

**UCLA**

Department  
of  
Geology

**NEWSLETTER**

**1967**

### The cover

Not psychedelic art, but strictly geological, the cover design is taken from the Wilbur Springs, California, Quadrangle Topo Sheet. Enlarged 2-1/2 times over the original 1/62,500 scale, intervals are colored between alternate 50 foot contours. The almost North-South ridge lies between a tributary valley to Antelope Valley on the right, and Little Valley on the left, from Secs. 1-3, T. 14 N., R. 5 W. northward to include Secs. 14-16, T. 15 N., R. 5 W.

Final drafting was done by Mr. J. C. Keeser head of the drafting department of Chevron Research Company, and the cover was printed at their La Habra Laboratory, courtesy of Chevron Research.

Letter from the Chairman

Dear Alumni:


This is the first and hopefully annual departmental newsletter. It has been compiled, written and edited by Helen Loeblich and I want to take this opportunity to express my sincere thanks to Helen for a difficult task well done. The "flavor" of the letter is hers and I find it refreshing.

The success of any newsletter series is largely a result of alumni response. If you find this first edition interesting and worth continuing, I trust that you will respond to the request for information.

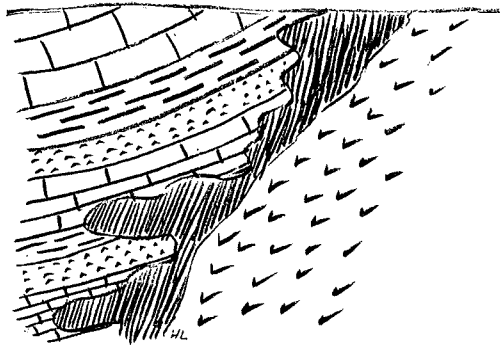
The changing nature of the geology department over the years is evident in what follows in the newsletter. To many of you, the staff will be nearly wholly different from what it was in "the good old days". For example, I am somewhat horrified to realize that with the departure of Dan Axelrod and John Crowell this summer, I will be the oldest staff member from the standpoint of years of service. Not only is the staff quite changed, but what goes on in the geology arena is often quite different from those earlier years. To a Brunton oriented geologist like myself, the changes are really fascinating, though not always fully understood, and I recommend that whenever you have a chance to be in the L. A. area that you stop in to see us. The red carpet will always be out and we sincerely welcome a visit at any time.

It was gratifying to see such large turnouts for the UCLA breakfast (especially at those elevated prices) at the GSA meeting in San Francisco last November, and for the cocktail party at the Annual AAPG meeting in Los Angeles this past spring. We are planning to have another cocktail party at the GSA meeting this November in New Orleans. Hope to see many of you at that time.

Sincerely,



C. A. Nelson

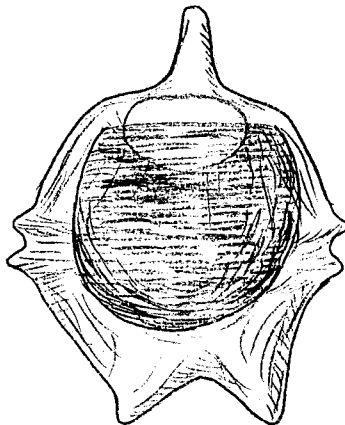


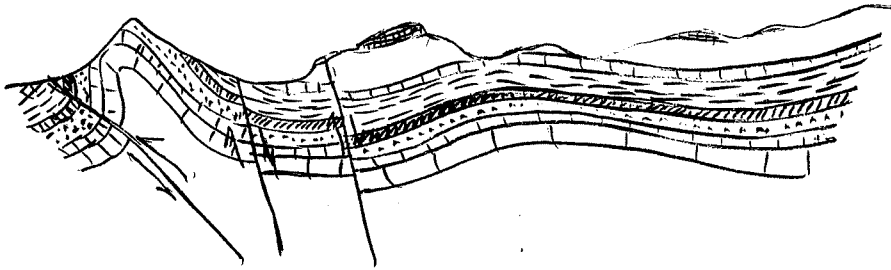
### Contact Metamorphism

The large University and particularly the California "Multiversity" has been thoroughly criticized in recent years, for its size and impersonal nature, and the lack of contact between student and faculty. Although this is a much greater problem for large lecture classes, in which a professor has little opportunity even to know the names of the many students, it is much less so in the science laboratory course, where more opportunity exists for contact, and this of less formal nature. Better yet is the opportunity for informal discussion that arises on a field trip. UCLA has always stressed the field aspects of geology, and has numerous scheduled field trips and field courses, in addition to the required summer field course for undergraduates. We have also made a conscious effort to improve and increase the opportunities for informal contact. Many of these ways, discussed under separate headings later in this report, are proving effective, and we hope to improve upon these in future years. This is not wholly an altruistic aim, in which we allow the lowly student to shine in our reflected glory. We are only too aware that these students will be the leaders in our profession in a very few years, their training far exceeds that received by any of us, and their future accomplishments will revolutionize the science of geology more extensively in the next few years than it changed in the century following William Smith. "Still water runs deep", but unless there is an influx at one end and outgo at the other, it only becomes stagnant. The student-staff dialogue is equally stimulating to both.

As UCLA and the Department of Geology have grown, the present and former staff and students have found it increasingly difficult to keep in touch. In the department we have initiated some new means of internal communication, to facilitate the mixing of hard and soft-rock types, increase the personal contacts of faculty and students, and further the interdisciplinary exchange of ideas. The present newsletter is intended to help you transgress boundaries of time and space, bring you up to date on our progress, activities, and needs,

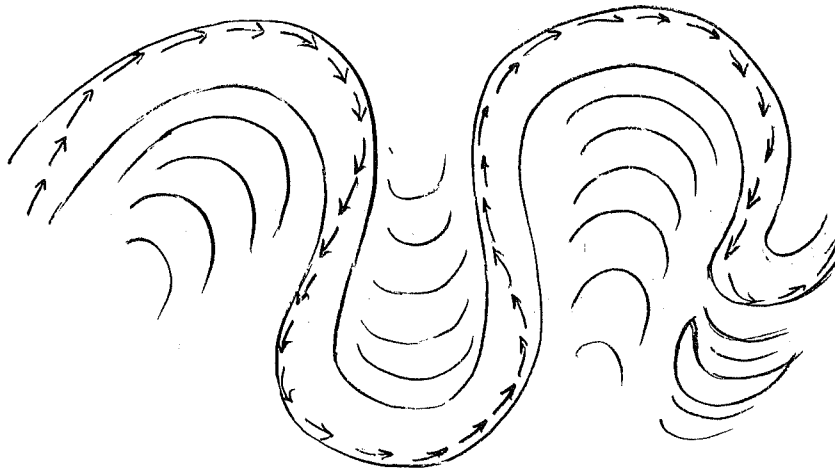
and stimulate your interest and support of the department. In return, we ask that you complete and return to us the last page of this pamphlet, so that we can in turn keep up with your progress. Later newsletters will then include such items as we can glean about the alumni from these reports.





### Regional Structure

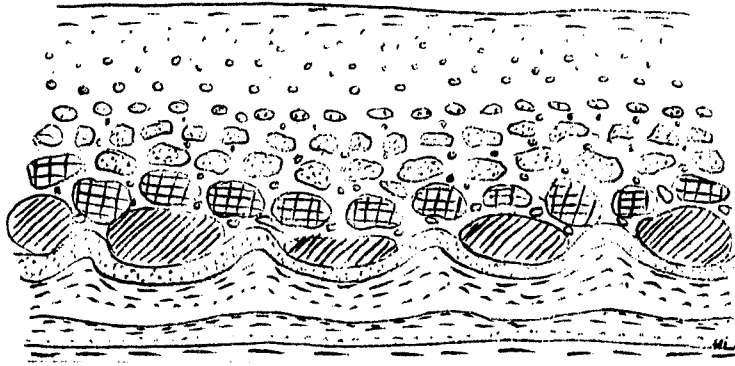
With the great growth of California and the Los Angeles area, the University has also expanded to meet the needs of this population. The total enrollment on all eight campuses averaged 84,325 over the three quarters of 1966-1967. About one-third of this total was at UCLA, as we averaged 26,101 this year (compared to the Berkeley campus total of 26,149). Both Berkeley and UCLA campuses will probably attain their projected maximum of 27,500 full-time students this coming year. The University of California will celebrate its centennial next year, but UCLA itself first opened to 250 students in 1919. Only half as old, we have come a long way, as UCLA is now one of the ten largest in the country in total enrollment.



### Geomorphology

The campus may have changed in appearance since you left, even though that may have been very recently. As the student enrollment increased, faculty increases (UCLA has a teaching staff of 1850, with 375 teaching assistants and 675 research staff), and new buildings arise to house the new equipment they require, campus roads and paths migrate in response, and multistoried parking structures rise to lodge the inevitable automobile. In fact, we are no longer surprised to find that changes occur since we left for home the previous evening!

There are now 78 permanent buildings on the campus, and many of these have added new floors, or new wings. To those tax-conscious Californians, we add that not all of these buildings are state-financed. Some were the result of gifts from generous donors (for example many of the medical school complex of buildings), others are financed by charges to staff and students (as were the Student Union, Faculty Center, the parking structures and dormitories), and some were partially or wholly the result of grants. The geology building has had two extensive additions, shared by the Geology Department and the Institute of Geophysics and Planetary Physics (the latter also shares some staff with the department). The new wing for planetary and space science that connects the east ends of the geology and chemistry buildings was financed by a grant from NASA.

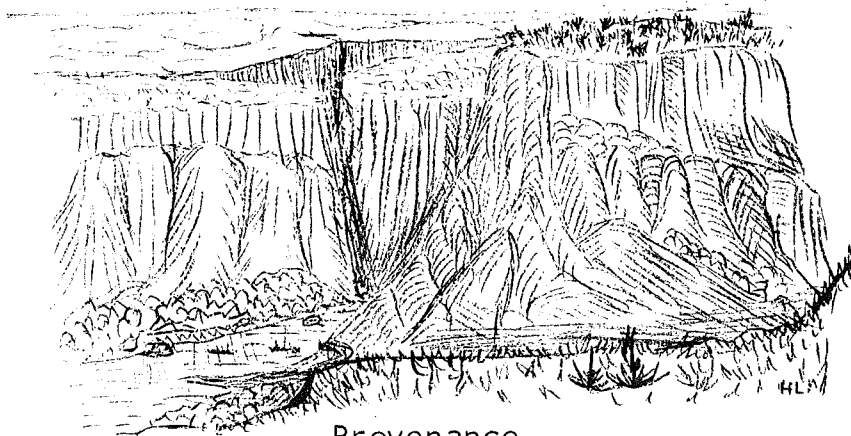


### Superposition

In accordance with the UCLA policy of rotating the departmental chairmanship every three years, Professor Kenneth Watson was succeeded as chairman in 1963 by Professor John Crowell. This past year, we have changed to a quarter system, revised the curriculum, changed all course numbers (and most of their content in order to fit the shortened term), and appropriately capped our new look with a new "head", Professor Clemens Nelson. He was fortunate in keeping the departmental secretary, Florence Bates, for most of this year of changes, but even this compromise with the past didn't last, for Joe Bates was transferred to the Dallas office of Delta Airlines, and Florence sold their California house to become a Texas belle.

Clem Nelson had served as Vice chairman for the previous three years, and as graduate advisor was well acquainted with the students and their problems. His letter to you, as Chairman of the department, appears at the beginning of this news report. He was followed as Graduate Advisor by Professor Donald Carlisle. In view of the many recent changes in the curriculum, course offerings, requirements and similar problems, Don would probably have been well advised to write all communications in disappearing ink.





Provenance

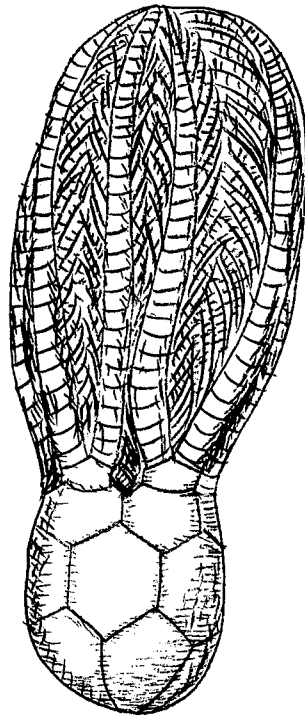
In any field of research or study, it is necessary to keep in touch with the latest developments elsewhere, as well as the background and classical studies of earlier times. The library is thus one of the best measures of quality in a University. The UCLA library contains nearly two and a half million volumes, with about 150,000 volumes added annually. More than 30,000 serial publications are received. Most of the latter are now housed in the new Research Library at the north end of the campus. The former library building now houses the College Library which contains most books required for undergraduate courses.

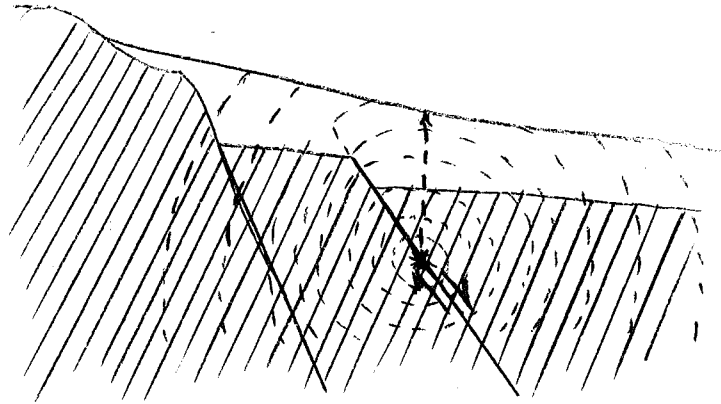
In addition to the main collections, some departments have separate libraries, as does Geology. At various times, we also find occasion to make use of the libraries in Bio-medical Sciences, Chemistry, the Engineering and Mathematical Sciences Library, or that of Physics.

Gera Freeman, the department Librarian, reports that the departmental library has also grown into an impressive size, about 50,000 volumes. We have been fortunate in obtaining many rare sets during the last few years (for example, Palaeontologia Indica) and are hoping to complete other sets as they can be obtained. Currently we receive 1464 serial titles from all over the world, including many from the Soviet block, that are represented in few library collections in this country.

The Geology-Geophysics Library has moved from the previous location to the new Geology wing. It occupies two levels, has a spacious reading room, new furniture, and floor-to-ceiling windows. It serves the Department of Geology, Institute of Geophysics and Planetary Physics, and the newly established Department of Planetary and Space Sciences. The staff has increased to three full-time employees, and is now decentralized from the Main library. As a result, ordering, cataloguing and binding have been much faster than before. The improved service is a particular boon in view of the shortened school term, and rapid turnover of reserve reading lists. Adjoining the Library

is the William C. Putnam Map Room, in which are housed the department collection of topographic and geologic maps. The map room was dedicated to Dr. Putnam who died in 1963.





Foci and Epicenters

The "cause d'etre" of the University is the student, and the student at UCLA has many direct effects on size of classes, teaching loads, and size of faculty. Sit-ins and strikes on various campuses intrigue the news media, but far more important and constructive "happenings" are commonplace in the university, if less photogenic.

The student geological society at UCLA has always been active in sponsoring talks, and discussions of greater significance than the psychedelic gatherings in Haight-Ashbury or the "Strip". The "trips" sponsored by GSUCLA may have been "far out", but seemingly are regarded as less newsworthy by Time, Life and Newsweek.

The Geological Society of UCLA also has undergone changes with the advent of the quarter system. Previously officers served one semester, but they are now elected to serve nine-month terms. Officers for 1966-1967 were:

President: Terry Tullis  
Vice President: Jehoshua Kolodny  
Secretary: Jan Tullis  
Treasurer: Else Neumann

The GSUCLA program of the current year began with a get-acquainted mixer in the geology building, at the end of the first week of classes. Later during the fall quarter, the annual picnic, baseball game, and beer bust was held at Tapia Park, west of Los Angeles. All students, faculty, staff and their families are invited; about 90 attended.

Another gathering was held at Dave Weide's somewhat later in the year. The steak cookout was held in the garage due to rain, but was a huge success nonetheless.

The final day of the fall term was also the day of the annual Christmas party, held in the Geophysics seminar room. Final exams were over and the first session under the quarter system completed, so everyone had something to celebrate.

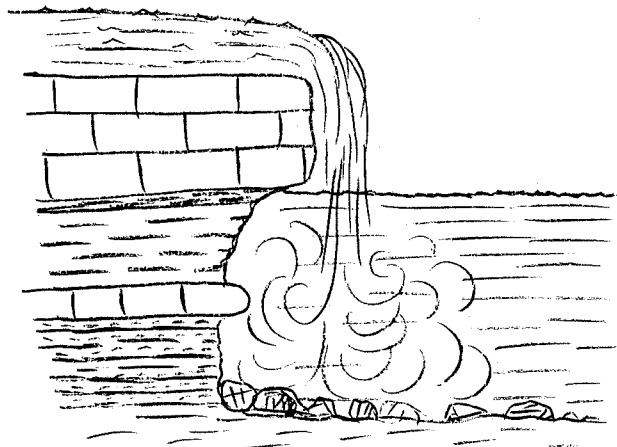
GSUCLA is cosponsor with the Geology Department of all noon and afternoon talks, lectures and other programs in the department, so some of their activities are covered elsewhere. Thursday noon talks by visitors, students or faculty have included some travelogue types, from the Antarctic to Scotland, and many places between. For example, one evening talk during the winter quarter, by graduate student Andy Link, recounted his adventures in Africa the previous summer, with slides and color movies.

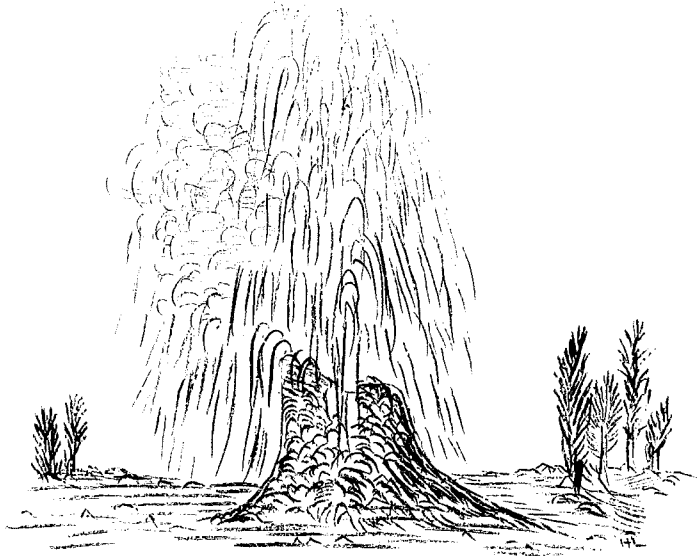
Two departmental field trips were held during the spring quarter, the first led by John Crowell in April, was to the Orocochia Mountains. The second, in May, led by Clem Nelson, John Christie, and Art Sylvester was in the White and Inyo Mountains. A year-end beach party at Santa Barbara was held the weekend following spring quarter finals, as a farewell for the summer.

Another "tradition" was initiated this year. We now have a "rogue's gallery" in the departmental office. Dave Weide took photos of all staff and students, and these are mounted in a large frame, with identification attached. The photos at times bear little resemblance to those "candid" shots taken at departmental picnics, at the "pizza parlor" on Friday evenings, or on field trips, but are most handsome and more suitable to the official atmosphere of the building.

One of the last actions of GSUCLA during the quarter was the election of the officers for next year:

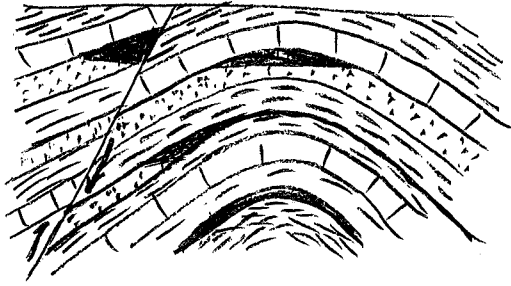
President: Andy Link  
Vice President: Don Coates  
Secretary: Jeanie Denison  
Treasurer: Julie Guenther  
Graduate Students Association  
Representative: Dave Baker





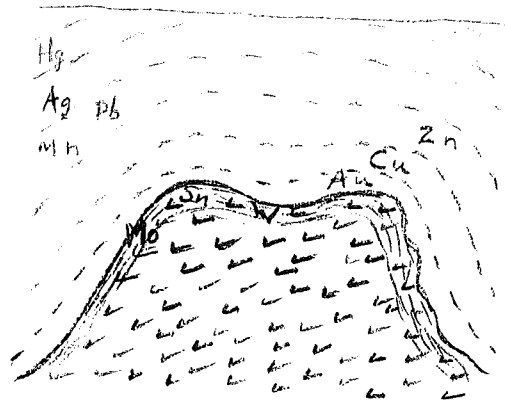
### Hot Springs, Geysers and Fumaroles

Some years ago, we realized that the specialization of the graduate students did not allow them to become well acquainted with all the faculty, and the faculty also found themselves unable to identify all the current graduate students. After much discussion, Tuesday noon "Instant Seminars" were initiated. All students and faculty attend, and undergraduates, staff and visitors are welcome. All bring their own "brown bag" lunch, and the Geological Society supplies coffee. For the first few years, all names were placed in a bag (sample bag of course), and one was drawn at the beginning of the hour. The one selected then spoke informally on some aspect of his research, an interesting article read recently, or any other topic of general (or limited) interest. No notes, no prepared material, and no slides were allowed, although a blackboard was available. The system worked well at first, but the possibility of being selected at any time led to a general drop in attendance as time neared for exams and thesis deadlines. This problem was solved by a minor change in format this year. All names are still in the bag, but two are drawn each time, to speak the following week. Time for presentation is limited somewhat, as discussion (somewhat heated at times) and questions follow each talk. As a result, the general ideas can be presented without great detail. As names are posted a week in advance, attendance has been excellent, and the main purpose is much nearer attainment. The informal meeting and discussion help us get better acquainted than is possible in the usual classes, and we get to know those in other lines of specialty as well as what they are doing.



### Reservoir Potentials

As the number of undergraduate geology majors has been low all over the country for nearly a decade, competition for the best graduate students has been increasing. We believe we have much to offer the graduate student. After all, the American Council on Education report last year, on their 1964 study of quality in graduate education, included UCLA among the top 10 geology departments in the country, and we continue to grow and improve! So to better acquaint potential graduate students with our department, the staff and the facilities, we held an Open House Conference for seniors in the colleges and universities of the general area. The conference was held on Sunday, January 8, and attendance was most encouraging. Visitors were greeted by the Chairman; some general explanations were offered in the Geology Museum area. After a coffee break, the group divided into two sections. Those choosing the "hard rock" route visited offices and laboratories of the mineralogists and petrologists, and the "soft rock" crowd visited similar facilities for paleontology, geochemistry and sedimentary petrology. After a lunch in the Museum, during which the staff members were all introduced, the tours continued through other laboratories and facilities, including the library, X-ray, and thin section laboratories, electron probe, and various laboratories of the Institute of Geophysics, again with a coffee break for mixing, discussion and questions. We enjoyed our visitors, who came from San Diego to as far north as Fresno, and plan to repeat the open house again.



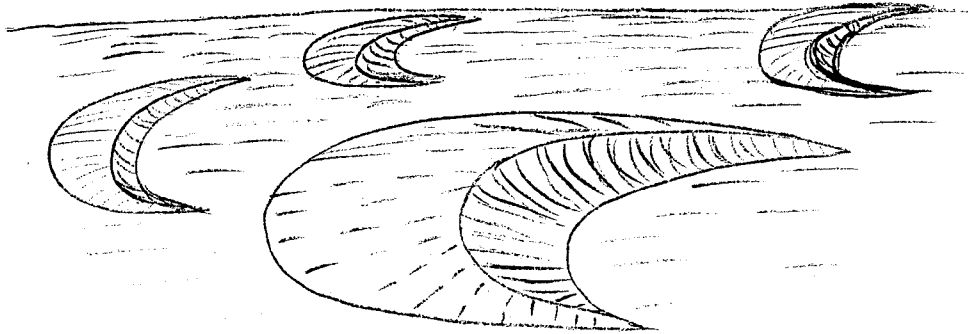
### Mineralization

Although a large state-supported University, UCLA has never had enough teaching or research assistantships and fellowships. Currently we have 13 TA positions, one Chancellor's Teaching Fellowship, 2 NSF traineeships, 3 NDEA Fellowships, a Shell Fellowship and an Atlantic-Richfield Fellowship. In contrast to this, at the end of the academic year, in spite of the many degrees just completed, 60 graduate students are continuing for next year, and approximately an equal number of new applicants requested financial support. As 20 positions can scarcely be divided 120 ways, a respectable proportion of the graduate students in recent years has been partially supported by NSF, ACS, NASA and other grants obtained by faculty members for that purpose, and in connection with their own research. (At the moment of writing this, 16 grants are currently active in the department.) Other solutions have been to appoint TA's for one semester, or two quarters only, thus spreading two positions to three students.

Due to budget problems, much equipment has also been grant financed (for example, the electron microprobe). The necessity for more complex (and expensive) equipment becomes increasingly urgent for student training in geology as well as for the research of graduate students and faculty. Although they are still useful, a hammer, Brunton compass and hand lens no longer suffice for the geologist. Some of the laboratory remodeling, with installation of the necessary equipment, is now hopefully getting under way, after years of repeated budgeting and later cancellation due to lack of funds.

Another fond dream of faculty and students is that we may some day be able to furnish a geology seminar or lounge with upholstered chairs, and related appointments, as we believe that a less institutional appearance would go far in relaxing the atmosphere for instant and other seminars, colloquia and

geologic "bull sessions". This cannot be done with state funds however. Does this sound like a pitch for alumni contributions? Perhaps more on this at a later date.





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The Periodic Table

The basic elements of a geology department are its faculty members, and the composition thus depends on the proportion therein of inert gases, native elements, and rare earths' and their combining properties, or nuclear activity.

Present activity of the current members of the faculty and research staff is indicated below, and except for the chairman and vice chairman in alphabetical arrangement. As noted in the following section, some have recently retired, some have moved elsewhere, and new faces have appeared to take their place.

Clemens A. Nelson, Ph. D., Minnesota

Chairman of the Department, Clem continues work (when the paper-pushing permits) on the cause and cure of the White-Inyo Mountains, of eastern California. The original stratigraphic-paleontologic work on the Precambrian and Early Cambrian succession has led to the investigation of the regional tectonics, granite tectonics, etc. of the region. Two (of four) quadrangles on which Clem has spent so much blood have recently been published--the Waucoba Mountain Quadrangle and the Blanco Mountain Quadrangle, as USGS GQ 528 and 529. With J. Wyatt Durham, U. C. Berkeley, he led the Paleontological Society field excursion to the White-Inyo Mountains following the San Francisco GSA meeting. A similar area was covered by the departmental GSUCLA field trip led by Clem and John Christie. His letter at the beginning of the news report modestly omits expansion on his cares and tribulations as "our leader".

Donald Carlisle, Ph. D., Wisconsin

Present Vice-Chairman of the Department and Graduate Advisor, Don has been exceedingly busy trying to match candidates and TA and Fellowship support, while advising graduate students on the changes in requirements and curriculum as they occur. The latest news is that Don has accepted the

position of Associate Dean, Student Support Section of the Graduate Division for UCLA, and will only continue as departmental advisor through this summer. His research presently concerns the origin and geochemistry of submarine volcanics, and he is directing an Undergraduate Research Participation project in British Columbia, with NSF support. Four and possibly five undergraduates will be connected with this project in the summer of 1967. He is also directing Ph. D. research of two students, both related to the Canadian region, and involving NE Vancouver Island, and Texada Island. He presented a paper on some compositional variations in pillows, pillow breccias and aquagene tuffs of the Karmutsen Group, at the GSA in San Francisco, in November, 1966.

Ted L. Bear, A. B., UCLA

A geological consultant, Ted is also a Lecturer in Petroleum Geology and joins us each fall to teach a course in Petroleum and Engineering Geology.

James A. Brown, now completing his Ph. D. at University of Southern California, will join us next year as Acting Assistant Professor. He was one of our visiting speakers during the past year, discussing his research on the thrust fault contact between the Franciscan Formation and Great Valley Sequence in California.

John M. Christie, Ph. D., Edinburgh

Cooperative work with Professor David T. Griggs, of the Institute of Geophysics, has concerned the origin of preferred orientations in metamorphic rocks, especially those with quartz (under NSF GP5575), and "year-long hot creep tests at high pressure" (NSF GA277). Six graduate students and other post-doctoral associates have been involved in these projects as well. Progress has been very good in the experimental production of preferred orientations in quartzites, micaceous rocks and dolomite, by deformation at high temperatures and pressures. Already interpreting the extensive data on fabrics of rocks, they are hopeful of developing a theory to account for the observed orientations. Significant information has been obtained about the state of stress during the history of the rocks. In the course of these projects, new apparatus had first to be developed, and the experiments followed. Various workers on these projects studied the mechanical twinning of quartz, during which plastically deformed crystals were later examined by electron microscope. The rotation of the grains, and the formation of twins were studied. Some of the high temperature and pressure work related to these projects is related by Griggs to a possible mechanism for deep focus earthquakes.

Other research interests of Christie include the analysis of minor structures in metamorphic rocks, and the interpretation

of preferred orientations of minerals and microscopic structures. He presented papers at the American Geophysical Union, Washington, D.C. in April on "Structures of rocks in mylonite zones", and at the western meeting of the AGU in September on the "Preferred orientation of quartz: a comparison of observed and predicted fabrics", the latter in cooperation with Charles Corbato of Ohio State.

Preston E. Cloud, Jr., Ph. D. Yale, Member National Academy of Science

Pres arrived at UCLA in the fall of 1965, after four months of field work in the Precambrian of Australia and southern Africa. His interests concern the evolution of the Precambrian biosphere, lithosphere and atmosphere, the major features of paleoecology and cosmobiology. Numerous trips and lectures have been related to these topics. Field trips during the past year have been to the Paleozoic of central Texas, and the Precambrian-Lower Paleozoic of the White and Inyo Mountains (with Clem Nelson), a 10-day backpacking trip with the kids into Kings Canyon, a visit to the type Huronian, and another to the Precambrian of the Shoshone area, Mojave region, with Loren Wright and Hans Hoffman. The Precambrian of British Columbia is on the agenda for this summer's visit.

Shuttle travel once or twice a month to Washington or elsewhere has been required by various NAS committees, and government advisory groups. During 1965-1966, Pres spoke on Precambrian life and atmospheric evolution, as well as the possibilities for Precambrian oil, at the API Symposium on Paleocology, Tulsa, Oklahoma, at the Univ. Southern California, and at the NASA Ames Research Center Symposium on Exobiology, as well as being the summary speaker for the Symposium on Exobiology, as well as being the summary speaker for the Symposium on Reconstructions of Past Biological Environments, Amer. Soc. Naturalists, at the AAAS meeting in Berkeley.

During 1966-1967, talks on Precambrian life, pre-metazoan evolution and the origins of the Metazoa were presented at the Claremont Graduate School (David French Lecture), at the Logan Club, Canadian Geological Survey, Ottawa, at the Symposium on Evolution and Ecology of Yale Peabody Museum, New Haven; at the Paleontological Society Symposium on the Precambrian of the southern Great Basin (GSA-PS meeting in San Francisco), at the Univ. Calif. Irvine Life Sciences group, at Stanford University (the annual lecture series in the earth sciences), at the Caltech Geology club, the Oak Ridge National Laboratory, Tennessee, and at the University of Miami, Florida. He also talked for GSUCLA on science and the public policy.

This fall he is to be on a Sigma Xi-RESA lecture tour, giving 16 talks on Precambrian life and atmospheric evolution at various campuses in the southwestern states, and will speak on "Resources and man" at the dedication of a new geology

building at the University of Texas. He serves on numerous committees of the NAS, AAAS, the AIBS-NASA Advisory Panel on Exobiology, an advisory committee to the Secretary of the Interior on Marine Resources development, and on the UC steering committee for the All University Conference on the University as a major influence in the State, at Santa Barbara. He has been a consultant on science, oceanography, earth sciences, and resources for various congressional committees, other universities and the NAS, yet has still found time to prepare and publish a half dozen or more articles each year for various journals, the USGS and symposium volumes, to teach courses and direct graduate student research on the Precambrian and Lower Paleozoic.

Wayne A. Dollase, Ph. D., M. I. T.

Joining UCLA this past fall, Wayne teaches beginning mineralogy, X-ray crystallography and crystal chemistry. His research lies in the field of X-ray crystal structure determination, and at present he is working on the structures of some of the silica polymorphs (tridymite and cristobalite), and on X-ray thermal diffuse scattering from silicates.

W. Gary Ernst, Ph. D., Johns Hopkins

Gary's present research is a hydrothermal synthesis at temperatures up to 950° C. at 500 bars total pressure, and 700° C. at 7000 bars pressure, with controlled partial pressures of H<sub>2</sub>O, O<sub>2</sub> and CO<sub>2</sub>, in order to determine the conditions under which garnets, amphiboles and zeolites are stable. Two graduate students are involved in this work. An electron probe microanalysis of minerals from low grade schists and from gabbroic rock is undertaken in an attempt to elucidate element fractionation among coexisting phases, as a function primarily of temperature. In addition, field petrographic and chemical comparative studies of the metamorphic rocks of the Franciscan terrane of the California Coast Ranges, and similar facies of the outer metamorphic belt of Japan has required a year's visit to Japan, and a return visit here of Japanese co-workers, Y. Seki, and H. Onuki. These projects were supported by NSF and UCLA research committee funds.

Gary attended the Eleventh Pacific Science Congress in Tokyo, August-September, 1966, and was coleader of a field trip to central Shikoku. He assisted in presenting an AGI short course on chain silicates at Palo Alto just before the GSA meeting in San Francisco, and led the post-GSA field trip to Pacheco Pass, "fabled in song and story" according to Gary. After checking with Webster's unabridged, I am certain there is no argument about the "fabled" part of the story! Other trips were to attend the AGU meeting in Washington in April, and to present three lectures at the University of Massachusetts. He is councillor for the Geochemical Society, and recently published a couple of papers on amphiboles.

Gary is Undergraduate Student Advisor, in which he is aided by Clarence Hall and Ron Shreve, and GSUCLA coordinator.

Ronald J. Gibbs, Ph. D., Univ. Calif., San Diego

Another new addition to our staff in 1966-67, Ron is continuing his research on the dissolved salts of the Amazon River system. Two papers concerning different aspects of the Amazon dissolved and suspended load are in press. A grant from the American Chemical Society Petroleum Research Fund supports research on the determination of the environmental factors that control the formation of clay minerals in nature. A paper on quantitative X-ray diffraction analysis using clay mineral standards is also in press.

Research has also begun on the factors controlling the geochemistry of the Yukon River system, and on the oceanic processes affecting Amazon River sediments.

Related to these projects as well as to the classes in sedimentology has been the renovation and remodeling of the Sedimentology Laboratory. The laboratory bench working area has been approximately doubled by the addition of formica and stainless steel-topped lab benches. Ron also designed and built an automatic particle size analyzer for material from 2 mm down to 16 microns in diameter. Cumulative and frequency curves are automatically recorded. Gasometric apparatus has been installed for the analysis of organic carbon, calcium carbonate, sulfur and nitrogen. Because much of this work involves cores, and other material requiring cold storage, a section of 60 cubic feet of refrigerated storage was added for sediment and water samples before analysis.

Meetings attended included the Gordon Research Conference on Geochemistry in August, 1966, the GSA in San Francisco, and the AAPG in Los Angeles. He is to be an invited lecturer at the Gordon Research Conference on Geochemistry of Nonmarine waters in August, 1967. He is directing the thesis research of a half dozen students in the field of sedimentology. Two of these plan theses related to Ron's studies of the Amazon and Yukon River systems.

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

Research interests at present are the growth layering of bivalved mollusk shells as an aid to paleobiogeographic interpretation; Geology of the West Huasna fault zone, San Luis Obispo County, California; facies changes in the upper Miocene and Pliocene Pismo Formation, San Luis Obispo region; the petrology and radiometric ages of Oligocene and Miocene volcanics in western San Luis Obispo County (with R. C. Surdam and D. L. Turner), and a numerical analysis of late Miocene faunas of California (with James Valentine, U. C., Davis).

The summer will be spent in teaching the UCLA summer field course for five weeks in the San Luis Obispo area. The students will map in the Franciscan Group, Vaqueros, Rincon, Point Sal and Monterey formations. Clarence will be in charge of the course, but will be aided by W. G. Ernst, who will be responsible for evening discussions of the Franciscan and the petrography of the Mesozoic and Cenozoic rocks of the area. A sixth week will be spent in the White-Inyo Range where Clem Nelson will take charge, assisted by Hall, and graduate student Phil Kern.

Hall led the Cordilleran Section, GSA, field trip into the San Luis Obispo-Nipomo area in March. Recent publications have concerned the Miocene Conus (Class Gastropoda) from Piedmont, northern Italy, published in the Soc. Paleont. Italica Boll.; the Potassium-Argon age of the Obispo Formation with Pecten lomdocensis, with D. L. Turner and R. C. Surdam; a new Pliocene spatangoid echinoid from the San Luis Obispo area, and the Stratigraphy and structure of the Mesozoic and Cenozoic rocks of the Nipomo quadrangle of the southern Coast Ranges, jointly with C. E. Corbato, of Ohio State Univ.

Lincoln S. Hollister, Ph. D., California Institute of Technology

Linc also joined UCLA for the first time last fall, although he didn't need to travel far from Pasadena to do so. His research interests involve electron microprobe studies of compositional variations in single crystals of garnet and staurolite, and the general petrologic implications of the compositional variations. His research has been supported both by a university research grant and by NSF. A graduate student is working with him on mineral separations of aluminum silicate-bearing rocks. Various field trips have been to the Yosemite Valley, the California Coast Ranges, Maria Mountains, and to northeastern Vermont. Some cooperative work with Caltech has continued, in particular involving the microprobe. He has also been interested in the glaucophane-schist tectonic block, Figueroa Mountain, California, and plans summer field research in the Coast Range Batholith in British Columbia.

Linc delivered papers on garnet zoning (GSA, San Francisco), metastable andalusite (AGU, Washington, D. C.), and staurolite zoning (MSA, Ontario, Canada, in August, '67). A paper on garnet zoning appeared in Science, and others on staurolite zoning, metastable andalusite and a glaucophane schist tectonic block are in the final stages of preparation. He also serves as recorder for staff meetings.

Isaac R. Kaplan, Ph. D., University of Southern California

Present research concerns the age and origin of recent marine phosphorites; the geochemistry of the Jordan Rift Valley and the Dead Sea waters; trace element concentration and diagenesis in marine interstitial water; the biological fractionation of  $S^{34}/S^{32}$ ; and  $O^{18}/O^{16}$  variation in water,

carbonates, dissolved  $SO_4$ , gypsum and anhydrite; pyritization in marine sediments; light hydrocarbons in meteorites and in ancient sediments; and the construction of equipment for in situ ecological studies. The various problems are financed by grants from ONR, AEC, NASA and the American Chemical Society Petroleum Research Fund. Currently Ian has 6 graduate students, a post-doctoral fellow and a research associate working with him. He is an associate editor of *Geochimica et Cosmochimica Acta*, and has been invited by the Ames Research Center (NASA) to partake in a study of returned Lunar material for evidence of life, when that becomes available.

Publications concerning his sulfur studies appeared in *Chem. Geol.*, including one with A. Nissenbaum on the origin of the Beerli (Israel) sulfur deposit, of Pleistocene age, and probable lagoonal environment. An article with W. T. Holser on the isotope chemistry of sedimentary sulfates demonstrated the variation in time of oceanic sulfate isotopes, regardless of the type of rock involved, or the geographic area. They suggest that the extensive change of sulfides to sulfates during the Permian was a cause of oxygen deficiency that perhaps was a factor in the many extinctions occurring at the end of the Paleozoic.

N. Gary Lane, Ph. D., Kansas

Present research concerns the evolution of lower Mississippian crinoids in Indiana, and the paleoecology of the Crawfordsville, Indiana crinoid beds. The projects are supported by two grants from NSF. Other projects include a study of Mississippian through Permian crinoid faunas of the southern Great Basin, and preparation of the section on the suborder Cyathocrinina for the crinoid volume of the *Treatise on Invertebrate Paleontology*. Last summer, this summer and that following are being spent at the U. S. National Museum, Washington, D. C. for research on the crinoids. During the fall and spring quarters, Gary and Clarence Hall have three-day field trips to southern Nevada, for the beginning paleontology class.

Gary is the secretary for the Pacific Coast section of the Paleontological Society, and is directing graduate student research in the lower Paleozoic of Nevada.

Recent publications include the description of a Permian crinoid fauna from Southern Nevada (U. C. Press), a redescription of the Pennsylvanian coral Chaetetes milleporaceus (with Roger Martin), and a discussion of the geologic history of New Harmony, Indiana (in *Geotimes*). An article on the Mississippian-Pennsylvanian boundary in Nevada (with Gary Webster, California State College San Diego), appeared in the commemorative volume to R. C. Moore in 1967.

Helen Tappan Loeblich, Ph. D. Chicago

Present research emphasis is on various phytoplankton groups, as background for preparation of the Treatise on Invertebrate Paleontology, Part B (jointly with husband Al). They are responsible for coccolithophorids and other calcareous nannoplankton, dinoflagellates and acritarchs, and assorted other protistan groups. Recent publications include an annotated index and bibliography to calcareous nannoplankton genera, species and suprageneric taxa (in *Phycologia*, with ARL Jr.), the first supplement to this having just been sent to press; an index to genera and species of silicoflagellates and ebridians, with descriptions and illustrations of valid taxa (with ARL Jr., ARL III, and Laurel Loeblich) in press as a GSA Memoir; a classification of the Chitinozoans (*Journal of Paleontology*); and a revision of the foraminiferal superfamily Discorbacea based on wall structures (with ARL Jr., published in Russian, in the *Voprosy Mikropaleontologii Vyp. 10*, honoring Lenin medalist Professor Dagmar Rauser-Chernousova).

Projects currently nearing completion jointly with ARL include a generic index to tintinnids (recent and fossil), a description of the first known Tertiary tintinnid, and a discussion of their primary wall composition and that of the Mesozoic Calpionellids; an ecologic and systematic study of the Recent foraminifera of the Sahul Shelf of Northwestern Australia, a modern carbonate environment (NSF financed, the abundant fauna having required approximately 5 years time for various scientific illustrators to do it justice); and a future supplement for Treatise on Invertebrate Paleontology Part C (on the Foraminifera and thecamoebians), as approximately 300 genera have been described since that volume went to press in 1962.

Helen is presently concentrating on a textbook for micropaleontology with a biologic emphasis, rather than systematic or stratigraphic. To be published by Harper & Row, it probably will appear in two volumes, of which the first, covering potential or actual protistan microfossils, is about two-thirds complete.

A discussion of wall structures and planktonic foraminiferal evolution (with J. H. Lipps) was given at the AAPG meeting in St. Louis, and a joint presentation (with ARL Jr) concerned the many aspects of "Fossil Phytoplankton" for a Paleontological Society Symposium at the GSA in San Francisco. Related to the phytoplankton studies has been a study of the fluctuations in phytoplankton abundance through time. Her theory that oxygen and carbon dioxide in the atmosphere have fluctuated in response to the changing oceanic primary production (largely due to phytoplankton), was presented at the GSA also, as "Three faces of evolution, biologic, atmospheric and lithologic", and in a talk for the Marine Biology Seminar at Scripps Institution of Oceanography, under the heading "The geologic ABC's of primary production: Atmospheric,



Biologic and geoChemical." A surprising number of correlative events seem to be interconnected through this process, ranging from changes in carbon isotope ratios to land and sea extinctions, to times of extensive carbonate solution or deposition.

Graduate students recently completed studies of Cretaceous foraminifera, Cretaceous planktonics, and Miocene planktonics under her direction, and are presently studying Cenozoic planktonics.

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

During 1966-67, Gerhard has been on a Guggenheim Fellowship at the University of Edinburgh. His research there concerns the mechanism of shear fracture in rocks with slaty cleavage. As a sideline, he is studying cyclic sedimentation in the British "coal measures" with Dr. Ken Walton of Edinburgh. During the year he has also visited Germany, Scotland, North Wales, Cornwall, and the Lake District. He accompanied a University of Edinburgh trip to County Antrim, North Ireland, and County Donegal.

He attended the Geologische Vereinigung, Mainz, Germany, presenting a paper "Transversalschieferung durch gleichzeitiges Gleiten auf mehreren Flächenscharen", and presiding at one session. He talked at the University of Edinburgh, on multiple gliding in slates of North Wales, and on the same subject at the University of Münster, Germany and Imperial College, London, and at the Techn. Hochschule Aachen, Germany. At the University of Bonn, and at the University of Cologne, Germany he talked on "Lebens und Todesgemeinschaften, ein paläoökologisches Modell am Elektronenrechner."

Recent publications have appeared in the Quart. Jour. G. S. London (with G. Y. Craig of Edinburgh), on "Deterministic models of living and fossil populations of animals", and another on "computer-generated populations and their graveyards" (on invitation, for Nature). Manuscripts have been finished on the "Tectonics of the Papoose Flat Pluton" (a joint paper with Christie, Nelson and Sylvester), and "Lessons from a feasibility study for computer models of coal-bearing deltas" (with E. K. Walton of the Univ. of Edinburgh).

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

Now completing a manuscript on earlier work on rotated garnets and their application to the tectonics of the western metamorphic belt of the New England Appalachians, in the middle of a paper on naturally decorated dislocations in garnet from a variety of occurrences; and presently working on conditions of metamorphism as implied from piezobirefringent haloes around quartz inclusions in garnet, in a variety of different metamorphic environments. An experimental program is planned on the same subject.

Last summer, field work was undertaken along the east side of the Green Mountains of southern Vermont, to determine the stratigraphy and structure of late Precambrian units. A field trip relating to the rotated garnet study was led by John into southeast Vermont, and he also attended the New England Intercollegiate Geological Conference field trip in the Mount Katahdin area of Maine.

Ronald L. Shreve, Ph. D., California Institute of Technology

During a sabbatical year spent at Harvard, Ron wrote an article on the "Black Hawk Landslide, of the Lucerne Valley in the northern San Bernardino, to be published as a GSA Special Paper, and a study of "Infinite topologically random channel networks", published in the Journal of Geology. He presented a paper on the Sherman Landslide at the San Francisco GSA, a result of the summer of 1965 which was spent at the Sherman glacier near Cordova, Alaska. The top of a mountain formed a landslide that was transported some two miles as a result of the Alaskan earthquake. This was published in Science last December. Current research interests concern the movement of glaciers, and involve checking in the field, particularly of the base of the glacier, to learn how the movement over the rock bed occurs. Ice temperatures are also measured in relation to this problem. Ron's field "laboratory" is in the Blue Glacier of Olympic National Park.

William S. Ting, Ph. D., Glasgow

Associate Research Geologist in the department, Bill Ting has an excellently equipped palynological laboratory, and states that he is "ever ready to cooperate with anyone". To use as a basis for paleobotanical studies, he has made a reference collection of about 2000 slides of modern pollen, preparing them, describing them, and formulating keys to the living pollen. Most of his research has been in Tertiary sediments, and as a result, studies of modern pollen are useful as reference. A key for the determination of species of Pinus by means of the pollen has been developed, and similar keys have been prepared for genera and species of about 20 families.

Projects completed include a study of Tertiary subalpine flora featuring spruce-fir and pine forests, from Idaho, and study of a Tertiary tropical flora from Del Mar. An interesting by-product consists of the tracing of aberrant forms through geologic time, and wondering about the meaning of this in the plant evolution. An electron-microscopical study of California pines has begun in cooperation with Dr. A. Diboll of the Botany Department. In cooperation with the L.A. County Museum, pollen from the La Brea Tar pits will be studied, and possibly also from the Palos Verdes terraces.

Peter P. Vaughn, Ph. D., Harvard University

Although officially a member of the Zoology Department at UCLA, Pete Vaughn's courses in Vertebrate Paleontology, and the seminar in Vertebrate Paleontology are also given Geology numbers, so he is actually teaching in our department as well. His research is in the field of Late Paleozoic Vertebrates, with particular emphasis on the Permian tetrapods. Field seasons have been spent for many years in the Four Corners area, from which he continues to find outstanding examples of previously unknown early reptiles. His morphologic studies are particularly concerned with the origins of the reptilian structural grade of evolution.

Kenneth D. Watson, Ph. D., Princeton

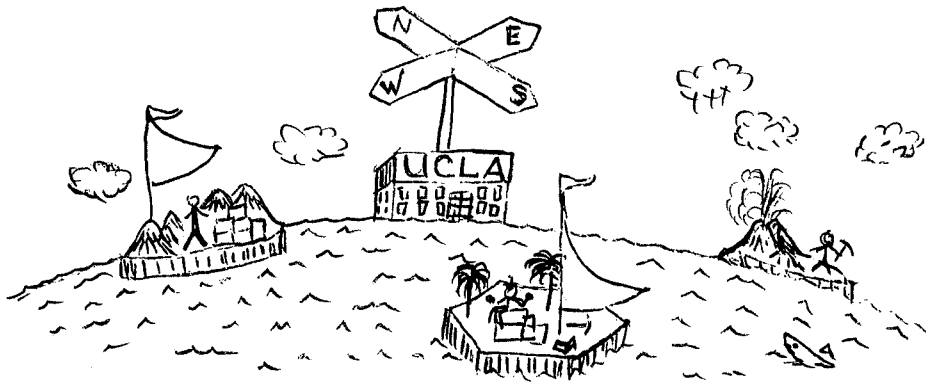
On sabbatical leave during the fall and winter quarters, Ken was engaged in research at the University of British Columbia, in Vancouver, involving the metamorphosed mineral deposits in Ontario and Quebec. Geological relationships show that the ore bodies have been metamorphosed, and the mineralogical, textural, and structural changes resulting from the metamorphism are being investigated.

Publications include the discussion of kimberlites of eastern North America, and kimberlite pipes of Northeastern Arizona, in the volume "Ultramafic and related rocks", in press with John Wiley & Sons. Although occurring mainly as small bodies, the kimberlites are widespread in North America. Most contain abundant primary calcite, perhaps partially explaining their emplacement at low temperatures. It may also afford evidence of their genetic relationship to carbonatites.

George W. Wetherill, Ph. D., Chicago

A member of the Institute of Geophysics and Planetary Physics, George teaches some geology courses as well. His research is in the field of geochronology, and isotope geology. Studies involve the Precambrian geochronology of North America and elsewhere, the evolution of continents, and the isotope chemistry and origin of meteorites.

Together with J. T. Wasson of the Department of Chemistry, George will shortly study the material to be returned to the earth by Apollo astronauts from the moon. They were recently chosen by the National Aeronautics and Space Administration to analyze a few ounces of this material, hoping to obtain a clue as to the origin of the moon, its age, evolution and exposure to radiation. Perhaps this study will settle definitively whether or not the moon was once a part of the earth, and whether it is now a "dead" body, or still geologically changing. George will concentrate on the study of the radioactive elements, rubidium, strontium, uranium, lead and thorium, in the determination of the age of the moon.



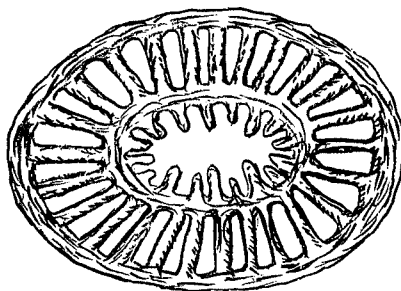
### Continental Drift

As new campuses of the University of California have been established and enlarged, some faculty members have been transferred to them from the larger campuses. In the past, we have done our share of "colonizing", as M. N. Bramlette and later E. L. Winterer moved south to U. C. San Diego, George Tunnell went to U. C. Riverside, and Cordell Durrell to U. C. Davis. This year two more long-time UCLA'ns are migrating from Westwood, Dan Axelrod to U. C. Davis, and John Crowell to U. C. Santa Barbara.

Daniel I. Axelrod came to UCLA in 1946 and will continue to observe the forests through the impression of a fossil leaf, making his headquarters a little closer to the trees. He is presently working on a subAlpine Eocene forest in Nevada and Idaho, the first such yet to be reported. Other projects involve paleoecology and paleoclimates, and range from the factors related to the Quaternary extinctions of mammals, and those factors explaining the widespread Cretaceous extinctions, to an explanation for Quantum evolution. Dan spends as much time in the field as possible, currently ranging over the Great Basin into Idaho in search of Tertiary localities to aid in environmental reconstruction. A trip to Japan in the summer has as its aim the opportunity to walk around in the "Eocene subalpine forests", like those he found in Nevada.

John Crowell has been on the faculty here since 1947, although he was a student before that, having obtained both his M. A. and Ph. D. here. He has recently really become involved in continental drift, as his research efforts have been lately concentrated on a five-year program (NSF) to prepare a paleogeographic and facies map of the Permo-Carboniferous of the far southern hemisphere. Together with graduate students and post-doctoral associates trips have been made to the Falkland Islands, Argentina, Brazil, Bolivia, Uruguay, Antarctica, and South Africa. Additional visits are planned to Antarctica, Africa, Australia and India. It is

hoped that the data obtained as to the late Paleozoic configuration and paleogeography of this region may have a bearing on the origin of the southern seas, and continental drift. Meanwhile, much useful information has been obtained on the criteria for facies interpretation, such as means of distinguishing truly glacial strata from those of other origin. In addition to the world encircling trips in the southern hemisphere, John has made a study of the tectonics in New Zealand, Puerto Rico, Jamaica, Barbados and Trinidad, visited several places in the Andes (particularly in Chile and Columbia under the auspices of Standard of Jersey), attended a meeting in Finland concerning earth movements, climbed the Alps with Heli Badoux and Rudy Trumpy (to observe the Engadine "accident", a presumed major strike-slip fault in the eastern Alps), and received an honorary doctorate degree from the University of Louvain in Belgium, for his work on California tectonic problems, and the studies of the San Andreas Fault. He served on GSA committees, participated in the San Andreas GSA symposium in San Francisco, and led a field trip in the Ventura Basin during the AAPG meeting in Los Angeles. He also gave a series of AAPG sponsored lectures (12 hours in 3 days in Houston and Denver), yet found time to publish several papers, concerning the interpretation of sedimentary strata and the recognition of ancient glacial deposits, and the description of Permo-Carboniferous tillites of the southern hemisphere. In Santa Barbara the Crowells are now building a "dream home" in the foothills, where daughter Marty can have a riding horse. Quite a change from L. A.





*But what is there to do there?*

### Mutations and Evolution

Some of our associates have "retired" in recent years, and have thus earned the title of Emeritus Professor. These include U. S. Grant IV, Joseph Murdoch, Willis P. Popenoe and William W. Rubey. Like all evolutionary processes, changes if any are at times very subtle, and we find that "retirement" has unusual connotations to these people.

Joseph Murdoch continues his research as actively as ever, and finds time for trips around the world, attends mineralogical meetings in Europe, and has spent a vacation on the English channel islands in the past year.

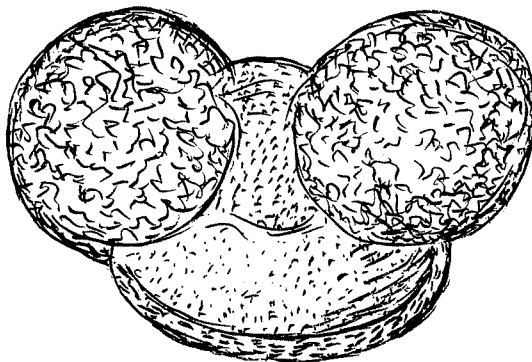
Parky Popenoe visited his son in Great Britain a year or so ago, and continues to work in the Redding area of California. Currently he is working on a joint paper with Louella Saul on "new and little-known" Cretaceous species occurring jointly in the Redding area and Chico Creek, in order to prevent "taxonomic collisions". Other joint work is that with Bob Kleinpell of U. C. Berkeley, which is a criticism based on thirty years findings of the old idea of R. E. Dickerson that tropical faunas evolved more slowly than temperate ones during the later Tertiary. The present results suggest that rates of evolution in the tropics are difficult to assess precisely, roughly the same as in temperate regions, and that the original theory of Dickerson was based upon the misinterpretation of incomplete and incorrect faunal and stratigraphic data. In other words, "there's something wrong with it." A recent publication was jointly with D. H. Dailey, on Upper Cretaceous mollusca from the Jalama Formation (in the U. C. Publ.). Other activities have been in the garden and backyard workshop. Although officially retired in 1965, Parky also taught the summer session in 1966.

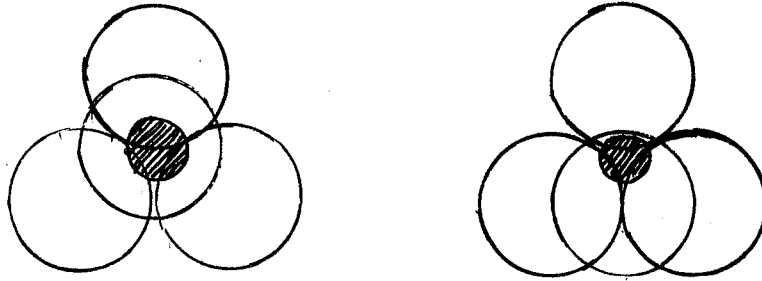
William Rubey is serving on a myriad of committees and councils, the Governing Board of the National Research Council, the Council of the National Academy of Sciences, visiting committee for Physical Sciences, Johns Hopkins University,

Visiting Committee for Geological Sciences, Harvard University, Board of Trustees Carnegie Institution of Washington, Board of Trustees Woods Hole Oceanographic Institution, and recently completed a six year term as member of the National Science Board. He was on the Committee on Mineral Science and Technology of the National Research Council, the panel on Denver Earthquakes of the U. S. Army Corps of Engineers, panel on Denver earthquakes of the Office of Science and Technology, White House meetings 1966, 1967; the panel on study of Earth-oriented satellite applications, of the NAS, and attended the All-University Faculty Conference at Santa Barbara in March.

Bill recently published a joint paper with H. C. Heard, on Tectonic implications of gypsum dehydration (in the GSA Bull.). Present research consists of the construction of a series of closely spaced structure sections through the overthrust belt of western Wyoming, and the problem of waste disposal in the Rocky Mountain Arsenal well and earthquakes in the Denver area. Lectures were given for the Colorado Scientific Society, Denver, and at the Geology Department of the University of Indiana. Conferences were attended regarding the proposed School of Earth Sciences of the University of Missouri.

With all of these commitments, Bill was still persuaded to return to teaching during 1966-1967 and again for 1967-1968, to present a seminar in Physical Geology for fortunate UCLA students.





### Accessory Minerals

In addition to the permanent staff, a continuing stream of post-doctoral research associates, and foreign colleagues has passed through the department, some remaining for a matter of days, others for months or years. Most of these have been carrying out portions of the research under way by various faculty members.

Dr. Jere H. Lipps, Research Geologist, has been associated with an NSF supported project of Helen Loeblich since completion of his degree in January, 1966. He has been making a study of foraminifera and nannoplankton from deep sea cores from the equatorial east Pacific Ocean. The fossils indicate ages of the sediments from Oligocene to Recent, and are used as a basis for interpretation of the paleoecology and marine geology of the area across the Clipperton Fracture Zone. A cross-country collecting trip was made last summer, with visits to various universities and museums on the way, and a longer stay at the U. S. National Museum for examination of specimens there. He presented papers concerning California Miocene planktonic biostratigraphy at the AAPG in St. Louis, on the Clipperton Fracture Zone cores at the GSA in San Francisco, and on a trace element analysis of foraminiferal tests by electron probe. Recent publications have concerned planktonic foraminiferal classification, wall structures, and systematics (Journal of Paleontology), on the electron probe analysis of the foraminiferal wall (with Paul Ribbe, in the Jour. Paleon.), a revision of the family Pseudoparrellidae (Tulane Stud. Geol.), planktonic foraminiferal biofacies in the Okhotsk Sea (with John Warme, in the Cushman Foundation), a new foraminiferal genus and family Tremachoridae (with Karen L. Lipps, in the Jour. Paleon.), 3 papers on Pleistocene biostratigraphy and paleoecology of the California Channel Islands (in the Veliger, Jour. Paleon., and Proc. of Symposium on the Biology of the Channel Islands). An article on the age and intercontinental correlation of the mid-Cenozoic California microfaunal stages, by means of planktonic foraminifera, will appear in the Journal of Paleontology. In July,



Jere leaves UCLA to join other UCLAns Cord Durrell and Dan Axelrod on the staff at U. C. Davis. He will be teaching this summer at the Davis geology department's Laboratory of Marine Geology and Paleoecology at the Bodega Bay Marine Station, now in full operation.

Two UCLA post-doctoral research associates have worked with John Crowell on the Antarctic- southern hemisphere project, Dr. Lawrence A. Frakes has been the chief associate, and has spent much of the last two years in the field. Dr. Jerry Matthews has also been involved both in the Antarctic and Los Angeles portions of the study, as have a number of master's and doctoral students. Publications by Frakes and Crowell have resulted from their collaboration.

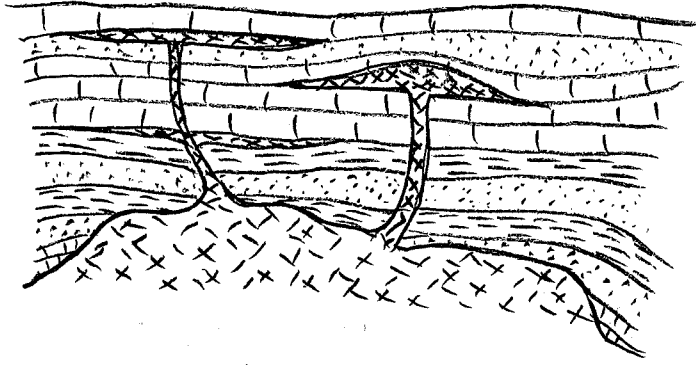
The projects of Professors Griggs and Christie have included three post-doctoral workers: Dr. Bruce Hobbs was here from December, 1965 to the end of February, 1967, working on the recrystallization of single crystals of quartz. He has now returned to Australia to take up a Research Fellowship at the Australian National University, Canberra.

Dr. Hans Rudolf Wenk, University of Zurich, Switzerland, has been working on the determination of preferred orientations by X-ray methods, and is leaving UCLA to take up a teaching position in the field of Crystallography at the Berkeley campus of U. C.

Dr. A. C. McLaren, Monash University, Australia, also visited the Institute of Geophysics in connection with the Griggs-Christie project for about 6 weeks. He made electron transmission microscope studies of Hobbs' cold-worked and recrystallized single quartz crystals.

Related to Prof. Ernst' studies of the metamorphic rocks of the California Coast Ranges (Franciscan Group) has been a comparison of these rocks to similar ones in Japan. In connection with this project, two Japanese colleagues spent some time here at UCLA, Drs. Y. Seki from Saitama University and H. Onuki from Tohoku University. Dr. M. C. Gilbert was also here for a time, from the Geophysical Laboratories, Washington, D. C. At present Dr. O. D. Hermes, from the University of North Carolina is associated with Ernst, making an electron probe microanalysis study of these rocks.

Dr. Alexander Stoyanow, Research Associate in Geology, is another long-time associate of the department, and continues his research on Mesozoic ammonites, although he insists he is really "working on borrowed time."



### Intrusive Bodies

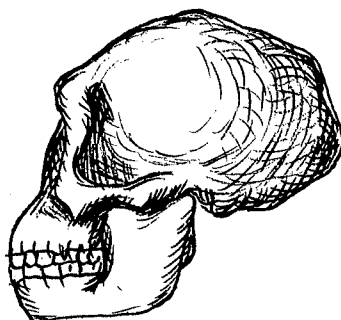
The department also has visiting professors at times, most commonly when one or another of the regular faculty is away on sabbatical. In recent years, these visiting professors have also had varied interests. In the spring of 1965, Professor Gordon Y. Craig of the University of Edinburgh was a UCLA visiting professor, his specialty being use of statistics in paleoecological studies. Professor Heli G. Badoux, of the University of Lausanne, Switzerland, was visiting professor in 1966, and gave two special lectures, "Geology of the ranges surrounding the western Mediterranean Sea, Part 1 South of France-Spain" (April 21, 1966), and "Part 2 North Africa-Italy" on April 28, 1966.

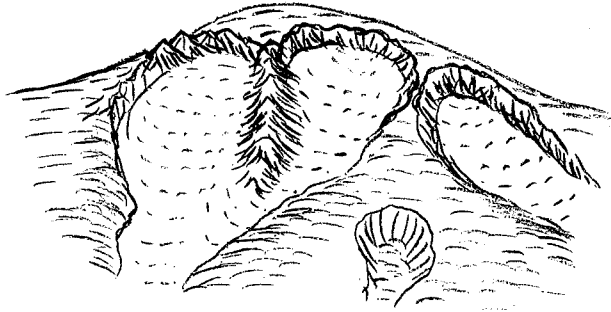
During the current year, Professor Pierre de Bethune, Univ. of Louvain, Belgium, has been visiting professor. He presented a lecture series on "Comparative tectonics of Folded belts, Western Europe", the six lectures covering "Hercynian Chain, The tectonic style of the Belgian Coal Basin", "The Midi Thrust", "Alpine Chain: The tectonic style of the Helvetic Alps", "Problems of the Pennine Alps", "A profile of the French Alps", including a film presentation, and "Comparative geomorphology of folded belts, Appalachians, Condros, Jura, Alps".

Dr. Robert Brooks has been at UCLA as Visiting Professor, and as an associate of Dr. Kaplan in research in geochemistry, for nearly a year. He will return to New Zealand in August, 1967. Together with Dr. Kaplan he has carried on research in the determination of trace elements in sea water and in the interstitial waters of oceanic sediments. They have devised new techniques for the analysis of several trace elements to the level of 0.1 part per billion. The data is used to study processes occurring in the oceanic sediments. This research has thus far resulted in two publications, by Brooks, Kaplan and B. J. Presley, concerning the determination of the trace elements in sea water and interstitial waters. While here, Dr. Brooks has talked on various occasions at UCLA, at California

State College Long Beach, at the local chemical society in Los Angeles, the Southern California branch of the American Chemical Society, and at the Rocketdyne Rock Hounds Club, on the subject of biogeochemical methods of prospecting. He also spoke at the Atomic Absorption Spectrophotometry Symposium in Los Angeles, on the determination of trace elements in the interstitial waters of oceanic sediments.

Professor Everett C. Olson, University of Chicago, will be Visiting Professor for the winter quarter of 1967-1968.





### The Cirque

In academic circles, a most important aspect is that of the supporting staff, and no newsletter would be complete without mention of their valuable contributions to the accumulation and dispersal of scientific knowledge. The department has 18 full-time non-academic employees.

George Lapins has been Senior Administrative Assistant for some years, and is the first and last resort for all necessities, from budget problems, to departmental records, to having a projector at the proper time and place for visiting speakers.

Our secretarial and clerical staff consist of Alice Bergdahl, secretary to the chairman, Lenore Aagaard, Jinny Cartwright, Maureen Carr, Darlene May, and Sally Petersen. These girls are responsible for typing letters, answering phones, keeping the faculty grants within their budgets, getting out the exam forms on time, and typing manuscripts for publication, among a myriad of other chores.

Technical assistance, in addition to that of part-time students, is supplied by Jean Denison, Mervyn Barman (micro-probe technician), Lowell Weymouth (departmental photographer), Paul G. Stummer (X-ray spectroscopist), and Opal Kurtz, Martha Matthews, and Julie Guenther (scientific illustrators).

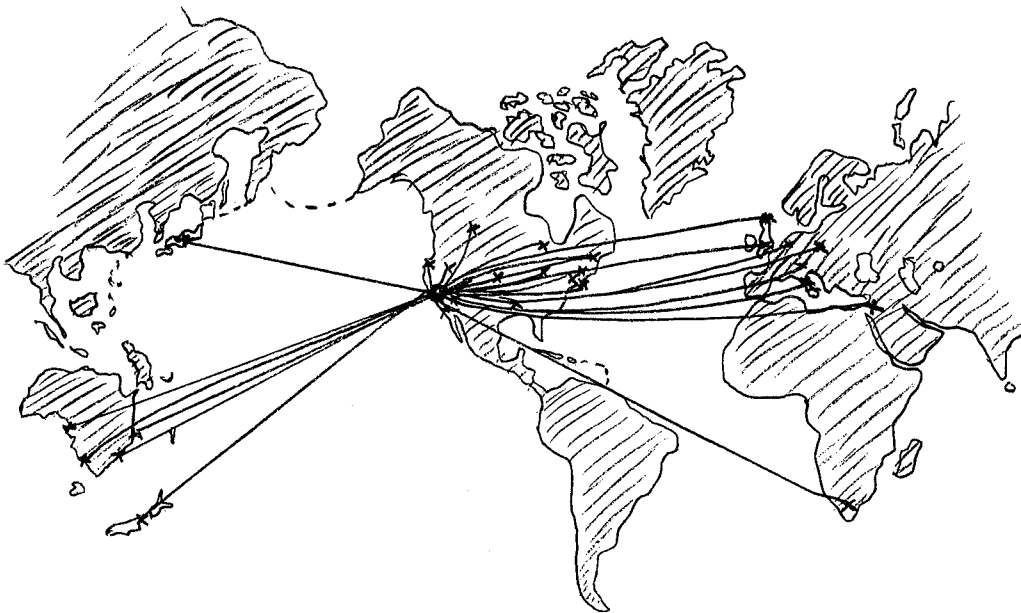
The thin section laboratory is headed by John de Grosse, who will celebrate his 20th year with us in September. He is ably assisted by Eugenio Gonzales, who has been here for five years, and two students working half-time each. The yearly output of sections prepared for geology and geophysics staff and students has increased, partly due to the arrival of the "probe", to about 7,000. John estimates that if all the sections turned out from the lab since his arrival here were laid end to end they would reach from the Geology building to home plate in the Dodger Stadium.

Curatorial duties in the paleontology and rock museum collections are carried out by three Museum Scientists.

Louella R. Saul reports that her research on Upper Cretaceous gastropods and pelecypods is moving at a snail's pace. (Anyone with a garden in California is aware that snails also get around pretty well). Together with Dr. W. P. Popenoe, Louella is describing new gastropods and pelecypods that are common to the type Chico Formation and the Cretaceous beds in the Redding area. They are also jointly preparing a check list of West Coast Cretaceous Mollusca. Louella's other projects involve a description of the fauna of the type Chico Formation, and studies of some groups of fossils whose members seem to indicate an evolving lineage.

Takeo Susuki is continuing joint studies of the Triassic faunas with Don Carlisle and Ron Surdam, but has also developed a new hobby. Through his efforts, an Earth Science section was formed a year and a half ago under the sponsorship of the West Los Angeles Japanese American Citizens League. It is aimed for family participation, and there are no membership restrictions. Some 55 families are currently enjoying monthly field trips to collect rocks, minerals, and fossils and to beach comb at low tide. A public showing of two years progress is set for October 21-22, 1967. The Earth Science Show will be staged at the Santa Monica Civic Auditorium, with the display of collections by the members of rocks, minerals, fossils, artifacts and handicrafts.

David L. Weide is in charge of rock collections, and has recently completed a study of the petrology of selected basalt flows within the Panamint Valley, California. The paper is being published as part of an interdisciplinary paper on the archaeology of the Panamint Valley, by the American Philosophical Society. Dave and his wife, Margaret, completed an archaeological reconnaissance of the Warner Valley region of southeast Oregon last summer, as material for Margaret's Ph. D. dissertation on lakeside adaptations of Indian groups within the Great Basin. Approximately 25 sites were mapped, and numerous rock and mineral specimens obtained for the UCLA collections. Recently chemical analysis has been completed of the soils for archaeological sites, concerning the measurement of anomalous concentrations of basic soil within the boundaries of numerous California sites. These highly basic areas mark the locality of buried structures and extensive burial grounds. The paper was published in the 1967 Annual Report of the U. C. Archaeological Survey.



### Exotics and Outliers

If all roads lead to Rome, they pass through Westwood on the way. Many geologists attended the geological meetings in California, or have passed through Los Angeles, on the way to or from other countries and continents. Many have stopped over long enough to give lectures here in the department, greatly enriching the curriculum, and giving students and staff the opportunity to learn, discuss and dispute a variety of topics. Most of these special lectures are held in the late afternoon, usually following a short coffee break. Others have been in the form of symposia, occupying more than one day, or sometimes an evening meeting.

As an indication of the varied diet we receive, these speakers and their topics of the past three years are listed.

- Dr. Albert E. J. Engel, Univ. Calif. San Diego, "Primary Magma and the nature of the Upper Mantle", Oct. 29, 1964  
Dr. Clarence R. Allen, Calif. Inst. Technology, "Circum-Pacific Faulting", Nov. 5, 1964  
Dr. Donald B. McIntyre, Pomona College, "Precision and the design of experiments in Geochemistry", Nov. 12, 1964  
Dr. D. B. Slemmons, Mackay School of Mines, Reno, Nevada, "Recent Faulting in the Great Basin", March 25, 1965  
Dr. John L. Rosenfeld, UCLA, "The major Upper Paleozoic metamorphism and diastrophism in Southeast Vermont", April 8, 1965  
Dr. Warren B. Hamilton, USGS, Denver, "The Permian Record and Continental Drift", April 22, 1965  
Dr. Joseph R. Curray, Univ. Calif. San Diego, "Structure of the Continental Terrace off Central California", April 29, 1965  
Dr. Roger Walker, Univ. Oxford, England, and Visiting Research Fellow at Johns Hopkins, "Comparison between Pennsylvanian submarine fan deposits of northern England and the modern submarine fans off California", May 20, 1965, and "The Origin and significance of the internal sedimentary structures of turbidites", May 27, 1965

- Gerald V. Middleton, McMaster Univ., Hamilton, Ontario, "Recent experiments in density and turbidity currents", May 23, 1965
- Dr. R. Patrick Suggate, Dept. Science and Industrial Research, New Zealand, "The Alpine Fault, New Zealand", May 24, 1965
- Dr. Paul B. Moore, Univ. Chicago, "Crystallochemical classification of the phosphates, arsenates and sulfates", June 1, 1965
- Dr. Raphael Freund, Hebrew Univ. of Jerusalem, "Geology of the Jordan Rift Valley", Sept. 16, 1965
- James Ingle, Univ. Southern Calif., "Paleoecology and stratigraphy of an ideal 20,000 meter deep-sea 'core'", Oct. 7, 1965
- Dr. Richard J. Russell, Louisiana State Univ., "Lecture on Geomorphology, Coastal Morphology", Oct. 11, 1965
- John E. Warne, UCLA, "Coastal lagoon ecology: paleoecological aspects of organism and sediment distribution, Mugu Lagoon, California", Oct. 28, 1965
- Dr. Clarence A. Hall, UCLA, "The Boot--a tour of Italy", Nov. 11, 1965
- Dr. Jiri Konta, Charles Univ., Prague, Czechoslovakia, "Quantitative petrographic classification and nomenclature of residual rocks", Nov. 17, 1965, and "Quantitative petrographic classification and nomenclature of pyroclastic rocks", Nov. 18, 1965
- Lincoln Hollister, Calif. Inst. Technology, "Petrologic implications of zoned garnets", Nov. 22, 1965
- Dr. A. Longinelli, Institute of Nuclear Geology, Pisa, Italy, "Paleotemperatures of ancient seas from oxygen isotope ratios in phosphatic shells", March 1, 1966
- Dr. Barry Raleigh, Australian National Univ., Canberra, "Mechanisms of plastic flow in silicate minerals", March 18, 1966
- Richard Naylor, Calif. Inst. Technology, "Age study on mantle gneiss domes of New England", May 22, 1966
- Dr. K. S. Heier, visiting Prof. at Univ. Calif. Berkeley, "Problems regarding the composition of the continental crust", May 25, 1966
- Dr. Edward L. Winterer, Univ. Calif. San Diego, "Tectonic erosion in the Great Basin", Nov. 10, 1966
- Dr. Robert A. Berner, Yale Univ., "Diagenetic processes in modern marine sediments", Nov. 17, 1966
- Dr. William F. Brace, Mass. Inst. Technology, "Experimental studies of volume changes in rocks during fracture", Nov. 18, 1966
- Dr. Peter Robinson, Univ. Massachusetts, Amherst, "Nappes and gneiss domes of the Bronson Hill Anticline, Central New England", Nov. 22, 1966
- Dr. Rudolf Steiger, Cal. Tech., "The microcline-orthoclase transition in a contact aureole", Nov. 29, 1966
- Dr. Leslie Marcus, Columbia Univ., "Measurement of Natural Selection using zoological and paleontological collections", Nov. 28, 1966
- Dr. Charles Stasek, Calif. Academy Sciences, "Environment,

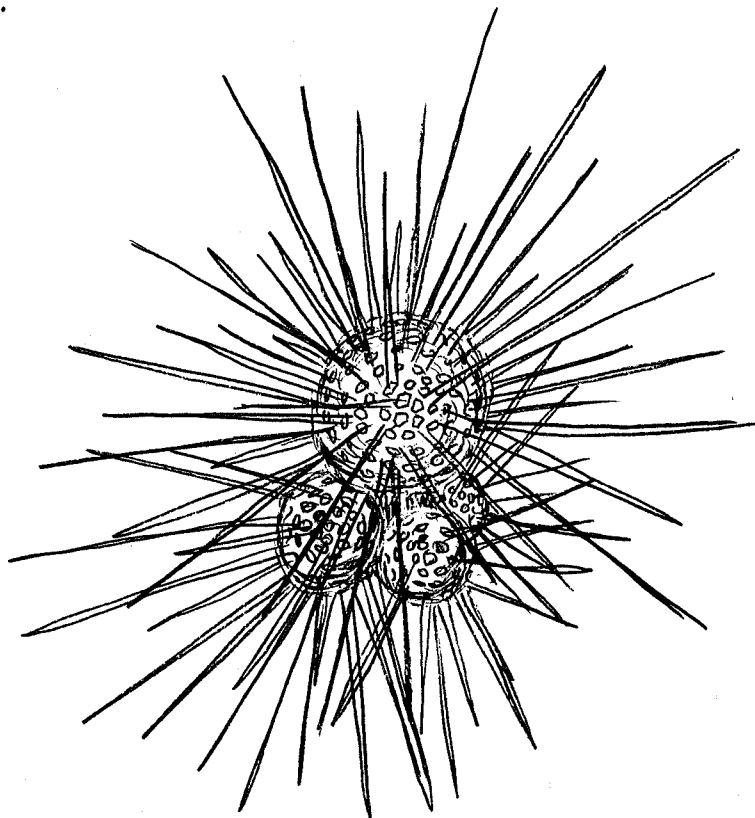
- form and evolution in the bivalved mollusca", Dec. 5, 1966
- Keith MacDonald, Univ. Calif. San Diego, "Quantitative studies on salt marsh mollusks", Dec. 5, 1966
- Dr. James W. Valentine, Univ. Calif. Davis, "Evolution and biological organization above the population level", Dec. 6, 1966
- Dr. William A. Newman, Univ. Calif. San Diego, "The Bathyalanidae n. fam. (Cirripedia. Balanomorpha): Recent bathyal-abyssal barnacles, with representatives in the Antarctic Cenozoic", Dec. 6, 1966
- Dr. Edmund G. Gill, Asst. Director National Museum Melbourne, and visiting Professor, Caltech, "Multiple migrations into Australia of Marsupials and Man", Dec. 9, 1966
- Dr. Melvin Peterson, Univ. Calif. San Diego, "Mineral Precursors", Jan. 12, 1967
- Dr. Ray Fletcher, Caltech, "A model for the replacement of a concordant intrusion", Jan. 18, 1967
- Dr. Warren B. Hamilton, USGS, Denver, "Structural geology of the Santa Maria Mountains, Southeastern California", Jan. 25, 1967
- Dr. David Kinsman, Princeton Univ., "Persian Gulf Evaporites", Feb. 8, 1967
- Dr. Karl Turekian, Yale Univ., "Patterns of trace element transport and deposition in the ocean", Feb. 14, 1967
- Dr. Vladimír Pokorný, Charles Univ., Prague, Czechoslovakia, "Mode of reproduction and sex ratio as paleoecological indicators", Feb. 22, 1967
- Dr. Robert Yeats, Shell Oil Co., Los Angeles, "Change in tectonic style in southern California", March 9, 1967
- Dr. J. P. Schaer, Univ. Neuchatel, Switzerland, and Visiting Professor Univ. Calif. Berkeley, "Structural evolution of the High Atlas, Morocco", April 3, 1967
- Dr. Fred J. Vine, Princeton Univ., "The history of the ocean basins", April 6, 1967
- Dr. Alan McGugan, Univ. Calgary, "Geology of the Canadian Rocky Mountains", April 19, 1967
- Dr. Robert Brooks, Visiting Professor, UCLA, "Pictorial tour of New Zealand", April 24, 1967
- Dr. S. Douglas McDowell, Univ. Chicago, "Petrogenesis of the Little Chief Stock, Panamint Range, California" April 25, 1967
- Dr. Robert Dill, Naval Electronics Laboratory, San Diego, "Transport of Sand from Coast to Continental Margin", April 28, 1967
- Dr. Henry W. Menard, Univ. Calif. San Diego, "Geological History of the Pacific Ocean Basin", May 8, 1967
- Dr. Eduard Wenk, Univ. Basel, Switzerland, and Visiting Prof., U. C., Berkeley, "Recent advances in metamorphic petrology of the Central Alps", May 9, 1967
- James A. Brown, Univ. Southern Calif., "Probable Thrust Contact between Franciscan Formation and Great Valley Sequence, Northeast of Santa Maria, California", May 18, 1967

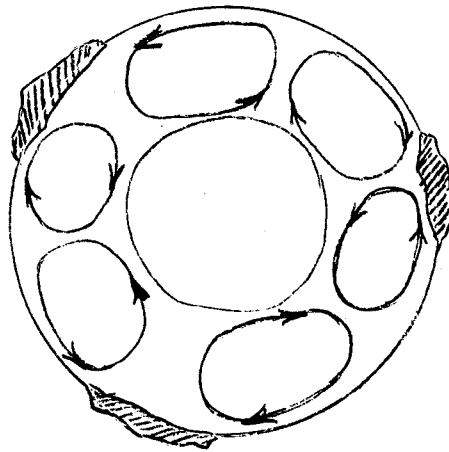


Dr. Frank W. Dickson, Univ. Calif. Riverside, "Replacement  
Origin of the Feldspars of the Papoose Flat Pluton,  
Inyo Mountains, California", May 22, 1967

Dr. A. Walsh, Division of Chemical Physics, CSIRO Melbourne,  
"Recent developments in Atomic Absorption Spectro-  
photometry", June 5, 1967

Dr. Martin F. Glaessner, Univ. Adelaide, Australia, "Precambrian  
Paleontology: Results, problems, perspectives", June 5,  
1967.





Convection cells

Convection currents may be set in motion by temperature differences within the earth's crust, and result in the eventual formation of mountains. We find that heated discussions and overturn of ideas have accompanied and resulted from various geological conventions, and symposia. In the last year or two, UCLA has had paleontological symposia of broad coverage. During the spring semester of 1966, a series of eleven lectures covered the broad topic "Perspectives in Paleontology." The keynote lecture was given by Dr. Ernst Mayr, Harvard University, "Evolutionary biology in 1966 and its bearing on paleontology", Feb. 17, 1966.

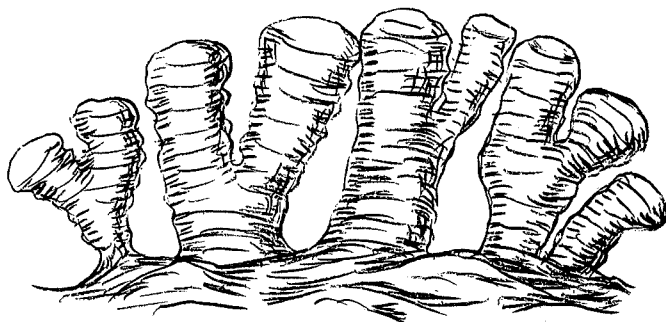
Dr. A. Lee McAlester, Yale University, discussed "Paleobiology of bivalve mollusks", Feb. 24, and Dr. John Imbrie, Columbia University, talked on March 9 about "Quantitative Paleobiology". Dr. W. R. Evitt, Stanford University, discussed "The smaller microfossils" on March 17, and Mr. W. R. Riedel, UCSD discussed the "Paleontology of the deep-sea floor", March 24. Dr. L. S. B. Leakey, Centre for Prehistory and Paleontology, Nairobi, Kenya, gave a talk to a standing-room only crowd at Royce Hall on "Olduvai Gorge and the oldest hominids", on March 28.

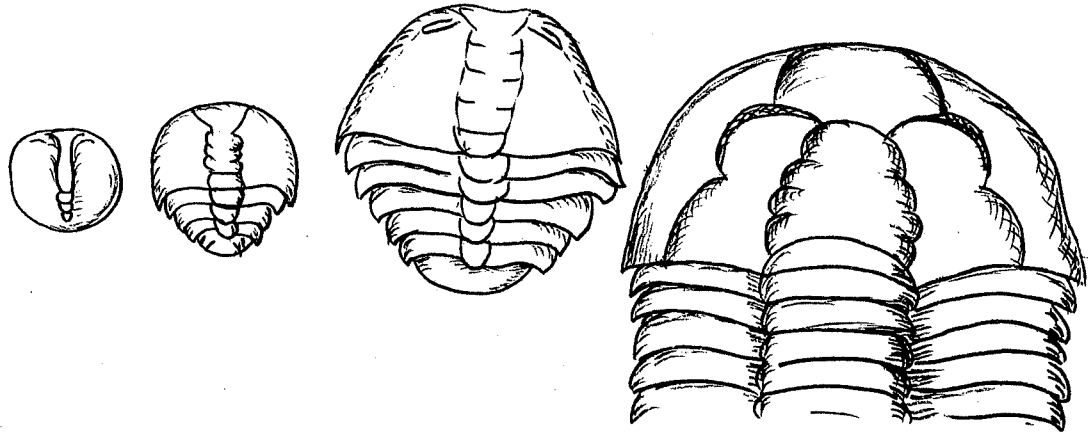
April 14, Dr. Leif Størmer, Universitetet i Oslo, Norway, spoke on the "Evolution of the arthropods", and Dr. A. J. Boucot, California Institute of Technology, discussed "Siluro-Devonian paleobiogeography" April 20. Dr. N. J. Silberling, USGS, Menlo Park, spoke May 5 on "Geochronologic significance of Triassic marine mollusks"; Dr. E. C. Olson, University of Chicago, discussed "Community evolution and the origin of mammals", on May 11. The series concluded with a tripartite summary of the "Prospectus for biogeology" on May 19, given by UCLA's D. I. Axelrod, I. R. Kaplan and P. E. Cloud, Jr.

Many of the topics were discussed before and after the formal talks by different classes, and the visiting speakers

also attended some of these classes to participate in the discussion of the topics.

Pres Cloud also organized a symposium in the fall of 1966, to take advantage of the presence of some visitors following the GSA meetings in San Francisco. On November 21, a symposium was held at UCLA on "Evidence for Precambrian Life--Biological and Chemical." Dr. Hans Hoffman, Geological Survey of Canada, Ottawa, spoke on "A reexamination of the Manchuriophycus problem," giving us a preview of the material that was discussed by him in Science a few months later. Mr. William Schopf, Harvard University, discussed "Aspects of Precambrian Paleobiology", showing illustrations of the exceptionally well preserved and interesting Precambrian algae he and various members of the Harvard staff have recently described. Mr. Gerald Licari, UCLA graduate student, gave a progress report on his work with Pres Cloud, "Some unusual microstructures in the Gunflint microbiota", Dr. Ted Belsky, UCLA Institute of Geophysics and Planetary Physics Research Geochemist spoke about the "Organic geochemistry of some Precambrian sediments", and Helen Tappan Loeblich discussed "Precambrian and early Paleozoic phytoplankton evolution and diversification."





### Population Dynamics

Although it was not possible in the first newsletter to obtain as much information about alumni as we would have liked, some statistics on the most recent graduates of the last 5 or 6 years will interest you. Bachelors' graduates are listed by year, masters and doctoral ones are listed alphabetically, with the title of their thesis, and present location when this was available.

#### Bachelor of Arts, Year ending June, 1962

Burgess, Richard Allan  
Colman, Dick Ray  
Davis, William Morris  
Harrison, John Hughes  
Julian, Theodor L.  
Lipps, Jere  
McNey, Jerrold L.  
Tribo, Ronald James

#### Year ending June, 1963

Edwards, Edwin Bruce  
Givens, Charles Ray  
Horn, Katherine Jadwiga  
Page, Oliver Sheldon  
Smith, Gerald Hugh  
Szynter, Steven Stanley  
Tary, Alejandro

#### Year ending June, 1964

Akpati, Benjamin Nwaka  
Blacic, James Donald  
Green, Harry Western II  
Gustafson, William Ivor  
Kelsey, James Walter

Kern, John Philip  
 Martin, Roger Alan  
 Stanley, Kenneth Oliver

Year ending June, 1965

Adams, Stephen Read  
 Crippen, Lawrence Charles  
 Pavlovich, Robert Lee  
 Ritchey, Joseph Landon  
 Scott, John Douglas

Year ending June, 1966

Cameron, Richard Douglas  
 Connor, John Charles  
 Dawson, James Clifford  
 Denison, Frank Edmond  
 Durkee, John Alden  
 Marincovich, Louie Nick  
 Oseguera, Alfonso  
 Slade, Richard Charles  
 Zumsteg, Jr., Howard Oliver

Year ending June, 1967

Duda, Vidmantas Kazimieras  
 de la Fuente, Juan Antonio  
 Kunitomi, Dale Sakaye  
 McConigley, Patrick  
 Sweeney, Robert Eugene

Master's and Ph. D.'s from 1962 to present

Akpati, Benjamin Nwaka, M.A., 1966

"Micropaleontology of the Jalama and Anita Formations, western Santa Ynez Mountains, Santa Barbara County, California". Now in graduate school, University of Pittsburgh.

Asihene, Edmund Buahin, M.A., 1962

"Geology of the Buena Vista Mercury Mine, Klau Mining District, San Luis Obispo County".

Bates, Jr., Edmond Elkins, M.A., 1965

"Stratigraphic analysis of the Cambrian Carrara Formation, Death Valley region, California--Nevada". With Pan American Petroleum Corporation, Fort Worth.

Beus, Stanley Spencer, Ph.D., 1963

"Geology of the Central Blue Spring Hills, Utah-Idaho". Now at Arizona State, Flagstaff.

Blackerby, Bruce Alfred, Ph.D., 1965

"The Conejo Volcanics in the Malibu Lake Area of the Western Santa Monica Mountains, Los Angeles County, California". Now at California State College at Fresno.

Blatt, Harvey, Ph. D., 1963

"The character of quartz grains in sedimentary rocks and source rocks". Now at University of Houston.

Blount, Charles Werner, Ph.D., 1965

"The solubility of anhydrite in the systems of  $\text{CaSO}_4\text{-H}_2\text{O}$  and  $\text{CaSO}_4\text{-NaCl-H}_2\text{O}$  and its geologic significance". Research geologist, University California at Riverside.

Bowser, Carl James, Ph. D., 1965

"Geochemistry and petrology of the sodium borates in the non-marine evaporite environment". Now at University of Wisconsin.

Burton, William Dunn, M.A., 1962

"Geology of the western part of the La Madre Mountain area, Clark County, Nevada". With Humble Oil Co., Kingsville, Texas.

Carter, Neville Louis, Ph.D., 1963

"Experimental deformation and recrystallization of quartz". Dept. of Geology, Yale University, New Haven.

Castle, Robert Oliver, Ph.D., 1964

"Geology of the Andover granite and surrounding rocks, Massachusetts". With USGS, Menlo Park.

Champeny, Jon Duckett, M. A., 1962

"Paleocene and Upper Cretaceous stratigraphy of Santa Ynez Canyon". With Humble Oil Company, Corpus Christie, Texas.

Colville, Patricia Ann, M.A., 1966

"A study of the relationships between cell parameters and chemical compositions of monoclinic amphiboles".

Davis, Briant Leroy, Ph.D., 1964

"High-pressure x-ray investigation of  $\text{CaCO}_3\text{-II}$  and  $\text{CaCO}_3\text{-III}$  at  $25^\circ\text{C}$ , and of the calcite  $\rightleftharpoons$  aragonite transition in the  $300\text{-}500^\circ\text{C}$  temperature interval". Now at South Dakota School of Mines, Rapid City, South Dakota.

Dawson, James Clifford, M.A., 1967

"The geology of the Bluff Cove Area, Falkland Islands".

Douglas, Robert Guy, M.S., Ph.D., 1966

"Upper Cretaceous planktonic foraminiferal biostratigraphy of the western Sacramento Valley, California". Currently teaching at Western Reserve University, Cleveland, Ohio.

Drake, Lon David, M.A., 1965

"Experiments on regelation of ice". Ohio State University, Columbus, Ohio.

Dutton, William George, M.A., 1962

"The geology of the Casitas Pass Region, Ventura County, California".

Ehrreich, Albert LeRoy, Ph.D., 1965

"Metamorphism, migmatization, and intrusion in the foothills of the Sierra Nevada, Madera, Mariposa, and Merced counties". Now at California State College, Long Beach.

Eidel, John James, M.A., 1963

"The paragenesis and geochemistry of the antimony-mercury deposits of the Antelope Springs mining district, Pershing County, Nevada". Now at Duval Corporation, Kingman, Arizona.

Evans, James George, Ph.D., 1966

"Structural analysis and movements of the San Andreas fault zone near Palmdale, southern California. Presently geologist, USGS.

Fan, Pow-Foong, M.A., 1963, Ph.D., 1965

"Mineral assemblages and sedimentation of the Sespe formation of South Mountain, Ventura County, California". (M.A.) "Recent silts in the Santa Clara River drainage basin, California: a mineralogical investigation of their origin and evolution" (Ph.D.). Now at University of Hawaii.

Frakes, Lawrence Austin, Ph.D. 1964

"Paleogeography of the Trimmers Rock Member of the Fort Littleton Formation (Devonian) in Southern and Eastern Pennsylvania". Research Geologist, UCLA.

Gallick, Cyril M., M.A., 1964

"The geology of a part of the Blanco Mountain Quadrangle, Inyo County, California".

Gilbert, Murray Charles, Ph.D., 1965

"Synthesis and stability relations of the hornblende, ferropargasite". Now at the Geophysical Laboratories, Washington, D.C.

Goldman, Harold B., M.A., 1964

"Tertiary fluvial deposits in the vicinity of Mokelumne Hill, Calaveras County, California". California Division of Mines, San Francisco.

Heard, Hugh Corey, Ph.D., 1962

"The effect of large changes in strain rate in the experimental deformation of rocks". Univ. Calif. Lawrence Radiation Laboratory, Livermore, Calif.

Hemborg, Thomas Harold, M.A., 1966

"The geology of the La Porte Quadrangle, Plumas County, California".

Hope, Roger Allen, Ph.D., 1966

"Geology and structural setting of the eastern Transverse Ranges, southern California". Now at USGS, Menlo Park.

Hsu, Liang-chi, Ph.D., 1966

"Selected phase relationships in the system Al-Mn-Fe-Si-O-H, a model for garnet equilibria". Presently in a research position, Pennsylvania State University.

Iqbal, Mir Waseluddin Ahmed, M.A., 1963

"Paleontology of the Ghazij Shale, Quetta-Kalat region, West Pakistan".

Janke, Norman Charles, Ph.D., 1963

"Effect of shape upon the settling velocity of regular geometric particles". At California State College, Sacramento.

Jestes, Edward Calvin, Ph.D., 1963

"A stratigraphic study of some Eocene sandstones, northeastern Ventura Basin, California". Present address 630 E. St., Davis, California.

Johnson, John G., Ph.D., 1964

"Great Basin Lower Devonian Brachiopoda". Research Geologist at California Institute of Technology, Pasadena.

Kahle, James Edward, M.A., 1966

"Megabreccias and sedimentary structures of the Plush Ranch Formation, northern Ventura County, California".

Kane, Henry Edward, Ph.D., 1965

"The Quaternary geology and geomorphology of the southeastern portion of the Canon City embayment, Colorado". At Ball University, Muncie, Indiana.

Kingsley, John, M.A., 1963

"A geologic and gravity survey of the rocks underlying the San Gabriel Valley, Los Angeles County, California".

Kuniyoshi, Shingi, M.A., 1966

"Geology of the Menzies Mountain area, British Columbia, Canada".



La Mori, Phillip Noel, M.A., 1963

"Fixed points on the high pressure scale".

Larson, Allan Richard, M.A., 1962, Ph.D., 1966

"Tertiary geology of a portion of the northern Sierra Nevada, California" (M.A.) "Stratigraphy and paleontology of the Moenkopi formation in southern Nevada" (Ph.D.).  
Now at Pan American Petroleum Corp., Denver, Colorado.

Lawrence, Edmond Francis, M.A., 1967

"Antimony deposits of Nevada". Address P.O. Box 8044,  
University Station, Reno, Nevada.

Learned, Robert Eugene, M.A., 1962

"Paragenesis of Mercury Ore deposits". Dept. of Geology,  
Chapman College, Orange, Calif.

Lipps, Jere Henry, Ph.D., 1966

"Cenozoic planktonic foraminifera. I. Wall structure, classification and phylogeny of genera. II. California mid-Cenozoic biostratigraphy and zoogeography". Research geologist, UCLA, 1966-67, now at University of California Davis.

Lumsden, William Watt, Jr., Ph.D., 1964

"Geology of the southern White Pine Range and the northern Horse Range, Nye and White Pine Counties, Nevada". Now at California State College, Long Beach.

Matthews, Jerry Lee, Ph.D., 1966

"Sedimentation of the coastal dunes at Oceano, California".  
Jerry has been associated with Dr. Crowell's Antarctic Project, as Assistant Research Geologist, and will be teaching in the summer session at UCLA.

McNeil, Mary Deligant, M.A., 1963

"The geology of the eastern half of the Victorville quadrangle, San Bernardino County, California".

Medaris, Jr., Levi Gordon, Ph.D., 1966

"Geology of the Seiad Valley area, Siskiyou County, California and petrology of the Seiad ultramafic complex". Now at University of Wisconsin.

Morton, Douglas Maxwell, Ph.D., 1966

"Petrology of the Lakeview Mountains Pluton and adjacent area, Riverside County, California". Now with the California Division of Mines, in Los Angeles.

Neder, Irving R., M.A., 1967

"Geology of a central part of the Bird Spring Range, Clark County, Nevada". Continuing graduate study at UCLA toward the Ph. D.

Newton, Mark, M.A., 1964

An experimental study of the P-V-T-S relations of sea water".

Newton, Robert Chaffer, Ph.D., 1963

"Some equilibrium reactions in the joint  $\text{CaAl}_2\text{Si}_2\text{O}_8 - \text{H}_2\text{O}$ ". Now at University of Chicago.

Nichols, Maynard Meldrim, Ph.D., 1965

"Composition and environment of Recent transitional sediments of the Sonoran coast, Mexico". Now at Virginia Institute of Marine Science, Gloucester Point, Virginia.

Nili-Esfahani, Alireza, M.A., 1965

"Investigation of Paleocene strata, Point Lobos, Monterey County, California".

Ovenshine, Alexander Thomas, Ph.D., 1965

"Sedimentary structures in portions of the Gowganda formation, north shore of Lake Huron, Canada". At USGS, Menlo Park.

Palmer, Leonard Arthur, Ph.D., 1967

"Marine Terraces of California, Oregon and Washington". Presently teaching at the University of Hawaii.

Pittman, Edward Dale, Ph.D., 1962

"Plagioclase feldspar as an indicator of provenance in sedimentary rocks". Now with Pan American Petroleum Corporation, Oklahoma City.

Player, Gary Farnsworth, M.A., 1966

"Petrography and origin of the phosphorite member of the Munson Creek Formation, Ventura County, California". With Union Oil Company in Alaska.

Raleigh, Cecil Baring, Ph.D., 1963

"Fabrics of naturally and experimentally deformed olivine". At USGS, Menlo Park.

Remenyi, Miklos Tamas, M.A., 1966

"Geology of the Texas Canyon area, Los Angeles County, California".

Reyes-Garces, Rafael Armando, M.A., 1967

"The geology of Libya and its oil fields". With Texaco in Bogota, Colombia.

Robison, James Holt, M.A., 1964

"Geology of the northwest portion of the Waucoba Spring Quadrangle, Inyo Mountains, California".

Roen, John Brandt, M.A., 1962

"The geology of the Lynn Window, Tuscarora Mountains, Eureka County, Nevada".

Roubanis, Aristidis Savvas, M.A., 1962

"Geology of the Santa Ynez Fault, Gaviota Pass, Point Conception area, Santa Barbara County, California". Pan-American Petroleum Corp., Lubbock, Texas.

Rowland, Richard Ernest, M.A., 1966

"Geology of the Grouse Creek area, south Fork Mountains, California".

Sams, Richard Houston, M.A., 1964

"Geology of the Charlie Canyon area, northwest Los Angeles County, California". Humble Oil Company, Corpus Christi, Texas.

Schmus, William Randolph, Ph.D., 1964

"The geochronology of the Blind River--Bruce Mines Area, Ontario, Canada". Now with Cambridge Research, U.S. Air Force, Hanscomb Field, Massachusetts.

Sharp, Willard Edwin, Ph.D., 1964

"The system  $\text{CaO-CO}_2\text{-H}_2\text{O}$  in the two phase region calcite + aqueous solution and its application to the origin of quartz-calcite veins". Now at University of South Carolina, Columbia, South Carolina

Sliter, William Volk, Ph.D., 1966

"Upper Cretaceous foraminifera from southern California and northern Baja California, Mexico". Now at Esso Production Research, Houston.

Stanley, Kenneth Oliver, M.A., 1966

"The structural history of the Clearwater Fault, northwest Los Angeles County, California". Continuing graduate study at University of Wisconsin, Madison, Wisconsin.

Stehle, Nancy Slover, M.A., 1965

"Migration of bubbles in ice under a temperature gradient".

Surdam, Ronald Clarence, Ph.D., 1967

"Low-grade metamorphism of the Karmutsen Group, Buttle Lake area, Vancouver Island, B. C." Now teaching at the University of Wyoming, Laramie, Wyoming.

Sylvester, Arthur Gibbs, M.A., 1963, Ph.D., 1966

"Geology of the Vrådal granitic pluton, Telemark, Norway". (M.A.) "Structural and metamorphic petrology of the contact aureole of Papoose Flat Pluton, Inyo Mountains, California (Ph.D.). Now with Shell Development Co., Ventura, California.

Taylor, James Barton, M.A., 1963

"The geology of the Indian Springs region, Clark County, Nevada". Texas Petroleum Company, Bogota, Colombia.

Theodore, Theodore George, Ph.D., 1967

"Structure and petrology of the gneisses and mylonites at Coyote Mountain, Borrego Springs, California". With the USGS, Menlo Park.

Van Couvering, John Anthony, M.A., 1962

"Geology of the Chilcoot quadrangle, Plumas and Lassen Counties, California".

Walker, Laurence Graves, M.A., 1962

"Geology of the Mt. Hope area, Garden Valley quadrangle, Nevada".

Warne, John Edward, Ph.D., 1966

"Paleoecological aspects of the recent ecology of the Mugu Lagoon". During 1966-1967, a Fulbright post-doctoral fellow at the University of Edinburgh, he will be teaching next fall at Rice University, Houston.

Webster, Gary Dean, Ph.D., 1966

"Biostratigraphy of the pre-Desmoines part of the Bird Spring Formation, northern Clark and southern Lincoln Counties, Nevada." Currently teaching at California State College, San Diego.

Weissberg, Byron Goodspeed, Ph.D., 1964

"Geochemical and petrographic aspects of arsenic deposits".

Wilhelms, Don Edward, Ph.D., 1963

"Geology of part of the Nopah and Resting Spring Ranges, Inyo County, California". USGS, Menlo Park.

Ziony, Joseph Israel, Ph.D., 1966

"Analysis of systematic jointing in part of the monument upwarp, southeastern Utah". USGS, Menlo Park.



Mrs. Helen Tappan Loeblich  
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.)

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\_\_\_\_\_

Publications, offices in professional societies?

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Other information, news of other alumni, etc.

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Suggestions concerning the newsletter?

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