the Lake Arrowhead Conference Center of the University in November, covered the occurrence of natural gas in marine sediments; the other, a consortium organized during the AAPG Convention at Anaheim in May, concerned deep-sea search for petroleum. These meetings were successful in alerting interested parties from industry, government, and universities to the possibility of hydrocarbon genesis in the outer continental margins, possibly conducted through the JOIDES Program by Scripps Institution of Oceanography.

Laboratory research is continuing on analysis of Apollo 16 and 17 lunar samples, trace element and gas analyses of JOIDES cores, the sedimentary sulfur cycle and the ocean nitrogen cycle, and the distribution of uranium in ocean sediments.

Three graduate students, Joel Cline, Marty Goldhaber, and George Claypool, are completing thesis research. Dr. Raphael

Ikan (visiting research scientist from the Laboratory of Natural Products, Hebrew University, Israel) is working in conjunction with Mary Jo Baedecker on thermocatalytic degradation of naturally occurring organic matter in recent marine sediments. Dr. Sam Ben-Yaakov and Ed Ruth have continued studies on the solubility of carbonates in the ocean using the in situ instrument package. Dr. Ben-Yaakov has also been invited to participate in the GEOSECS program for the study of the Pacific Ocean as part of the International Decade of Ocean Exploration. Sam has been appointed Associate Professor in Residence for 1973-74 and will teach a seminar in mathematical modeling.

Susan Werner Kieffer, Ph.D., California Institute of Technology.
Assistant Professor

Previously a Research Fellow with the Department, Sue became a full member of the Department as Assistant Professor on July 1, 1973. Sue's general interests concern mineral lattice vibrations and thermal properties (heat capacity, thermal diffusivity and conductivity, Gruneisen's ratio), geological physics--planetary surface processes, meteorite impact and volcanism, and shock-wave physics.

Her research efforts during the past year have concerned experimental determination of the thermal diffusivity of minerals to pressures over 30 kb. Sue hopes to obtain data against which to test the model of mineral lattice vibrations which was developed as part of her thesis work. During odd moments she is preparing a manuscript with John Christie and Prem Phakey that describes the origin of high-pressure phases of SiO_2 in shocked rocks from Meteor Crater, Arizona, based on transmission electron microscopy in combination with her previous optical and X-ray studies. A summary of the Meteor Crater work was presented at the A.G.U. fall meetings by Christie, while Sue viewed the Apollo 17 launch. Meteoritics has accepted Sue's translation of a Russian article by L. F. Firsov, "Concerning the meteoritic origin of the Puchezh-Katunkii Crater." If this astrobleme is indeed a meteorite impact crater, it may be the largest yet recognized.

During the winter quarter Sue taught a course in astrogeology (planetary surface processes, emphasizing meteorite impact and volcanism). After years spent as a graduate student studying impact mechanics and cratering theory, it has only recently been possible for her to study active volcanoes. Sue and her husband, Hugh, were in Hawaii during the two most active eruptions of Mauna Ulu during 1973-1973.

N. Gary Lane, Ph.D., University of Kansas. Professor

After spending last year as a Visiting Fulbright Professor

of Geology at Trinity College in Dublin, Gary returned to Los Angeles at the end of August, attended the International Geological Congress in Montreal, and then went on to Washington, D. C., for an international conference on fossil and living echinoderms which was sponsored by the Smithsonian Institution. A crinoid collecting trip in Nevada, Arizona, and New Mexico followed with Dr. George Sevastopulo, a lecturer at Trinity College who is much interested in Late Paleozoic crinoids.

Gary then adds that "During the winter quarter, after much debate with myself, I accepted a position as Professor of Geology at Indiana University, and I will be moving to Bloomington during the summer. It is with great regret that I leave all of you fellow faculty and the current students here at UCLA, but I have determined that this change will be advantageous in many ways, both professionally and personally."

Gary's principal publication this year was the report on the Crawfordsville, Indiana, fossil site, which has been in the hands of the University of California Press for almost two years. Much of his research time involved various parts of the crinoid volume of the Treatise on Invertebrate Paleontology. Type-setting for this volume, one of the last to be completed, is supposed to begin in the near future.

Alfred R. Loeblich Jr., Ph.D., University of Chicago. Adjunct Professor

During the past year Al taught a Seminar in Paleontology, covering taxonomic practices involving both the International Codes of Botanical and Zoological Nomenclature. He then taught the lecture and lab for the "Paleobiology of Plant Microorganisms" (Geology 215) during the spring quarter. In August he attended the First International Congress of Systematic and Evolutionary Biology and presented a paper on "Protistan Phylogeny as Indicated by the Fossil Record" for the Symposium on Phylogeny of Protista. On June 1 graduate student Todd C. Frazier joined Al as a research assistant. They are jointly working on various projects on Lower Paleozoic Hystrichophyta (Acritarcha) and hope to complete a study of the subsurface Maquoketa Formation of Indiana in the fall of 1973.

Helen Tappan Loeblich, Ph.D., University of Chicago. Professor; Vice-Chairman, Department of Geology

On sabbatical leave during the fall and winter quarters, Helen managed to complete for press two manuscripts, one on the evolution of oceanic plankton for Earth Science Reviews jointly with Al Loeblich, and one concerning molecular oxygen and evolution. During the summer of 1972 her field work with Al and graduate student Merton Hill covered the Mid Cretaceous of Texas and

southern Oklahoma, the Ordovician of Oklahoma, and Silurian of New York. At the International Geological Congress, she presented a paper (with A. R. Loeblich) on "Fluctuating rates of protistan evolution, diversification, and extinction," published in the Congress Proceedings.

Helen is a member of the Paleontology and Biostratigraphy Panel, JOIDES; the Editorial Board for Palaeogeography, Palaeoclimatology, Palaeoecology; and is West Coast Correspondent for Micropaleontology. She attended the national meetings of the G.S.A. and A.A.P.G. and organized the symposium on Phylogeny of Protista for the First International Congress of Systematic and Evolutionary Biology in Boulder, Colorado, during August 1973.

Upon return from her sabbatical leave, she took over the duties of Vice-Chairman and Graduate Advisor while Ken Watson took a "vacation" on sabbatical. She taught Historical Geology during the spring quarter and is directing the dissertation research of E. Reed Wicander on Late Devonian acritarchs from Ohio (Reed presented partial results of this at the Cordilleran G.S.A. meeting and the national S.E.P.M.); of John Barron on the Late Miocene - Pliocene diatom biostratigraphy and paleoclimatology (early results presented at the Anaheim S.E.P.M. meeting); and of Merton Hill on middle Cretaceous calcareous nannoplankton from the Gulf Coast. All three were research assistants under a current NSF grant during 1972-1973.

Timothy Loomis, Ph.D., Princeton University. Adjunct Assistant Professor

Tim will join the Department this summer as an Adjunct Assistant Professor and as an Assistant Research Geologist with Gary Ernst. He is coming from two years as the J. Willard Gibbs Instructor at Yale University. Tim will teach the third quarter of the undergraduate mineralogy-petrology sequence.

Tim spent last summer in Idaho and in the Ivrea Zone of the Western Alps considering possible projects concerning tectonic implications of their metamorphic history. He attended a Penrose field conference on ophiolites in Oregon and California in September and presented a paper on tectonic development of the Alboran Sea (Western Mediterranean) at the A.G.U. meetings in San Francisco in December.

Publications appearing last year include "Coexisting aluminum silicate phases in contact metamorphic aureoles," in the American Journal of Science, vol. 272; "Gravity anomalies, ultramafic intrusions, and the tectonics of the region around the Strait of Gibraltar," Journal of Geophysical Research, vol. 78

(with W. E. Bonini and J. D. Robertson); and "Sea-floor spreading rate changes in the South Atlantic," in Volume 2 of Marine Geophysical Researches (with W.J. Morgan). Tim's dissertation "Metamorphic and structural effects of the emplacement of the Ronda ultramafic mass, southern Spain," was published as two articles in the G.S.A. Bulletin in 1972.

He is presently continuing work on the plate tectonics of the Gibraltar area and some high-grade metamorphic reactions of rocks associated with the peridotites of Southern Spain and the Ivrea Zone.

Douglas M. Lorenz, Ph.D., Northwestern University. Assistant Professor

Doug has been a Postdoctoral Fellow in the Department of Paleobiology, U. S. National Museum of Natural History, Washington, D. C., for the past year. His research interests are in quantitative paleoecology and biometry, with emphasis on evolutionary dynamics in ancient benthic marine communities; Lower Paleozoic bryozoan paleobiology and systematics; and the applications of analytic probability (stochastic) models in paleobiology and paleoecology.

His publications have been "Adaptive response to environmental stability: a unifying concept in paleoecology," Proc. North American Paleon. Convention, Chicago, Allen Press (with P. W. Bretsky); "An essay on genetic-adaptive strategies and mass extinctions," G.S.A. Bulletin, vol. 81 (with Bretsky); and "Lithofacies, paleocurrents, and environments of deposition of the Dunkard Group in Ohio, Pennsylvania, and West Virginia," in AAPG Eastern Section Field Trip Guidebook, 1972 (with W. D. Martin). Papers in press or in preparation involve community structure of Upper Ordovician benthic faunas in Kentucky and functional morphology of bryozoa.

Paul M. Merifield, A.B., M.A., UCLA; Ph.D. University of Colorado. Partner, Lamar-Merifield. Lecturer in Geology.

During the past year, Paul taught Engineering and Environmental Geology and helped teach the winter and spring field courses. As part of his connection with the proposed graduate program in Environmental Science and Engineering, he participated in three environmental problem-solving courses involving the geology and hydrology of Mammoth Lakes, the feasibility of offshore nuclear power plants, and proposed alternatives for the Santa Monica Pier area.

Paul is a principal investigator on the NASA-Skylab Earth Resources Experiment Package. Imagery of southern California,

taken from SKYLAB is being studied for information on the tectonic history of the area. A similar study of ERTS-1 imagery of California will be made under contract to the U. S. Geological Survey. Computer and optical image enhancement will be performed by Jet Propulsion Laboratory and the Rand Corporation.

He was coauthor of "Pseudocolor transformation of ERTS imagery," presented at the ERTS-1 Symposium, Goddard Spaceflight Center, March 5-9, 1973; and "On the feasibility of floating nuclear power plants along the California Coast," Trans. American Nuclear Soc., Supplement No. 1 to Volume 16, 1973. He also contributed chapters to "Facing the Future: Five Alternatives for Mammoth Lakes" and "Environmental, Technical, Legal, and Safety Aspects Related to Floating Nuclear Power Plants off the Coast of California," reports published by the University.

Joseph Murdoch, Ph.D. Professor Emeritus

Clemens A. Nelson, Ph.D., University of Minnesota. Professor

After a "normal" year, including two more shakedown terms of "Geology of California," the spring term field course, etc., the real highlight of 1972-73 for Clem was his participation in the Symposium on the Precambrian-Cambrian transition of the Siberian Platform in June-July, 1973. Together with twenty-five "foreign" geologists (U. S., Canada, Great Britain, Australia, France, Poland, Sweden, Denmark, both Germanys), he visited exposures along the Aldan and Lena Rivers in eastern Siberia--"a fabulous experience, exposing many of our misconceptions about that region." They also visited Lake Baikal, but unfortunately in heavy fog.

Clem attended "old home week" at the G.S.A. in Minneapolis last November, but as a truly confirmed Californian, had forgotten how cold it could be. His most recent publication is "Tectonic origin for an assumed glacial pavement of late Proterozoic age, Southern Australia," with B. Dailey and V. A. Gostin, Jour. Geol. Soc. Australia, vol. 20, pt. 1, 1973.

Gerhard Oertel, Dr. rer. nat., University of Bonn. Professor

Gerhard is in Europe on sabbatical leave until December of this year. He will spend part of the time in England at the University of Sheffield, working on fabrics of several kinds of sedimentary rocks with Charles Curtis (visiting professor at UCLA in 1970-71); with Dennis Wood (University of Illinois, Urbana) on the strain field of the Cambrian slate belt of North Wales; and on aspects of the strain field of the English Lake

District. Near the end of his sabbatical leave, he will visit various parts of Europe, finishing his tour at the University of Göttingen, Germany.

In April he gave a lecture "On Aspects of Finite Strain in Geology" and a seminar on finite strain at Stanford, and in June he lectured on "Preferred Orientation of Micas and Clays as a Measure of Strain" at the University of Sheffield. His current NSF grant, "Preferred Orientation and Flow in Micaceous Rocks," is for support of a two-year program of transmission electron microscope and X-ray texture goniometer studies of shales and clay-rich carbonate rocks, slates, phyllites, and mica and chlorite schists.

Gerhard's most recent publications include "Texture of a slate from Nantlle, Caernarvon, North Wales," which appeared in volume 1 of the new journal Texture (coauthored by Prem Phakey); "Clay-ironstone concretion preserving fabrics due to compaction" in the G.S.A. Bulletin, vol. 83 (with Charles Curtis); "Deformation of a slaty lapillar tuff in the English Lake District: Reply" (G.S.A. Bulletin, vol. 83); and, with Phakey and Christie, "Transmission electron microscopy of fine-grained phyllosilicates in ultra-thin rock sections," Clays and Clay Minerals, vol. 20.

In addition to his current research on fabrics of medium-grained micaceous rocks, Gerhard and Gary Lane have undertaken a study of the history of research on crinoids from 1600 to 1800. He will spend some of his European sabbatical searching libraries and translating still dustier Latin and vernacular tomes to add to their already large collection of information. When he returns to his regular professorial tasks in December, Gerhard also plans collaboration with John Christie for a manuscript on structures in and around the Papoose Flat pluton, Inyo Mountains, California.

One of his students, Thekkey Krishnan, is currently on leave to gather information for his area of study of structural style in the western part of the Labrador Trough, near Schefferville, P.Q., Canada; and Steve Lipshie continues work on the application, and extension of present applications, of X-ray techniques for strain determination in micaceous rocks.

Willis Parkison Popenoe, Ph.D. Professor Emeritus

Most of the past year was spent at the office, completing the joint work with Bob Kleinpell on the Late Tertiary (or perhaps Early Quaternary) fauna of the Bondoc Peninsula, Luzon, Philippines, which now has been submitted for publication to

the California Academy of Sciences. "This fauna, according to an earlier study (of 1920 or thereabouts), had been thought to be of middle or lower Miocene age, and, as it contains 80 to 90 percent Recent species, was the basis for the earlier idea that molluscan evolution in the Tropics proceeded much more slowly than in the temperate regions. Our conclusions are that molluscan evolution (or extinction?) proceeds at comparable rates in the two climatic zones."

Additional activities of the year include resumption of work on the Pacific Coast Turonian gastropods and three forays of a few weeks each into the Redding region to try to unscramble some problems in the stratigraphic succession in the Lower Senonian parts of the column, which are obscured by faulting, discontinuous and broken exposures, and general paucity of fossils and traceable marker beds. The S.E.P.M. field trip guidebook covering the Cretaceous of the Redding area included a short chapter by Parky, who attended the October 1972 trip. He also attended the meetings of the Pacific Coast Section of the Paleontological Society in March '73 at Portland, Oregon. The coming year will be spent almost exclusively in completing the paper on Turonian gastropods, hopefully by early 1974.

Parky notes that "diversions of the year include an attempt to grow a garden of annuals at home, so that I can now tell a pansy from a zinnia; the usual job of catering to the wants and whims of my fourteen-year-old black cat, Damon; and a vacation trip routed by way of the Gulf and South Atlantic Coasts to Richmond, Virginia, westward via Lexington, Kentucky, and Topeka and Eureka, Kansas, visiting friends and relatives, thence homeward in December-January."

Walter E. Reed, Ph.D., University of California, Berkeley. Assistant Professor

Since joining the faculty in January, Ted has been involved in the "busy work" of setting up and teaching the two courses, Sedimentology and Sedimentary Petrology, as well as refurbishing the Sedimentology Laboratory. Rather than using the usual classical approach, he chose to conduct these classes as a series of small field projects. Accordingly, after some introductory material, the class visited outcrops illustrating specific depositional environments, such as shoreface sediments in the Topanga Formation or the deep marine turbidites exposed at Santa Paula Creek. For the Sedimentary Petrology course, a class project was undertaken to study depositional environments, paleobathymetry, and so on for part of the Late Tertiary sedimentary sequence exposed on the Coalinga and Kettleman Hills anticlines, with a departmental seminar being given to present the results.

His "extracurricular" activities have primarily involved proposal writing (to the Petroleum Research Fund of the American Chemical Society for a study of crude oil compositions in the Four Corners Area and to the N.S.F. for an organic geochemical investigation of Cretaceous sediments on the Utah-Colorado Plateau). He lectured to the UCLA Careers Day, to the Los Angeles Basin Geological Society, and to the South Coast Geological Society on his work concerning deposition of organic detritus and its control on crude oil composition.

John L. Rosenfeld, Ph.D., Harvard University. Professor

John spent most of the year with teaching duties and writing up the results of his N.S.F. project (with L. H. Cohen of U. C. Riverside, and H. G. Adams) relating to determination of pressures and temperatures of crystallization of pelitic rocks from stress effects around quartz inclusions in garnets. Results of this research, reported at the A.G.U. National Meeting in San Francisco, give independent support to location of the aluminum silicate triple point experimentally determined by Bob Newton (Ph.D., UCLA).

Ron Shreve and John planned and organized some new local field trips for use in the relatively new, noncredit program of freshman seminars, now participated in by all faculty in order to give lower-division elementary geology students an opportunity for an informal, small class experience. They attempted to demonstrate geological inference in the field. One of the trips related to the sedimentary processes associated with the San Gabriel River and to the environmental consequences of man's tampering with these processes. The other trip, using the Santa Monica Mountains as a base, was a demonstration of some of the ways in which geologists determine geological history in the field.

John's other activities included participation in a Penrose Conference at Amherst, Massachusetts, on the relationship of field geology to field geophysics in interpretation of the northern Appalachians. The major lesson of that conference, according to John, is that "there is still much work to be done in tying the field geology of that area to the new plate tectonics in a convincing way. The older record is much messier than the post-Mesozoic one." John also led a field trip on "Rotated garnets and tectonism in southeast Vermont," as part of the 64th Annual New England Intercollegiate Geological Conference, held at the University of Vermont in Burlington. He gave talks on the inclusion work at Rensselaer Polytechnic Institute and on the rotated garnet work to the Hewett Club at U. C. Riverside.

William W. Rubey, D.Sc., Missouri, Villanova, Yale; LL.D., California. Professor Emeritus of Geology and Geophysics.

Bill Rubey was honored at a two-day conference in Santa Barbara, the "Rubey Conference on Crustal Evolution," on June 15-16. Limited to approximately 25 invitees, it was sponsored by the Carnegie Institution of Washington and planned by Dr. Philip Abelson, President of Carnegie, Professors P. E. Cloud and John Crowell of U. C. Santa Barbara, and W. G. Ernst, the Chairman of the Geology Department at UCLA. With an informal format, discussions were designed to look at crustal evolution broadly in time, space, and theory, without getting hung up on the latest and already much-discussed episode of plate motions. Topics that were considered included the degree to which the plate tectonics model can validly be extended into the distant geologic past, earth-moon relations, planetary evolution, geochemical differentiation and evolution, atmospheric-hydrospheric-biospheric origins and interactions, internal processes, etc. The gist of the conference will be distilled into a short meeting note for Science.

During the fall Bill made final corrections on a geological map representing some of his field work while with the U.S. Geological Survey. The map has been published (June 1973) as "Geological Map of the Afton Quadrangle and Part of the Big Piney Quadrangle, Lincoln and Sublette Counties, Wyoming: Miscellaneous Geologic Investigations Map I-686."

In March Bill attended a two-day meeting (March 23-24) in El Paso, Texas, of the Committee on Arid Lands of the A.A.A.S., and on March 30, he was in Washington, D. C., as official UCLA representative at the annual Council meeting of the Universities Space Research Association. U.S.R.A. is the organization responsible for the management of the Lunar Science Institute in Houston, Texas, of which Bill was the first director (1968-71). On May 3 and 4 he was in Washington again at the annual meeting of the Trustees of the Carnegie Institution of Washington. He has been a trustee of C.I.W. since 1962.

He taught his graduate seminar in Advanced Topics in Geology during the spring quarter, with maximum enrollment as usual.

Douglas Rumble, Ph.D., Harvard University. Assistant Professor

Doug presented a paper on "Andalusite, kyanite, and sillimanite from the Mt. Moosilauke area, New Hampshire" at the A.G.U. Annual Meeting in Washington, D. C., 1973. A recent publication on this topic was "Andalusite, kyanite, and sillimanite from the Mt. Moosilauke region, New Hampshire," Geol. Soc. America Bull., vol. 84, 1973. During the past year he made field trips to the

Beartooth Mountains of Montana and to the eastern Mojave to study the Precambrian iron formations that have been contact metamorphosed by the Stillwater igneous complex. He is continuing his research on the thermodynamic properties of the fluid phase of regional metamorphism.

Doug decided this year to return to the Carnegie Institution Geophysical Laboratories in Washington, D. C., at the end of the summer of 1973. We all regret his decision, but we wish him continued success in his research on that other coast.

J. William Schopf, Ph.D., Harvard University. Professor

Bill has had another busy year, attending and presenting papers at the International Geological Congress in Montreal, the American Institute of Biological Sciences meeting in Minneapolis, speaking at the Seminar on the Origin of Eukaryotic Cells and the American Association of Stratigraphic Palynologists in Newport, Rhode Island. He also presented papers for the Committee for the Analysis of Carbon Compounds in Meteorites and Returned Lunar Samples, Houston, Texas; presented talks at seminars for the Department of Biology of San Francisco City College; the Department of Biology, Simon Fraser University, Vancouver, B.C.; the Symposium on Environmental Geochemistry, Utah State University, Logan, Utah; and the Fourth International Conference on the Origin of Life, Barcelona, Spain. Talks were also given at the Department of Botany, University of California, Davis; at the University of Southern California; the University of Texas at Austin; and California State University, Hayward. He attended the AAPG-SEPM meetings in Anaheim; the Botanical Society of America in Amherst, Massachusetts; and a Penrose Conference on Early Crustal Evolution, Santa Barbara.

Geological field work was undertaken in Glacier Park, Montana, in the summer of 1972, and at Laguna Mormona, Baja, Mexico, in 1972 and 1973. In June of 1973 Bill spent a short time at the U. S. National Museum in Washington, D. C., with graduate student Donna Satterthwait, examining Cambrian algal collections. In August Bill, wife Julie, and son James left for a ten-week field trip to Australia (via Fiji) and India, returning via Cairo, Rome, Munich, and London. Graduate student Tom Fairchild and his wife Yassuko plan to go to Australia with the Schopfs and will stay on for three months of field work for Tom's dissertation.

Bill is on the editorial or advisory boards for Precambrian Research, Evolutionary Theory, Origins of Life, and is Treasurer of the UCLA Chapter of Sigma Xi. In addition to his NASA and NSF grants for support of Precambrian research, Bill was awarded a

John Simon Guggenheim Fellowship (1973-74). Courses taught during the past year include Principles of Paleontology, Paleobotany, Principles of Earth Sciences, and Earth History.

Bill's recent publications include "Evolutionary significance of the Bitter Springs (late Precambrian) microflora," in Proceedings of the XXIV International Geological Congress, Montreal, Sec. 1, Precambrian Geology; "On the development of metaphytes and metazoans" (with B. N. Haugh, R. E. Molnar and D. F. Satterthwait), Jour. Paleontology, vol. 47; "Microorganisms from the late Precambrian of the Grand Canyon, Arizona" (with T. D. Ford and W. J. Breed), Science, vol. 179; "Paleoenvironments and the evolution of life," in Geology Today, a new textbook by CRM Books, Del Mar, California; and "Late Precambrian microfossils, a new stromatolitic biota from Boorthanna, South Australia" (with T. R. Fairchild), Nature, vol. 242.

Graduate students working with Schopf include John Oehler, studying the chemical and micromorphological changes accompanying artificial permineralization of blue-green algae in silica; Dorothy Oehler, whose research in Precambrian paleobiology includes carbon isotopic composition of Precambrian organic matter, the origin of photoautotrophy, and electron microscope studies of organelle-like bodies preserved in Precambrian microorganisms; Bob Horodyski, working on paleoecology and stratigraphy of stromatolitic sequences from the Proterozoic Belt Supergroup of Montana; Donna Satterthwait, whose thesis studies concern paleobiology of carbonaceous algal fossils from the Burgess Shale and other middle Cambrian deposits; and Tom Fairchild, who will work on the biology and paleoecology of a newly discovered stromatolitic microbiota from the late Precambrian of Boorthanna, South Australia.

Ronald L. Shreve, Ph.D., California Institute of Technology.
Professor of Geology and Geophysics

Ron taught the Field Geology course with Douglas Rumble in the fall. "We still go to many of the same areas--well remembered by countless alumni--Sepulveda Summit, Bouquet Canyon, Last Chance Canyon, Barstow." Stress and Deformation, now a two-quarter course, was taught during winter and spring. It includes new material on Mohr's circle and finite strain.

With John Rosenfeld, Ron took a Freshman Seminar group to trace the movement of water and sediment from the San Gabriel Mountains to the ocean and to see and discuss the amazing complex of check dams, flood control basins, channels, recharge wells, and beach groins constructed to circumvent Nature's messier but cheaper methods of doing the same job. During the spring quarter he gave a seminar and three public lectures on Theoretical Geomorphology with special emphasis on channel networks, soil creep, and river profiles.

In January the long expected paper with Lon Drake (M.S., 1965) on "Pressure melting and regelation of ice by round wires" finally appeared (Proceedings of the Royal Society of London, ser. A, vol. 332). Drake did the experimental work for his Master's thesis. He then went on to get his Ph.D. at Ohio State, and now is Associate Professor of Geology at the University of Iowa.

Research this year has mainly centered on the effort to calculate by finite-element methods the flow of ice toward a water-filled subglacial tunnel, such as those in which eskers form, and to predict the paths of eskers of southeastern Maine from the theoretical profile of the ice sheet that covered the area.

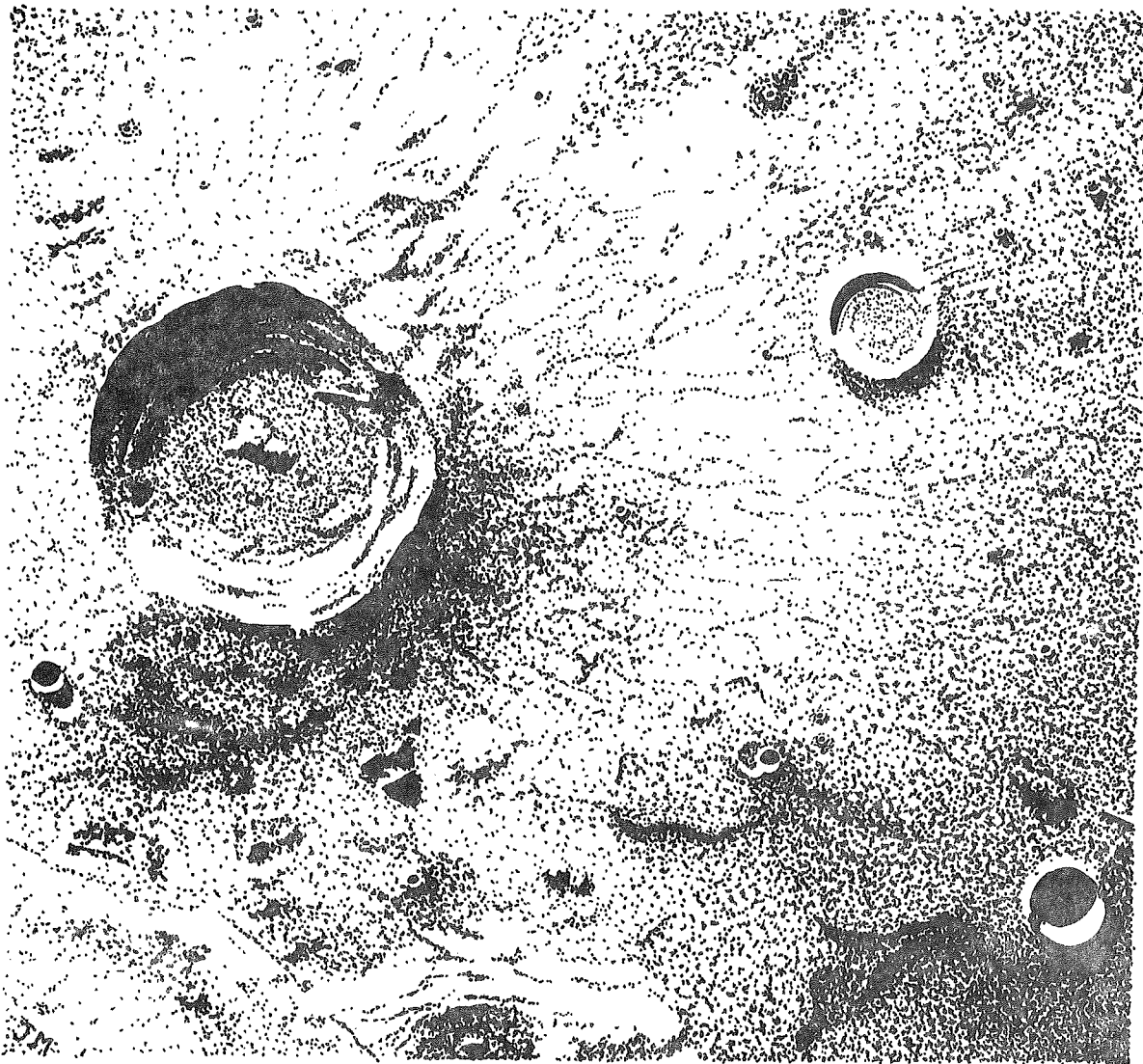
Bernard Hallet is working on a combined observational, theoretical, and experimental study of glacial striations and near-bed flow in glaciers. His field areas are in recently deglaciated limestones and argillites of the Canadian Rockies and Glacier National Park. Bill Holman is doing an observational and theoretical study of exfoliation, especially sheeting in granites. His field areas are in Yosemite National Park, although he has also worked in the Escalante River region of southern Utah. Dave Thompson is starting a theoretical study of stability and secondary flow in glaciers. He does not have a field area, but is working this summer on the Variegated Glacier, a surging glacier in Alaska, with Professors Charles Raymond of the University of Washington and Will Harrison of the University of Alaska.

Kenneth D. Watson, Ph.D., Princeton University. Professor

Ken spent about ten days at the beginning of September 1972 on a field excursion of the International Geological Congress to copper and molybdenum deposits of the Western Cordillera, British Columbia. Most of his summer was spent in field investigations of metal deposits associated with volcanic rocks in the Canadian Shield.

During the fall and winter quarters, Ken made a study of recently discovered kimberlites from Keith Township, Ontario, in the Superior Structural Province of the Canadian Shield. In collaboration with Douglas M. Morton (Ph.D., 1966, UCLA), now with the U. S. Geological Survey, petrologic research was continued on the potassic igneous rocks and carbonatites occurring near Mountain Pass, California. Part of Ken's sabbatical leave during the spring quarter 1973 was spent visiting kimberlite diatremes and carbonatites in Arizona, Arkansas, Kentucky, Tennessee, Kansas, and Colorado.

Among the graduate students directed by Ken, David Frishman has started research on the ultramafic and associated rocks of the Ship Mountain area, western Klamath Mountains, California; and Michael Garcia is working on the structure and petrology of a metamorphosed volcanic arc complex, Galice quadrangle, Klamath Mountains, Oregon.



Lunar impact crater "Maander" in Mare Orientale; diameter--55 km, rim-to-rim. The smaller crater is "Hohmann" (not necessarily an impact crater); diameter--16 km.

POST-DOCTORAL FELLOWS AND RESEARCH ASSOCIATES

Richard I. Grauch, Post-doctoral Fellow

Dick is currently involved in compiling the geologic history of the Venezuelan Andes, or, more specifically: (1) delineation of the thermal history of the range as reflected by metamorphism. Associated with this phase of the study is an investigation of the mineral paragenesis within the staurolite zone, especially those reactions involving the aluminum silicates; (2) delineation of the history of the Boconó Fault; and (3) definition of a structural disconformity between Precambrian and Paleozoic rocks in the central Andes. Dick is planning an August field trip to Venezuela to clear up details on the definition of the Mucuchies Formation, a new Mio-Pliocene unit in the central Andes, and will also spend November through January in the Venezuelan Andes working on the metamorphic map of the central and eastern portions of the range.

He attended the Ninth Interguayana Geologic Conference in Puerto Ordaz, Venezuela, and the G.S.A. Annual Meeting in Minneapolis, where he presented a discussion paper on geomorphic expression of the Boconó Fault. He gave a lecture at UCLA on the geologic history of the Venezuelan Andes.

His recent publications include "Preliminary report of a late(?) Paleozoic metamorphic event in the Venezuelan Andes," in the H. H. Hess Volume: Studies in Earth and Space Sciences, Geol. Soc. America Memoir 132 (1972); "Boconó Fault, Venezuelan Andes: evidence of post-glacial movement--discussion," Science, vol. 175, no. 4021 (with R. F. Giegengack); and "Geomorphologic expression of the Boconó Fault, Venezuelan Andes, or geomorphology to a fault" (discussion paper), in Abstracts with Programs, Geological Society of America, vol. 4, no. 7 (1972, also with Giegengack).

Mason L. Hill, Ph.D., Wisconsin

Research Associate since 1968.

Alexander Stoyanow, Ph.D., Moscow

Professor Emeritus from the University of Arizona, Stoy has been a Research Associate since 1950.

Edward C. Wilson, Ph.D., U. C. Berkeley

Curator of Invertebrate Paleontology, Los Angeles County Museum and Research Associate since 1967.

MUSEUM ACTIVITIES

LouElla Saul, Museum Scientist

Lou has "continued a spree of borrowing type specimens of Cenozoic mactrids from Berkeley; this was touched off by the discovery that 99.5 percent of the West Coast Mactridae in our collections were misidentified. Hopefully, this can be reduced to a more normal 40 percent so that students referring to this material will no longer be so bewildered, befuddled, and outraged by the inconsistency of identification."

Last year's field trips to the Coalinga area produced some of the background for a contribution to the Pacific Section of the S.E.P.M. fall field trip guidebook on the Cretaceous of the Coalinga area. It also turned up a Trigonia of the T. leana or Steinmanella ilk, which she will use in a continuing study of that group.

During the past year Lou was Chairman of the Pacific Coast Section of the Paleontological Society and justified attendance at the G.S.A. Cordilleran Section Meeting in Portland, Oregon, by a talk entitled "Parallel Evolution and Continental Drift." "Evidence of the origin of the Mactridae (Bivalvia) in the Cretaceous" was published as Volume 97 of the U. C. Publications in the Geological Sciences.

Takeo Susuki, Museum Scientist

David Weide, Ph.D., Geography, UCLA. Museum Scientist

After nine years and nine months, Dave Weide is finally leaving UCLA (he says that some people think he has been here since the lower Pleistocene). He has accepted a position with the Department of Geosciences, University of Nevada, Las Vegas, where he will be teaching Introduction to Physical Geography, Geomorphology, Cartography, and all other courses usually relegated to "staff," having completed his Ph.D. during his 'spare time' from curating.

His successors in the position of curator of rocks and minerals in the future will be graduate students in geology, as the position will now be used to provide half-time support for students on a two-year basis. As of July 1, Phelps Freeborn will assume the job of keeping track of maps, rocks, innumerable pieces of departmental equipment, and the thousand-and-one bits of superficially useless information the job requires. Weide's only regret is that he "failed to qualify for a ten-year pin." In lieu of that "the Department has awarded me a lifetime supply of rock specimens that have lost their labels!"

GRADUATE STUDENTS, 1972-1973

Alpert, Stephen P.,	B.S.,	1969,	UCLA
Bachman, Steven B.,	B.S.,	1971,	University of Washington
Balderman, Morris,	B.S.,	1969,	UCLA
	M.S.,	1972,	UCLA
Barron, John,	B.S.,	1969,	UCLA
Berggren, Richard,	B.A.,	1971,	Occidental College
Bing, Donald,	B.A.,	1972,	Pomona College
Budnik, Roy,	B.S.,	1968,	Northern Illinois University
Clymer, Richard W.,	B.S.,	1967,	Massachusetts Institute of Technology
	M.S.,	1973,	UCLA
Connor, John C.,	A.B.,	1966,	UCLA
Cottrell, John,	B.S.,	1972,	Michigan State University
Crawford, Kenneth,	B.S.,	1966,	Fresno State
	M.S.,	1969,	University of California, Davis
Crocker, David,	B.A.,	1972,	Middlebury College
Cröse, Michael,	A.B.,	1968,	University of California, Berkeley
Dollinger, Gerald,	B.S.,	1962,	University of Wisconsin
	M.S.,	1965,	University of Wisconsin
Duarte, W. W.,	B.S.,	1948,	UCLA
Fairchild, Thomas,	B.S.,	1966,	Stanford University
Fouda, Ahmed Ali,	B.S.,	1952,	Cairo University
	Ph.D.,	1973,	UCLA
Freeborn, W. Phelps,	B.S.,	1965,	California Institute of Technology
Frishman, David,	B.A.,	1970,	University of Pennsylvania
Gardner, David,	B.S.,	1971,	UCLA
Garcia, Michael O.,	B.A.,	1971,	Humboldt State
Gordinier, Keith,	B.S.,	1970,	University of California, Santa Barbara
Griffin, Ray M.,	B.S.,	1971,	UCLA
Grimmer, John,	B.S.,	1961,	University of Wisconsin
	M.A.,	1966,	Southern Illinois University
Grudewicz, Eugene,	A.B.,	1962,	San Diego State
	M.A.,	1972,	UCLA
Hallet, Bernard,	B.S.,	1970,	UCLA
Haugh, Bruce,	B.S.,	1965,	University of Wisconsin
	M.S.,	1968,	University of Oklahoma
	Ph.D.,	1973,	UCLA
Hill, Merton Earle,	B.S.,	1969,	University of Redlands
Horodyski, Robert,	B.S.,	1965,	Massachusetts Institute of Technology
	M.S.,	1968,	Massachusetts Institute of Technology

Holman, William,	B.S.,	1967,	UCLA
Hoylman, Edward,	B.S.,	1970,	University of Hawaii
Hurst, Richard,	B.S.,	1970,	SUNY at Stonybrook
Jacobson, Sara,	B.S.,	1972,	SUNY at Stonybrook
Kato, Terence T.,	B.S.,	1968,	University of California, Davis
	M.S.,	1971,	University of California, Davis
Keller, Margaret,	B.A.,	1972,	Occidental College
Kettenring, Kenneth,	B.S.,	1966,	Lehigh University
Kirby, Stephen,	B.S.,	1967,	University of Illinois
Krishnan, Thekkey,	B.Sc.,	1958,	Presidency College, Madras, India
	M.Sc.,	1960,	University of Madras, India
Lee, Stephen,	B.S.,	1971,	University of Illinois
Lee-Hu, Chin-Nan	B.S.,	1957,	Taiwan University
	M.S.,	1967,	UCLA
Le Fever, Richard,	A.B.,	1967,	Occidental College
	M.S.,	1971,	UCLA
Lincoln, Timothy,	B.S.,	1972,	University of Massachusetts
Lipshie, Steven,	B.S.,	1965,	California Institute of Technology
MacDonald, Robert,	B.S.,	1972,	California State University, Los Angeles
Maillet, Stephen,	B.S.,	1971,	California State University, Fullerton
Mankiewicz, Paul,	B.S.,	1971,	UCLA
McCormick, John	B.S.,	1970,	Pennsylvania State
Miller, Richard,	B.S.,	1965,	California State University, Northridge
	M.S.,	1967,	UCLA
Moir, Gordon J.,	B.S.,	1965,	University of Capetown
Moore, Johnnie N.,	B.S.,	1970,	California State University, Northridge
	M.S.,	1973,	UCLA
Mount, Jack,	B.S.,	1969,	California State University, Los Angeles
	M.S.,	1972,	UCLA
Neder, Irving,	B.A.,	1961,	UCLA
	M.S.,	1967,	UCLA
Oehler, Dorothy Z.,	B.S.,	1967,	UCLA
Oehler, John H.,	B.S.,	1966,	UCLA
Owen, Phillip G.,	B.S.,	1967,	California State University, Northridge
Parker, Charles R.,	B.S.,	1942,	Reed College
	M.D.,	1945,	Cornell University
Pausé, Paul,	A.B.,	1972,	University of California, Berkeley
Prior, Scott,	B.S.,	1972,	UCLA
Putnam, Burleigh,	B.S.,	1968,	UCLA
Recks, Elizabeth H.,	B.S.,	1969,	Massachusetts Institute of Technology

Redwine, Lowell,	A.B., 1935,	UCLA
	M.A., 1937,	UCLA
	Ph.D., 1972,	UCLA
Rosenberg, Gary D.,	B.S., 1966,	University of Wisconsin
	Ph.D., 1972,	UCLA
Sakal, Richard,	B.S., 1971,	California State University, Los Angeles
Sayre, Michael A.,	B.S., 1971,	UCLA
Semet, Michel P.,	Min.Eng., 1964,	University of Louvain
	Ing.Geol., 1965,	University of Louvain
	Ph.D., 1972,	UCLA
Sherwood, Gary I.,	B.S., 1970,	UCLA
Shmerling, Ronald,	B.A., 1970,	University of California, Santa Barbara
Spear, Frank,	B.A., 1971,	Amherst
Stoddard, Edward,	A.B., 1971,	Amherst
Sweeney, Robert,	B.S., 1967,	UCLA
	Ph.D., 1972,	UCLA
Thompson, David,	B.S., 1970,	Indiana University
	M.S., 1971,	UCLA
Tippetts, Mark,	B.S., 1959,	Northern Illinois University
	M.A., 1962,	West Virginia University
	M.S., 1972,	UCLA
Treiman, Jerome,	B.S., 1972,	UCLA
Trice, Roderick,	B.A., 1972,	University of California, Santa Barbara
Vaughan, Peter,	B.A., 1971,	University of Rochester
Wall, Barrie D.,	B.A., 1968,	California State University, Long Beach
Wegner, Warren,	B.S., 1971,	University of Wisconsin
	M.S., 1972,	University of Wisconsin
Wicander, E. Reed,	B.S., 1969,	California State University, San Diego
Wong, Helen,	B.A., 1971,	UCLA
Yeoman, Ross,	B.S., 1968,	Brown University

Graduate Fellowships and Assistantships for 1972-1973

Stephen Alpert * +
 Steven Bachman * +
 John Barron, Post-Graduate Research, NSF
 Donald Bing, Regent's Graduate Intern Fellow
 Roy Budnik, Chancellor's Teaching Fellow +
 John Cottrell +
 David Crocker, Chancellor's Fellow *
 Gerald Dollinger, Post-Graduate Research
 Phelps Freeborn +
 David Frishman *
 Thomas Fairchild, Chancellor's Dissertation Fellowship

Michael Garcia, Graduate Advancement Fellow
 David Gardner * +
 Keith Gordinier, Chancellor's Intern Fellow +
 Eugene Grudewicz, Post-Graduate Research (IGPP)
 Bernard Hallet, Regent's Graduate Intern Fellow +
 Merton Hill, Post-Graduate Research, NSF
 William Holman, Graduate Intern Fellow
 Robert Horodyski, NSF Trainee
 Richard Hurst, Research Assistant (P&SS)
 Sara Jacobson +
 Terence Kato, Chile-California Coop. Fellow
 Stephen Lee +
 Timothy Lincoln +
 Steven Lipshie * +
 Paul Mankiewicz, NSF Environmental Trainee
 John McCormick * +
 Dorothy Oehler, NSF Trainee
 John Oehler * +
 Scott Prior * +
 Elizabeth Recks, Chancellor's Intern Fellow
 Ronald Shmerling * +
 Frank Spear, NDEA IV Fellow
 Edward Stoddard +
 David Thompson, Research Assistant
 Jerome Treiman *
 Peter Vaughan, Research Assistant (IGPP)
 Barrie Wall, NDEA IV Fellow
 Warren Wegner, NSF Fellowship *
 E. Reed Wicander, Post-Graduate Research, NSF

Graduate Fellowships and Assistantships for 1973-1974

(Previous addresses given for those who will be new to the Department)

Stephen Alpert +
 Steven Bachman +
 John Barron, Post-Graduate Research, NSF
 Donald Bing, Regent's Teaching Fellow
 William Bruner (B.S., Brown University), NSF Fellow *
 John Cottrell + *
 Thomas Fairchild +
 Michael Garcia, Graduate Advancement Fellow
 Merton Hill, Post-Graduate Research, NSF
 William Holman +
 Sara Jacobson +
 Daphne LaPointe (B.A., Smith College) +
 Stephen Lee + *
 Timothy Lincoln, Mark and Minnie Newman Endowment Fellow +

Steven Lipshie +
 Calvin Miller (B.A., Pomona; M.S., George Washington Uni-
 versity) +
 Molly Miller (B.A., College of Wooster; M.S., George
 Washington University) +
 Roland Mora (B.A., Pomona), Geology Alumni Fellow +
 Scott Prior +
 Ronald Shmerling +
 Edward Stoddard +
 Warren Thomas (B.A., Pomona), Chancellor's Fellow
 Beth Zigmont (A.B., Smith College) +

* Partial fellowship from Shell Companies Foundation.
 + University teaching assistantship.

Undergraduate Scholarships for 1971-1972

Ken Shay, Standard Oil Company of California Scholarship
 David Wilson, Standard Oil Company of California Scholarship

Undergraduate Scholarships for 1973-1974

Ken Shay, Standard Oil Company of California Scholarship

NEW ALUMNI, 1972-1973

Listed below are those who received degrees through
 June 1973. Thesis or dissertation title is given for those
 obtaining advanced degrees.

Bachelor of Science, 1972-1973

Kelly Canice McSpadden	1972
Scott Prior	1972
Hardy Evald Prueel	1972
Robert Stephen Shank	1973
Jerome A. Treiman	1972
David Vernon Wilson	1973

Master of Science

Balderman, Morris Aaron

Relationship of Yield Stress and Strain-rate in
 Hydrolytically Weakened Synthetic Quartz. 1972.

Clymer, Richard W.

Rayleigh Wave Phase Velocities and the Upper Shear Velocity Structure of Fennoscandia. 1973.

Moore, Johnnie Nathan

Stratigraphic Comparison of the Precambrian Wyman and Johnnie Formations in the Western Great Basin, California. 1973.

Mount, Jack Douglas

Late Paleozoic Biostratigraphy of the Pancake Range, Nye County, Nevada. 1972.

Tippetts, Mark Wills

By comprehensive examination. 1972.

Doctor of Philosophy

Fouda, Ahmed Ali. 1973.

The Upper Mantle Structure under the Stable Regions.

Haugh, Bruce N. 1973.

Paleozoology of Mississippian Camerate Crinoids.

Redwine, Lowell Edwin. 1972.

The Tertiary Princeton Submarine Valley System Beneath the Sacramento Valley, California.

Rosenberg, Gary David. 1972.

Patterned Growth of the Bivalve Chione undatella Sowerby Relative to the Environment.

Semet, Michel P. 1972.

Stability Relations and Crystal-chemistry of the Amphibole Magneshastingsite, $\text{NaCa}_2\text{Mg}_4\text{Fe}^{3+}\text{Si}_6\text{Al}_2\text{O}_{22}(\text{OH})_2$.

Sweeney, Robert E. 1972.

Pyritization During Diagenesis of Marine Sediments.

LECTURE SERIES, 1972-1973

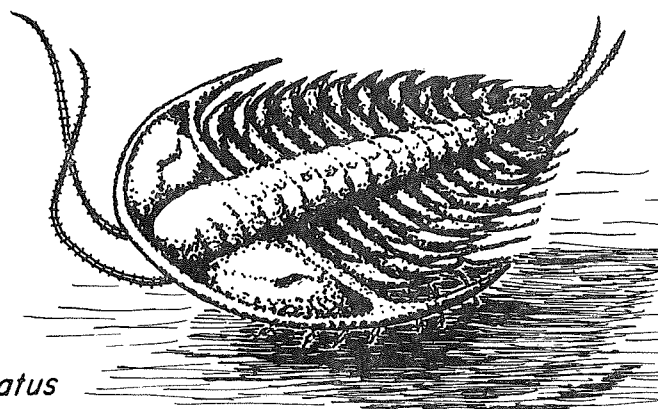
Lectures sponsored jointly by the Department of Geology and the Geological Society of UCLA and open to the public are generally held on Thursday afternoons. Those of the past year are listed in order of their presentation.

- Dr. Robert E. Sweeney, Department of Geology, University of California, Los Angeles. "Pyritization during diagenesis of marine sediments." September 12, 1972.
- Mr. Roy Copp, Consulting Geologist, Northern Ontario Georesources Company. "Zodiacal dust-derived Be^{10} compounds from deep-sea sediments and their relationship to mid-Atlantic plate tectonics." September 31, 1972.
- Dr. Warren Hamilton, U. S. Geological Survey, Denver, Colorado. "Tectonics of the Indonesian Region." October 12, 1972.
- Dr. K. W. Klement, AAPG Distinguished Lecturer, University of Texas at El Paso, Texas. "Practical classification of reefs and banks--bioherms and biostromes." October 18, 1972.
- Dr. Gordon L. Nord Jr., Case Western Reserve University, Cleveland, Ohio. "Transmission electron microscope study of substructures in Stillwater bytownites." October 20, 1972.
- Dr. Jibamitra Ganguly, Research Geophysicist, Institute of Geophysics and Planetary Physics, UCLA. "Phase relations of chloritoid and staurolite and metamorphism of pelitic rocks." October 26, 1972.
- Dr. Jim Bischoff, Department of Geological Sciences, University of Southern California, Los Angeles, California. "Metal rich deposits on East Pacific Rise: experiences aboard a Soviet expedition." November 9, 1972.
- Dr. Leon T. Silver, Division of Geological Sciences, California Institute of Technology. "Mineralogical considerations in the age interpretation of U-Pb isotope systems in igneous zircons." November 30, 1972.
- Mr. Arthur R. Green, Esso Production Research Company. "Global tectonics and oil exploration in sedimentary basins." January 16, 1973.
- Dr. Bevan French, Program Director of Geochemistry Section, National Science Foundation. "Meteorite impact origin of the Sudbury structure, Ontario, Canada." January 17, 1973.

- Dr. Dennis Wood, Department of Geology, University of Illinois. "Patterns and magnitudes of natural strain in rocks." January 25, 1973.
- Dr. Everett C. Olson, Department of Biology, UCLA. "Vertebrate evolution in the Permian." January 31, 1973.
- Dr. Richard Cowan, Department of Geology, University of California, Davis. "The adaptive evolution of the brachiopods." February 1, 1973.
- Dr. George Tunell, Department of Geological Sciences, University of California, Santa Barbara. "Mercury deposits at Almaden, Spain, and Idrya, Yugoslavia." February 8, 1973.
- Dr. C. B. Raleigh, U. S. Geological Survey, Menlo Park, California. "Earthquake prediction and control." February 15, 1973.
- Dr. Arvid Johnson, Department of Applied Earth Sciences, Stanford University. "Discontinuities in folding." February 22, 1973.
- Dr. Norman Gilmeister, Department of Geological Sciences, University of California, Santa Barbara. "Stratigraphy, structure, and petrology of the Tobacco Root Mountains, Montana." March 1, 1973.
- Professor H. Wänke, Max-Planck Institut für Chemie, Mainz, Germany. "Concentrations of 50 elements in lunar rocks and soils (including Apollo 17 orange soil) and in Allende white inclusions, and the composition of the moon." March 14, 1973.
- Dr. David H. Green, Senior Research Fellow, Department of Geophysics and Geochemistry, Australian National University, Canberra, Australia. "The low velocity zone and melting in the upper mantle under wet conditions." March 22, 1973.
- Professor John F. Nye, University of Bristol, Bristol, England, and Visiting Professor of Geophysics, University of Washington, Seattle, Washington. "Wave-train dislocations and new uses of radio echoes from ice sheets." April 10, 1973.
- Dr. Timothy P. Loomis, Department of Geology and Geophysics, Yale University. "Mantle diapirism, orogeny, and plate tectonics near the Strait of Gibraltar." April 12, 1973.

- Dr. Peter M. Sheehan, Department of Geology, University of Western Ontario. "Silurian communities in the Great Basin and an analysis of Late Ordovician and Early Silurian Community evolution in North America." April 16, 1973.
- Dr. Douglas Lorenz, Smithsonian Institution, Information Systems Division Mathematician. "Probabilistic approaches to the analysis of ancient marine communities, an Ordovician example." April 18, 1973.
- Dr. David Cummings, Department of Geology, Occidental College, Los Angeles, California. "The San Gabriel anorthosite complex--an alternative hypothesis." April 27, 1973.
- Mr. Pierre Y. Robin, Department of Earth and Planetary Science, Massachusetts Institute of Technology. "Elastic strain in cryptoperthite lamellae and the 'coherent solvus' in alkali feldspars." April 27, 1973.
- Dr. David Walker, Research Fellow, Department of Geological Sciences, Harvard University. "Origin of lunar feldspathic rocks." May 8, 1973.
- Dr. John Warme, Department of Geology, Rice University. "Submarine bioerosion." May 17, 1973.
- Dr. Richard I. Grauch, Post-doctoral Fellow, Department of Geology, UCLA. "Outline of the geologic history of the Venezuelan Andes." May 31, 1973.
- Dr. K. O. Emery, Woods Hole Oceanographic Institution, Woods Hole, Massachusetts. "Structure of the continental margin off western Africa." June 13, 1973.

In addition, many of the above speakers were featured at "Informal Brown-Bag Seminars" at noon on the day of their formal, scheduled lectures.



Olenoides serratus

ALUMNI NEWS

Thanks to Gary Ernst's reminder, replies from alumni have been somewhat better this year, but we still lack the latest information for many of you. The Post Office doesn't forward second class mail, and you may not be receiving your copy of the Newsletter because we don't have your correct address. The usual information blank is supplied as the last page of the Newsletter.

The following reports from alumni are listed in alphabetical order.



Benjamin N. Akpati, A.B., 1964, M.A., 1966, received his Ph.D. in 1970 from the University of Pittsburgh. He became a research associate in Environmental Engineering at the University of Southern California, where he worked on the effects of solid waste dumping in coastal waters, then was a post-doctoral fellow in Environmental Science and Engineering at UCLA before joining California State University, Northridge, as an Assistant Professor of geology. He is currently on a one-year leave of absence from Northridge. As adjunct Assistant Professor of Geology at UCLA, he will be serving the University of California as Professor and Director of the University of California Study Center at the University of Ghana, Legon-Accra, Ghana, for 1973 and 1974. His address will be: Dr. Benjamin N. Akpati, Director, University of California Study Center, c/o Department of Geology, University of Ghana, Legon-Accra, GHANA.

Kwame A. B. Asihene (alias Ed Asihene), M.A., 1962, Ph.D., 1970, writes that he is President of the Ghana Branch of the International Association of Engineering Geology and a member of its Executive Committee. He has been deeply involved in the establishment of a Department of Minerals Engineering and Applied Geology at the University of Kumasi and has also been studying slope stability problems in road cuts along Ghanaian highways. Ed also writes that Mr. Godfried O. Kesse (A.B., 1960) has recently been promoted to the post of Deputy Director of the Ghana

Geological Survey and will become the Acting Director of that department when the present director retires at the end of June 1973. Address: Faculty of Engineering, University of Science and Technology, Kumasi, GHANA.

Roland J. Bain, B.A., 1952, M.A., 1954, is a consulting petroleum geologist. He received a Fulbright Scholarship (1956-1957) for studies at the Institut Français de Petrole and the University of Paris (Sorbonne). Address: 2844 Latham Drive, Sacramento, California 95825.

Ralph Bass, M.A., 1960, writes that he left Conoco's R & D lab in Ponca City, Oklahoma, in 1970 to move to the Gulf of Mexico offshore operations in Houston, Texas. He is working in the Miocene gas area and claims that he is about to forget what a rock is! "Plenty of faults though--but not like Calif!" His addresses are: (Home) 8931 Hendon, Houston, Texas 77036; (Office) CAGC Marine Region, Conoco, Box 2197, Houston, Texas 77001.

Fred W. Bergen, M.A., 1955, Division Paleontologist for Shell Oil in Los Angeles, was Chairman of the Pacific Section AAPG-SEPM 1971 field trip and coauthor with K. J. Bird of "Foraminiferal Paleontology of Upper Miocene in Ocean City area, Washington," Proc. Pacific Coast Miocene Symposium 1972. Address: Shell Oil, Box 3397, Los Angeles, California 90051.

Eugene Borax, M.A., 1942, has joined the staff of Merrill, Ogle, Babson & Wallis, Inc., Petroleum & Mineral Consultants, P.O. Box 5412, 559 San Ysidro Road, Santa Barbara, California 93108.

Victor V. Botts, Jr., B.A., 1956, is a partner and manager for Santa Clara Quicksilver Company, P.O. Box 126, New Almaden, California 95042. His company has operated the New Almaden Mine for the past two years.

Thomas J. Brady, B.A., 1954, M.A., 1958, is looking for oil in the offshore part of the Niger Delta as the Exploration Manager of Occidental Petroleum of Nigeria, P.O. Box 3992, Lagos, Nigeria. "Mind weakened by malaria pills, but still surviving in 'the white-man's graveyard'."

James B. Brown, B.A., 1955, is a candidate for a Master's degree in geography at Cal State University, Los Angeles (Thesis: "The Natural Gas Industry of Southern California"), while working for the Southern California Gas Company (P.O. Box 3249, Terminal Annex, Los Angeles, California 90051). He was recently promoted to Regulatory Assistant after fifteen years in the Gas Supply Department of that company. Address: 7702 Luxor Street, Downey, California 90241.

Dean K. Bryson, A.A., 1954, gained experience in petrography, sedimentology, field logging, bathymetry, and real estate at UCLA, USC, Berkeley, and on the job over the past years. He is currently working to become established in Lyndon, Kansas, and is taking part in a professional study and on a field project researching one-point liquid limits. Address: Lyndon, Kansas 66451.

Max Carman, B.A., 1948, Ph.D., 1954, is spending a year's leave of absence from the University of Houston and is touring Europe. He will spend the fall months around Sintra in Portugal looking at hypabyssal mafic alkaline intrusives that somewhat resemble the rocks of west Texas that he has been studying for years. The winter and spring will be spent in Zurich at the Eidgenössische Technische Hochschule, where he will work on alkali feldspars brought from home. Max's wife, Libby, just completed her Ph.D. in urban anthropology from Rice University, having spent the last year in Bahía, Brazil, for her research. She and Max will determine whether Brazilian Portuguese is as strange in Portugal as American English is in England. Address: Department of Geology, University of Houston, Houston, Texas 77004.

A. Louis Canut, B.A., 1954, is the President of Sage Oil Company, Inc., 3243 Wilshire Blvd., Los Angeles, California 90010. Home address: 3947 Marshall Way, Long Beach, California 90807.

Donald A. Coates, Ph.D., 1969, has been at the Cleveland State University, Department of Geological Sciences, 1983 East 24th Street, Cleveland, Ohio 44115, since the fall of 1971, following two years with the Institute of Polar Studies at Ohio State University. He is teaching stratigraphy, geomorphology, and glacial geology and is continuing to write up his Antarctic research while eyeing environmental problems in Ohio and deciding where to start. Home address: 14432 Delaware Avenue, Lakewood, Ohio 44107.

William C. Cornell, Ph.D., 1972, is an Assistant Professor of Geology, Department of Geological Sciences, The University of Texas at El Paso, El Paso, Texas 79968. He presented "Maastrichtian silicoflagellates of the Great Valley, California" at the Annual Meeting of the American Association of Stratigraphic Palynologists in Newport, Rhode Island, and received Honorable Mention in the Best Paper Competition. "Evolution of the Late Cretaceous silicoflagellate algal genus Lyramura" will be presented at the ICSEB in August. Bill is Secretary-Treasurer for the El Paso Geological Society and coeditor of the Department of Geological Sciences Newsletter (good work, William). His paper "Late Cretaceous chryomonad cysts" appeared in Volume 12 of Palaeo.³ Bill proudly reports that he is also a new father: Anne Burgess Cornell arrived safely at 1:05 p.m.

on April 1, 1973, weighing 7 lbs., 4 oz., and screaming. Home address: 440 Francisco Avenue, El Paso, Texas 79912.

Clyde B. Cotton, B.A., 1948, was transferred from Anchorage, Alaska, to Houston, Texas, in October of 1972 and is now District Geologist for Getty Oil Company, P. O. Box 1404, Houston, Texas 77001. Home address: 555 North Post Oak Lane, Houston, Texas 77024.

John C. Crowell, Ph.D., 1947, has been engaged in the usual teaching of undergraduate and graduate courses in geology, primarily in structure and tectonics, at the University of California, Santa Barbara. His research efforts have been mainly directed toward understanding the Late Paleozoic in the far southern hemisphere and the relationships of glaciation of that time to continental drift and oceanic and atmospheric circulation. His interests involve paleoclimates as they relate to tectonic changes on earth. In addition, he is "steaming up vigorously for tectonic studies in southern California" and has an NSF grant for those investigations. Six Ph.D. students and two Masters students are undertaking studies along the fault zone with him. John writes that visiting their field areas is fun, but a time-consuming undertaking. On campus, he is Co-chairman of the Interdisciplinary Environmental Studies Program, and he finds it difficult, though stimulating, to try to get across problems of resources and their distribution to non-science students in a large auditorium. "We have a going thing underway in our Environmental Studies Program, but it is indeed difficult to stimulate an organization like ours to really try new types of cross-disciplinary teaching." John visited Brazil last Thanksgiving to participate in a symposium and excursion on Late Paleozoic Gondwana stratigraphy, will present an invited paper at Canberra, Australia, and take a field trip to look at Late Paleozoic glacial deposits in eastern Australia this August.

Donald H. Dailey, M.A., 1960, is a Research Geologist with Cities Service Oil Company, Exploration and Production Research, P.O. Box 50408, Tulsa, Oklahoma 74150. His Ph.D. dissertation (University of California, Berkeley, 1969), "Early Cretaceous Foraminifera from the Budden Canyon Formation, Northwestern Sacramento Valley, California," is scheduled for publication later this year in the University of California Publications in the Geological Sciences as Volume 106.

Paul H. Dudley, Jr., M.A., 1954, has been located for the past year (for the second time) in New Orleans, Louisiana, where he is Manager of Exxon's Southeastern Exploration Division. He reports that the oil business in the eastern United States is booming due to recent discoveries in Florida/Alabama, Michigan, and

to the general increase in product prices. Address: Exxon Company U.S.A., P.O. Box 61812, New Orleans, Louisiana 70161.

J. James Eidel, M.A., 1963, is a District Geologist for the Hanna Mining Company, P.O.Box 12647, Tucson, Arizona 85711.

Jack G. Elam, A.B., 1943, M.A., 1948, received his Ph.D. in 1960 from Rensselaer Polytechnic Institute. He is now a consulting geologist and independent operator, doing research on the origin of structures in the Permian Basin. In addition to his consulting, he is President of the Permian Basin Graduate Center, "organized by the various technical societies to bring continuing education to the Permian Basin." Address: 511 Gulf Building, Midland, Texas 79701.

Linda Engel, B.S., 1971, is working at Big Basin Redwoods State Park in the Santa Cruz Mountains as a State Park Ranger and is involved in preparing interpretive exhibits and programs.

Frank A. Exum, B.A., 1956, M.A., 1957, is currently working on Upper Cretaceous rocks of the Powder River Basin as a Senior Geologist for Marathon Oil Company, P.O. Box 120, Casper, Wyoming 82601. "Lithologic gradients in a marine bar, Cadeville Sand, Calhoun Field, Louisiana" was published in the Bulletin of the AAPG in February 1973. Home address: 1244 Granada Avenue, Casper, Wyoming 82601.

Richard E. Faggioli, M.A., 1953, spent two very interesting years as Environmental Conservation Manager in a new division at Exxon headquarters and is now back closer to his original profession as Manager of Special Products in the Producing Department of Exxon headquarters. He will be working principally on areas of the world in which no single Exxon function or affiliate is currently very prominent and in this connection will be playing a coordinating role in bringing together Exxon's overall interests. Meanwhile, he continues to wear his hat as Chairman of Exxon's Oceans Committee. Address: 1251 Avenue of the Americas, New York, New York 10020.

Daniel Flynn, B.A., 1948, M.A., 1957, is with Coldwell, Banker, and Company, P.O. Box 2069, San Diego, California 92112.

Eugene Fritsche, A.B., 1958, Ph.D., 1969, is an Associate Professor of Geology at California State University, Northridge, California 91324. Eugene continues his research on Tertiary paleontology and stratigraphy along Upper Sespe Creek, north of Ojai, in the California Coast Ranges. He was runner-up for the Best Paper Award at the Pacific Section of the AAPG meeting for his paper, "Structure of Miocene rocks in the Sierra Madre,

northeastern Santa Barbara County, California," and was elected Secretary of the Pacific Section SEPM for 1972-73. Home address: 17605 Cantara Street, Northridge, California 91324. He presented "Necessity and advantages of integrating the structural and field geology courses" at the Cordilleran GSA meeting in Portland, Oregon.

Joe Galbreath, B.A., 1958, is the Director of Marketing for Rocket Research Corporation, York Center, Redmond, Washington 98052. He is a member of the Marine Technology Society. Home address: 1439 Eighth Place East, Edmonds, Washington.

Warren D. Gillies, M.A., 1959, is a Division Geologist with Texas Petroleum Company, Apartado Aereo 3622, Bogota, COLOMBIA.

Orlando J. Gonzales-Correa, M.S., 1970, is an Exploration Geologist with Texas Petroleum Company, Apartado Aereo 3622, Bogota, COLOMBIA.

Harry W. Green II, A.B., 1963, M.S., 1967, Ph.D., 1968, is now Assistant Professor of Geology at the University of California, Davis 95616. He is currently working on structural petrology of mantle rocks from Hawaii, South Africa, Spain, Switzerland, and Greece, mainly utilizing high-voltage transmission electron microscopy. He was an exchange scientist in France from August through December of 1973. His paper on "The nature of deformation lamellae in silicates" (with S. V. Radcliffe) appeared in the GSA Bulletin, vol. 83, p. 847-852; "Dislocation mechanisms in olivine and flow in the upper mantle" (with S. V. Radcliffe) in Earth and Planetary Science Letters, vol. 15, p. 239-247; "A CO₂-charged asthenosphere," Nature (Phys. Sci.), vol. 238, p. 2-4; "Metastable growth of coesite in highly strained quartz," Jour. Geophysical Research, vol. 77, p. 2478-2484; and "Deformation processes in the upper mantle," was published in Geophysical Monograph 16 (the Griggs Volume) of the American Geophysical Union, p. 139-156.

Dave Gross, B.A., 1954, M.A., 1958, is now Project Engineering Geologist with Woodward-Lundgren and Associates, 2730 Adeline Street, Oakland, California, having recently returned from the Tarbula Dam Project in Pakistan. Home address: 649 Mohr Lane, Concord, California 94518.

Eugene Grudewicz, M.A., 1971, recently published "Endogenic cratering distribution on the moon," Nature, vol. 241, p. 185-186. He attended the Fourth Lunar Science Conference in Houston, Texas, in March of 1973 and was coauthor of a presented paper entitled "The flux of extralunar materials onto the lunar surface as a function of time" (with P. A. Baedeker, C.-L. Chou, and J. T. Wasson). Gene is continuing graduate studies for his Ph.D. at UCLA.

Bob Hale, B.A., 1957, works on the Alaska North Slope for Western Geophysical Exploration Company (information from Byron M. Ishkanian, B.A., 1957).

John Handin, A.B., 1942, M.A., 1948, Ph.D., 1949, is Associate Dean of Geosciences, Director of the Center for Tectonophysics, and Distinguished Professor of Geology at Texas A & M University, College Station, Texas 77843.

Allen W. Hatheway, A.B., 1961, received his Ph.D. in Geological Engineering from the University of Arizona. He is now Senior Project Engineer for Woodward-McNeill & Associates, a geotechnical engineering firm, and an Adjunct Assistant Professor of Engineering at the University of Southern California, where he teaches courses in soil mechanics and foundation engineering. He received the American Society of Civil Engineers Outstanding Young Civil Engineer Award and won the Society's Daniel Mead Award for his paper on engineering ethics, both in 1972. He has recently published seven papers in the fields of soil mechanics, rock mechanics, and engineering geology. Address: Woodward-McNeill & Associates, 758 North Batavia, Orange, California 92668.

Gwenn (Jensen) Heller, B.S., 1968, and Jeff C. Heller, M.S., 1970, were married on 25 November 1972. Both were promoted to Geologist 2 with Cities Service Oil Company last June, and they were transferred to Denver last August. Gwenn is currently working on central San Joaquin stratigraphy and the Sonoma-Livermore area, while Jeff's studies include the areas of northern and southern San Joaquin Valley, Oregon, and Washington. Address: Cities Service Oil Company, 900 Colorado State Bank Building, 1600 Broadway, Denver, Colorado 80202.

Liang-Chi Hsu, Ph.D., 1966, is an Associate Professor and Associate Mineralogist at the Mackay School of Mines of the University of Nevada, Reno, Nevada 89507. He has a National Science Foundation grant to investigate hydrothermal tungsten ore formation. "Origin of the scheelite-powellite mineral series" will appear in No. 5 of Economic Geology 1973.

Byron M. Ishkanian, B.A., 1957, is a Petroleum and Mining Safety Engineer for the State of California Division of Industrial Safety, 411 East Cañon Perdido, Room 5, Santa Barbara, California. He has been in the Santa Barbara area for twelve years, working for the most part in offshore drilling and development, but has also been involved in some mercury mining activities. He writes that he has completed almost enough work for a M.S. in Petroleum Engineering and that he has become an experienced hard-hat and scuba diver with mixed gas experience. He is also a certified Safety

Engineer. Home address: 1480 San Leandro Park Road, Montecito, California 93108.

Stephen Emanuel Jacobs, B.S., 1971, is a graduate student at the University of Nebraska, Lincoln, Nebraska 68508, and plans to finish up his Masters degree this summer (thesis title: "Paleoecology of the Stull Shale [Upper Pennsylvanian] in Southeastern Nebraska and Southwestern Iowa"). He then plans to continue on toward a Ph.D.

Bradford K. Johnson, B.A., 1950, M.A., 1952, Ph.D., 1954, has been with McCulloch Oil Corporation, 10880 Wilshire Blvd., Los Angeles, California 90024, for the past two years as Chief Geologist. He had previously been with Marathon Oil in Los Angeles. Home address: 967 Wellesley, Los Angeles, California 90049.

Jess Johnson, Ph.D., 1964, has been promoted to Associate Professor with tenure in the Department of Geology, Oregon State University, Corvallis, Oregon 97331.

R. L. Johnson, B.A., 1957, M.A., 1959, works for Dow Chemical Company in San Francisco and lives in Walnut Creek (information from Byron M. Ishkanian, B.A., 1957).

Stan Kahan, B.A., 1955, is the Distribution Planning Supervisor for the Southern California Gas Company, Northwestern Division (report from James B. Brown, B.A., 1955).

Godfried O. Kesse, A.B., 1960, recently promoted to the post of Deputy Director of the Ghana Geological Survey, will become the Acting Director of that department when the present director goes on retirement at the end of June 1973 (report from Ed Asihene, Ph.D., 1970).

Charles F. Lechler, B.A., 1933, has retired. Home address: 28179 Portsmouth Drive, Sun City, California 92381.

Ernest B. Lian, B.A., 1949, Senior Geologist with Marathon Oil Company, P.O. Box 2380, Anchorage, Alaska, is hoping for a transfer to a warmer spot.

J. G. Liou, Ph.D., 1971, became an Assistant Professor in the Department of Geology of Stanford University, Stanford, California 94305, in September of 1972. His research involves (1) experimental investigation of the stabilities of epidotes and some other low-grade metamorphic minerals; (2) some petrotectonic assemblages such as ophiolites and glaucophane schists from Taiwan; and (3) mineral parageneses of metaconglomerates in the Franciscan. His paper "Stability relations of epidote" has been accepted for publication in the Journal of Petrology.

Peter P. Marsh, B.A., 1958, became Superintendent of International Mill Service's Pueblo Plant in Colorado this July, "an interim position, but quite enjoyable." He had been hired originally to set up and operate an ill-studied talc operation in Brazil. He had previously been a mining engineer for the U.S. Bureau of Mines and, before that, the General Manager of a barite production company in Brazil, had done well logging in California, Colombia, and Alaska, and for five years was a mining consultant in Colombia. He spent 1965 and 1966 in graduate studies at Cal State, Los Angeles, made flotation chemical hazard and geothermal studies with the Bureau of Mines, and studied accounting. Address: 2001 North Drive, Pueblo, Colorado 81008.

David R. Martin, B.A., 1957, M.A., 1958, was recently promoted to President of Occidental Petroleum de Venezuela, South America. He is also Exploration Manager - Latin America, Occidental Petroleum Corporation, with an office in Bakersfield, California. Address: 406 Jamaica Way, Bakersfield, California 93309.

Robert F. Martin, Jr., B.A., 1958, is working toward a C.L.U. degree at the American College of Life Underwriters in Bryn Mawr, Pennsylvania. Address: New York Life Insurance, 2801 West Sixth Street, Los Angeles, California 90018.

James M. Maxwell, B.A., 1958, deceased, June 1973 (report from R. F. Martin, Jr., B.A., 1958).

Robert M. Norris, A.B., 1943, M.A., 1949, received his Ph.D. from Scripps Institution of Oceanography in 1951 and is a Professor of Geology at the University of California, Santa Barbara. He just completed work on late Quaternary sedimentation off the northwest coast of South Island, New Zealand, and is currently working on the late Quaternary history of some Mojave Desert pediments. With R. W. Jessup he wrote "Cainozoic stratigraphy of the Lake Eyre basin and part of the arid region lying to the south," which appeared in the Journal of the Geological Society of Australia in 1971. "Shell and gravel layers, western continental shelf" appeared in the New Zealand Journal of Geology and Geophysics in 1972, and "Structure and Quaternary history of Karamea Bight, South Island, N.Z." is in press in the same journal. Address: Department of Geological Sciences, University of California, Santa Barbara, California 93106.

John D. Oehler, Ph.D., 1973, will become a Research Scientist at CSIRO in Canberra, Australia.

Dorothy Z. Oehler, Ph.D., 1973, will continue her research in Canberra, Australia, where husband John will be at CSIRO. She

received one of five Graduate Women of the Year Awards from the Association of Academic Women at UCLA this year.

Tom Ovenshine, Ph.D., 1965, joined the Alaskan Geology Branch of the USGS in 1965, and until 1970 he worked mostly in the "panhandle" region of southeastern Alaska mapping unmetamorphosed lower Paleozoic strata in the Sumner Strait region. The major results of this work are the documentation of 120 miles of right-lateral separation on the Chatham Strait fault (24th I.G.C.) and the controversial suggestion that the Paleozoic section is allocthonous with respect to the rest of the North American Cordillera (USGS Professional Paper 800-B). He was the Assistant Branch Chief from 1970 to 1972 and had the opportunity to participate in the two major issues presently affecting the State of Alaska: the pipeline and the Alaska Native Claims Settlement Act. In the pipeline issue he was detailed to the office of the Under Secretary of the Department of the Interior (W. T. Pecora) as a member of the group for the final drafting of the 6000-page Environmental Impact Statement. In the Native Claims Settlement he edited an open file report on "The Status of Mineral Resource Information on the Major Withdrawals Made Under the ANCSA of 1971." In 1972 he resumed geological studies, turning to an investigation of contemporary sedimentation in the Turnagain Arm, a 45-mile-long marine embayment near Anchorage, Alaska, now largely filled by sand and mud brought by glacier-fed streams from the surrounding Chugach Mountains. Tom's most recent major activity is his participation as a sedimentologist on Leg 29 of the JOIDES Deep Sea Drilling Project. Nine sites were drilled in the New Zealand - East Australian - Tasman Sea area, in a program attempting to determine the age of the onset and times of maximum Cenozoic Antarctic glaciation, as well as details of the timing of the drift-separation of the various crustal blocks in that region. Leg 29 also recovered the first basement cores from a magnetic quiet zone. Address: A. T. Ovenshine, U. S. Geological Survey, 345 Middlefield Road, Menlo Park, California 94025.

Edward D. Pittman, B.A., 1956, M.A., 1958, has been connected with Amoco's Research Center for about eight years, carrying out various types of research on carbonates and sandstones. In recent years his main interest has been in the application of scanning electron microscopy and microprobe studies to sedimentary rocks. His days as an active researcher ended, at least temporarily, when he took over the duties of Group Supervisor for Sedimentary Petrology. Address: Amoco Production Company, Research Center, 4502 East 41st Street, P.O. Box 591, Tulsa, Oklahoma 74102.

Richard J. Proctor, M.A., 1958, is Head of the Engineering Geology Branch of the Metropolitan Water District of Southern California,

Box 54153, Los Angeles, California 90054. He was appointed to the National Research Council's U. S. National Committee on Tunneling Technology, whose purpose it is to advise the NAS and promote tunneling information and research. He received the E. B. Burwell Memorial Award of the G.S.A. in 1972 for his paper "Mapping geological conditions in tunnels," which was published in the Bull. Assoc. Engineering Geologists; and he coauthored the paper "Relation of known faults to surface ruptures, 1971 San Fernando Earthquake, Southern California," in the G.S.A. Bulletin in June of 1972.

Tom Redin, B.A., 1952, has been District Exploration Geologist for Union Oil and Gas Division, Western Region, 9645 S. Santa Fe Springs Road, Santa Fe Springs, California 90670. Home address: 12016 Groveland Avenue, Whittier, California 90604.

Rafael Armando Reyes-Garces, M.S., 1967, is an Exploration Geologist with Texas Petroleum Company, Apartado Aereo 3622, Bogota, Colombia, South America, working in the Llanos area in eastern Colombia. He is also a Professor of Geology at the Universidad de America in Bogota. Home address: Carrera 52 N. 128-C-80, Las Villas, Bogota, COLOMBIA.

Jim C. Roth, B.A., 1956, M.A., 1959, is the President of the newly formed Carlsberg Petroleum Corporation. This internationally oriented oil and gas exploration company is an affiliate of the Carlsberg Financial Group of Companies, and is located in Century City, Los Angeles, California. Jim is the Chief Operating Officer, responsible for directing the Company's activities, and he travels extensively abroad. Address: Carlsberg Petroleum Corporation, 1801 Century Park West, Suite 503, Los Angeles, California 90067.

Edward W. Scott, B.A., 1932, was transferred in 1967 from his position as Vice-President of Exploration for Union Oil of Canada to become Manager of Exploration Research for Union Oil, Box 76, Brea, California 92621.

Richard Slade, B.A., 1966, is employed as an Engineering Geologist with Geotechnical Consultants, Inc., of Burbank, Ventura, and Santa Ana. His present work and main interest concerns ground-water and hydrogeologic investigations of numerous south coastal ground-water basins in Ventura and Santa Barbara counties. He is also involved with test hole/water well design and completions. A Registered Geologist with the State of California, he hopes to receive his Masters in Engineering Geology at the University of Southern California in June of 1974. His wife, Terry, is a cartoonist with Hanna-Barbera Studios; they have one child, Danya, age 2½. Home address: 12235 Dilling Street, North Hollywood, California 91602.

William V. Sliter, Ph.D., 1966, has left the Institute of Sedimentary and Petroleum Geology, Geological Survey of Canada, where he was Section Head for the Micropaleontology Section, undertaking Mesozoic foraminiferal age and paleoenvironmental studies of the Sverdrup Basin, Arctic Islands, Canada; and as of August 1973 will have joined the USGS in Menlo Park. Address, U. S. Geological Survey, 345 Middlefield Road, Menlo Park, California 94025.

Ken Stanley, B.A., 1964, M.A., 1966, was promoted to Associate Professor of Geology at the University of Nebraska, 433 Morrill Hall, Lincoln, Nebraska 68508, in June of 1972. He received his Ph.D. from the University of Wisconsin in 1969. His present research involves nonmarine invertebrate trace fossils; trace fossils and primary depositional structure of eugeosynclinal Ordovician Vinnini carbonates and sandstone in central Nevada; hydraulics of climbing of ripples, and sandstone petrography and petrology of the High Plains. In December of 1972, "Epeirogenic and climatic controls of Early Pleistocene fluvial sediment dispersal, Nebraska" appeared in the G.S.A. Bulletin.

Frank Stebelski, B.A., 1959, is now a Senior Programmer/Analyst employed by Systems Development Corporation in Santa Monica. He is currently working at the Camp Pendleton Marine Base in Ocean side and is living with his wife and two children at 3974 Park Drive, Carlsbad, California 92008.

Harold H. Sullwold, Jr., B.A., 1939, M.A., 1940, Ph.D., 1950, still is associated with Geo. H. Roth and Associates, Consulting Petroleum Geologists, but has moved from North Hollywood to 560 Concha Loma Drive, Carpinteria, California 93013.

Art Sylvester, Ph.D., 1966, was recently promoted to Associate Professor at the University of California, Santa Barbara, and is the Associate Director for the Education Abroad Program in Bergen, Norway (report from Bob Norris, M.A., 1949).

Alexander Tary, A.B., 1963, was promoted to Senior Geologist in the U. S. Forest Service, Geotechnical and Materials Engineering, 367 Civic Drive, Pleasant Hill, California 94523. Two days after his promotion, he was transferred with the entire office when they moved to Pleasant Hill. He is involved in engineering geological and shallow seismic investigations of all seventeen national forests in the California region (Region 5). Home address: 2858 Madeira Way, Pleasant Hill, California 94523.

J. D. Traxler, B.A., 1942, M.A., 1947, Division Geologist for Signal Oil and Gas Company, P.O. Box 2828, Long Beach, California 90801, was transferred from the headquarters office (now in

Houston) to the regional office at Signal Hill, California. Home address: 15510 Friends Street, Pacific Palisades, California 90272.

Bennie W. Troxel, B.A., 1951, M.A., 1958, has returned to his post of Scientific Editor for the Geological Society of America after a quick sojourn with the California Division of Mines and Geology, a sojourn which provided him with the opportunity to continue his field research in Death Valley. He returned to full-time editing again by January 1973. Address: The Geological Society of America, 3300 Penrose Place, Boulder, Colorado 80301.

George Tunnell, UCLA faculty 1947-1962 and then at University of California, Riverside, until retirement, will be awarded the Roebling Medal at the annual meeting of the Mineralogical Society of America in November.

Quentin Van Camp, B.A., 1957, M.A., 1959, is a Union Oil Company Geologist in Indonesia (report from Byron M. Ishkanian, B.A., 1957).

Ray Waldbaum, B.A., 1966, is still employed as an Engineering Geologist with the Los Angeles County Engineer. In October of 1972 he passed both the California State exams for registration as a geologist and for certification in engineering geology "on the first try. I learned all I know at good old UCLA, of course." Home address: 2327 Harwood Street, Los Angeles, California 90031.

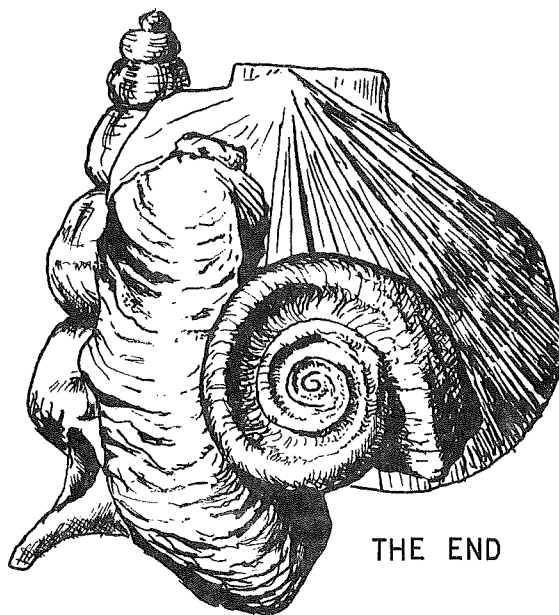
Bob Webb, A.B., 1931, Professor of Geology at the University of California, Santa Barbara "is planning to retire in a few years, a hard idea for his friends to get used to," reports Bob Norris, M.A., 1949.

A. E. (Bud) Wheeler, A.B., 1942, was killed in an automobile accident (report of J. D. Traxler, M.A., 1947).

Richard M. Wisehart, M.A., 1971, is an Engineering Geologist for the U. S. Forest Service, 367 Civic Drive, Pleasant Hill, California 94523. His duties concern providing pertinent geologic input to engineers who design roads, bridges, and other works on Forest Service land in California, Nevada, and Arizona. Recently he has become involved in a "terrain analysis" of select Forest Service land in the North Coast Ranges and the Klamath Mountains of California. The principal objective of this analysis is to predict the consequences of landslides and sediment yield of logging and road building in a previously untouched area. "In essence I'm writing geologic impact statements--quite fashionable

work!" He has also taken some course work in soil mechanics and geomorphology at Berkeley this past winter. Home address: 111 Chollo Ct. #9, Pleasant Hill, California 94523.

Joseph I. Ziony, A.B., 1956, M.A., 1959, Ph.D., 1966, is a geologist with the Engineering Geology Branch of the USGS, 345 Middlefield Road, Menlo Park, California 94025. In August he will move to Washington, D. C., to help guide the Survey's earthquake research program as Deputy for Geology, Office of Earthquake Studies. For the past several years he has been preparing small-scale maps of coastal California that depict geologic factors of concern to siting of nuclear power reactors. His research chiefly has been on the geologic evidence for recency of fault displacement; published reports cover recency of faulting in the San Diego area and a map showing recency of faulting in coastal southern California. He attended the Fifth World Conference on Earthquake Engineering in Rome, Italy, during June to present a paper, "Recency of faulting--a widely applicable criterion for assessing the activity of faults." Present home address: 1640 Escobita Avenue, Palo Alto, California (he will be moving to Washington, D.C., in August).



THE END

Geology Newsletter Editor
Department of Geology
University of California
Los Angeles, California 90024

Name _____

Address _____

UCLA degree and date _____

Present position, company or institution, address

Recently transferred? promoted? retired?

Professional and other activities (degrees from other schools?
current work, research studies, awards, etc.)

Publications, offices in professional societies?

Other information, news of other alumni, etc.
