

# The Department of Geology University of Kentucky

## The Round Up (1981)



Round Up 1981

Dear Alumni:

I have just been appointed chairman of the Department of Geology, U.K. for the next four years. The appointment procedure envisions the participation of faculty and staff, students and administration and I am grateful to all four bodies for their support. It is perhaps a difficult time to take up the leadership of the Department, since universities are under pressure to reduce their financial commitments. It is, however, obvious to the majority of informed people that the Commonwealth of Kentucky can only hope to prosper if it can utilize rapidly and efficiently its natural resources among which mining, gas and petroleum exploitation, water utilization, etc. are of considerable, if not paramount significance. For instance in 1978 the value of mineral production in Kentucky was \$3,870,009,883 while cash receipts from farm marketing were \$2,039,927,000. We as geologists should not only be aware of these facts, but also bring them to the attention of our friends, colleagues, legislators and the population in general. Therefore, I should like to invite you to join me in spreading the information regarding the usefulness of our science and the place in it held by our Department in which you have acquired your craft and I have the honor to represent.

It seems also timely to urge you to participate in the life and well-being of our, nay, your Department. You are invited to come and see us whenever it suits you, you are welcome to attend our meetings and seminars. In the past many of you have shown much generosity - in the future we will be appreciative of any help that may accrue from you.

The Department of Geology is growing at both the Major and the Graduate levels, but in the process of its growth it is trying to preserve the values of integrity and scholarship that we all cherish and to advance with the tide of scientific progress and the spread of technological applications that we all need. In all this I request your good will and your concern

Nicholas Rast

### Cover Photo

For many of you it would be difficult to recognize the distinguished gentleman featured on our cover as he has joined our staff quite recently. He is Nick Rast the Chairman of the department and the first person to hold the Hudnall Professor of Geology chair. Your 1980 copy of the Round Up gave a biographical sketch of Rast so we will not include one here.

### Forty-Niners Club

You will recall that last year some alums organized the group of alums and former students known as the Forty-Niners in an attempt to get greater participation in financial support of department activities. As your editor I am pleased to report that there continues to be support for this group but I am also somewhat dissatisfied that I am unable to report an increase in the total number of members. Currently money is a real problem in attempting to maintain quality higher education. The funds which the department receives from this group can and is spent for enhancing the program in ways which cannot be done with state funds are more important than many of us might believe. Why not join the Forty-Niners group now. Any amount which you feel you would like to give will be most helpful. Just make your check (tax deductible) to the University of Kentucky and designate McFarlan Fund or Geology.

Here is a list of the members of the Forty-Niners by virtue of having made a contribution since the last issue of the Round Up. They have been divided into benefactors who have contributed \$49. or more and patrons who have given a lesser amount.

Benefactors: Clemont Bruce, Charles V. Cunard, Hamilton Duncan, Russell Ford, Jay C. Henthorne Jr., Emily and William Jackson, C.M. Jacobs, James H. Johnson, Ovid M. Johnson, Mr. and Mrs. Robert Lieber, Ronald Mackey, Earl Majeski, Mr. and Mrs. A.J. Napier, Vincent Nelson, Kennon Pavona, Albert Pettit, George Pirtle, Ben Plock, Glenn Rice, Willard E. Rubarts, H.M. Rutledge, Sam H. Stith, Donald

Townsend, James K. Vincent, Jane C. Welch, R.O. Wilson, Leonard Wood.

Patrons are as follows: Lois Campbell, Reaves Jackson, Joseph H. Mills, James M. Puchen, James Rankin.

As a result of various companies having a policy of matching gifts of employees to educational institution the following companies belong in this listing: Amoco Foundation, Anadarko Prod. Company, Atlantic Richfield Foundation, Chevron, Mobil Foundation, and Trankline Gas Co.

#### Staff Update

Two adjunct faculty were appointed to the department this past year namely Donald Haney, Director of the Kentucky Geological Survey, and Jim Hower a coal petrologist with the Institute of Mining and Minerals Research.

Fred Wright who hold a Co-appointment in geology and Civil Engineering retired this year.

Bill Dennens second four year term as chairman of the department ended July 1. Dennen requested that he not be considered for another term.

#### Student Enrollment

The geology department continues to have large enrollments in both the undergraduate and graduate programs. It is still a little early in the semester to have exact figures but a conservative estimate of the number of undergraduate majors is 82. The graduates in residence for the fall semester is somewhere between 70 and 80. If one thinks that the faculty has nothing to do these days it might be brought to your attention that the faculty has but one more full time member now than it had when the graduate enrollment numbered between 20 and 30.

#### Geology Summer Field Camp

The following report comes from Frank R. Ettensohn the departments field camp director.

Last year's 32nd field season in Colorado was another successful season.

Only 17 students were present but they were a hard-working group. We also expanded our "Leadville Trip" to a week in duration and travelled from Leadville to Colorado National Monument, Arches National Park, Monument Valley, the Four-Corners region, Mesa Verde and back to camp. This kind of trip provided the regional framework in which to place "Cement Creek geology", as well as provided access to many geomorphological, structural, physiographic, and stratigraphic features not present in the Cement Creek area.

This year the format and duration of the camp have been changed. The camp was reduced from eight weeks to six weeks, and the entire group was housed in dorms at Western State College in Gunnison. Because students must now find their own way to and from Colorado, the decrease in duration will really not be that major. A full week of time was merely taken up with the transport of students to and from Colorado. And all the time taken to transport students to and from Gunnison for laundry, check-cashing, supplies, etc. is difficult to measure. This is no longer necessary with the new format.

The change in housing arrangements, however, was brought about by some different circumstances. Last summer the Forest Service condemned the bridge across Cement Creek to our camp site. They refused to allow vehicles and heavy equipment of any nature across the bridge until it was repaired. Repair (actually, replacement) would cost about \$3000, money which the Department does not have. Because we cannot run the tent camp without bringing vehicles and heavy equipment across the bridge, we were forced to cancel the tent camp and move our set-up to the college. Although this is an experimental arrangement, there is pleasure in sleeping in real beds, taking real showers, and flushing real toilets during the summer.

Something else new also - this year our camp was run jointly with Eastern Kentucky University. This is also an experimental arrangement which could lead to future joint ventures with other Kentucky universities. Because of this

arrangement, our camp had its largest student population ever - 45 students. Thirty-two students came from U.K. and thirteen from Eastern. Fourteen of the U.K. students are from schools other than U.K. including Western Kentucky University, the University of Louisville, Vanderbilt, Radford, Cornell, and S.U.N.Y. at Stony Brook. Apparently, our field-camp program has gained some acknowledgement from at least the Kentucky schools, for many of these schools continue to send us more of their better students every year.

This year the camp had five full-time staff members: A director from U.K., an assisting professor from Morehead, an assisting professor from Eastern, and two teaching assistants.

#### San Francisco AAPG Meeting 1981

We were pleasantly surprised by the large number of alums who showed up at the Alumni Cocktail Party in San Francisco. Robert Flege took care of the local arrangements for which we thank him. We asked those present to check their names off in the 1980 Round Up. If your name should have been on the list of those present and is not, you probably forgot to sign in. The list makes no attempt to identify spouses unless they were geology department majors. The usual confusion of a cocktail party with everyone milling about makes it difficult to keep an accurate record of everyone present. Please excuse any errors.

The following is your editors best effort to list those present: Leslie F. Berry, Alan Bland, Clemont Bruce, William P. Conyers, Susan C. Ericksson, Robert F. Flege, Donald J. Fullerton, Arnold C. Hayden, James W. Hazel, George T. Hine, Charles Holbrook, James K. Kearby, Mrs. Leslie Lieber, Robert Lieber, Ronald Mackey, Rudi Markl, Gary B. McCreary, James Pollock, Louis Ponsetto, Thomas Leslie Reeves, Glen Rice, Thomas Robl, Willard E. Rubards, H. Mitchell Rutledge, Kenneth George Smith, Patricia Sprouse, Jane Collier Welch. The staff was represented by Frank Etensohn, Bill MacQuown, and Vincent Nelson.

Can we do as well at Calgary next June?

Seminar Program 1980-81.

The department is pleased to report that the geology seminar program jointly sponsored by the department, the graduate school, the McFarlan Fund, and SGE had another successful year. We are, however, unhappy to report that we were forced to drop plans for the annual one day seminar entitled "New Concepts In Sedimentation." This has proven to be an event well attended by many current and prospective graduate students as well as professional geologists within the mid-eastern area. Your editor still feels that some one of our graduates should be able to convince his company that sponsoring the seminar with proper recognition would be beneficial to the company, industry, and the department. We know that we can obtain outstanding speakers for this program at really bargain prices.

Following is a list of the 1980-81 Seminar Program.

Fall Semester

- Oct. 9 Dr. John Thrailkill, Dept. of Geology, University of Kentucky  
Carbonate Geochemistry of Vadose Water Recharging Limestone Aquifers
- Oct. 16 Dr. Thomas J. Carrington, Dept. of Geology, Auburn University, Auburn, Ala.  
Geology of Low-Rank Metasediments in Chilton, Shelby and Talladega Counties, Ala.
- Oct. 23 Prof. Claude Hillaire-Marcel, Dept. of Earth Sciences, University of Quebec, Montreal, Quebec  
The Laurentide Ice Sheet and Its Disintegration
- Oct. 30 Mr. Clement H. Bruce, Mobil Exploration and Producing, Dallas, Texas  
Shale Tectonics
- Nov. 6 Dr. Frank R. Ettensohn, Dept. of Geology, University of Kentucky  
Geological and Ecological Studies, San Salvador, The Bahamas
- Nov. 13 Dr. James Clavarino, Marathon Exploration, Australia  
Some Aspects of Mineral Exploration in Australia
- Dec. 4 Dr. Cornelis Klein, Dept. of Geology, Indiana University, Bloomington, Indiana  
Precambrian Banded Iron Formations: Diagenesis and Metamorphism

Spring Semester

- Feb. 12 Dr. Bruce Moore, Dept. of Geology, University of Kentucky,  
Lexington, Ky.  
Geology and Structure of Uruguay and Southern Brazil
- Feb. 19 Dr. David K. Hylbert, Dept. of Physical Sciences, Morehead State  
University, Morehead, Ky.  
The Application of Satellite Imagery to Detection of Coal-Mine  
Roof-Fall Hazards
- Mar. 5 Dr. Giovanni Flores, Geological and Geophysical Consultant,  
Florence, Italy.  
Tectonic-Sedimentary Evolution of the Apennines, Italy
- Mar. 12 Dr. M. Malek-Aslani, Geological Research, Tenneco Oil, Houston,  
Texas  
Environmental and Diagenetic Controls of Carbonate and Evaporite  
Source Rocks
- Apr. 2 Dr. Ina Alterman, Nuclear Regulatory Commission, Washington, D.C.  
Tectonics of the Central Appalachian Piedmont--Progress and  
Problems
- Apr. 9 Dr. Carl Rexroad, Indiana Geological Survey, Bloomington, Indiana.  
Chesterian Conodonts, or Games People Play
- Apr. 16 Dr. William H. Blackburn, Dept. of Geology, University of Kentucky,  
Lexington, Ky.  
Statistical Analysis of Elemental Patterns in the Devonian Shale  
of Kentucky
- Apr. 23 Dr. A. Conrad Neumann, Dept. of Marine Sciences, University of  
North Carolina, Chapel Hill, N.C.  
Deep Sea Bioherms, Ancient and Modern (McFarlan Lecture)

Staff Potpourri

From Bill Brown we have received the following information. He still finds the Piedmont geology as fascinating as ever and has had several stints of field study there during the past year. Presently he is concerned with a study of a probable major movement zone with partial ophiolites and melange in the Virginia Piedmont.

Following the November meeting of G.S.A. in Atlanta last fall he set forth on a 10 day Ecuadoran Andes and the Galapagos Islands Trip. This fall Bill was a speaker at the Appalachian Basin Industrial Associates meeting in Pittsburgh. He spoke on Environmental Framework of Upper Precambrian and Cambrian Detritus in



the Central Appalachians. The Appalachian Basin Industrial Associates is a group made up of ten universities including Kentucky and at present four oil companies. The oil companies are furnishing the financial support and share information to the benefit of both the universities and the companies interested in regarding the Appalachian region.

These notes come from Lois Campbell.

It was very pleasant to see a number of you at the AAPG section meeting in Evansville. As I did for the section meeting in Lexington several years ago, I put together an exhibit featuring Department activities and took it to Evansville. In addition to pictures showing our facilities we showed off Bill MacQuown's posters on Waulsortian-type mounds in the Fort Payne, the final report of our Black Shale group put together by Bill Blackburn, several reports of John Ferm's Coal Group and Ron Street's compilation of original New Madrid earthquake accounts, much of it brought together for the first time.

The Field Trip Committee for next fall's GSA meeting of which I'm chairman and Tom Robert's co-chairman, continues its work. I've busied myself largely with trip logistics and budgets for 19 trips, while Tom has been editing road logs and accompanying texts. It is gratifying that our Department members are leaders for three trips, and in addition the Kentucky Geological Survey is leading a coal trip, ECU faculty are involved in two trips, and the University of Louisville, in one. All in all, Kentucky geologists are offering more than one-third of the trips.

I've continued as seminar coordinator this past year, and you'll find the list of our speakers and comments on the seminar program elsewhere.

Bill Dennen who has just completed his second four year term as department chairman is not on campus this fall. He and Charlotte are spending a sabbatical leave in England and will return to the Lexington Campus in early January.

Your editor did not get a definite fix on what Bill will be involved in while on the other side of the Atlantic but you can be sure that his scientific inquisitiveness will not cease during his stay in the British Isles.

Bud Fisher submits the following information.

The greatest Fisher news is that we are now grandparents. Beth had a son, Nicholas Fisher Hanson, born in November. Dad, Brian Hanson, is a crystal chemist teaching at VPI. In the department we have juggled courses a bit. Optical has been added as a required second semester of mineralogy and elementary paleo is now required formally rather than informally. We have cut summer camp to six weeks actually in camp and no longer supply transportation from as to Lexington. The tent camp will not exist this summer and the group will room and eat at Western State College. Frank tells me there will be 45 students in camp. We have strongly considered dropping the Saturday field course and substituting a concentrated field course in the four week intersession between the end of the spring semester and summer school. This plan has been set aside because of the additional cost to students and the fact that it would hinder student summer employment. To give an idea of undergraduate course loads there are thirty five students advanced registered for the first semester of mineralogy which is taught only in the fall semester. We have been on an intensive eighteen month campaign to get new petrographic microscopes since those we have are in a deplorable state and several have been stolen. We have seven petrographic scopes on order. At present all microscopes are under lock and key, not the old standard key, but a new one with very limited numbers. We need more as the course is running fifteen students each semester. If we can get a second purchase order next year we should be in pretty good shape. The University tries to supply new research equipment, but is so generally hard up for money that funds for teaching equipment are desperately hard to obtain. The big push for the present order came from our incoming chairman, Nick Rast.

Bill MacQuown has a number of things to report which helped to occupy his time during the past year.

Last year as a member of the departmental External Affairs Committee Bill sent out to selected companies and alumni a "Report of the University of Kentucky, Department of Geology on Research Funding and Aid to Graduate Students". If you did not get a copy and would like to have one let us know. A positive response to the report was received from many alumni and several companies decided to support M.S. Graduate Research Assistants. Support came from Newco, Inc. (Harvey Young, Alumnus); Lake Ronel Oil Co. (Les Berry, Alumnus); Delta Drilling Company, Lancaster Exploration, Columbia Gas Co., and some companies operating in Tennessee and Kentucky. Chevron Oil Co. (thanks to the efforts of Charlie Holbrook, alumnus) responded with an equipment grant.

Summer and part time employment for students have also been on the increase in the past year. Mobil Oil Company employed four of our students during this past summer, three in Dallas and one in field work in the Rockies. Many small operators have been employing students on an hourly basis to gather and interpret data available at the Kentucky Geological Survey.

MacQuown was involved in three paper presentations this past spring. He was co-author of a paper with Pete Hetherington on M.S. candidate which was presented at the Southeastern Section G.S.A. Meeting in Hattiesburg, Miss. Title of the paper was "Big Lime" (Mississippian) subsurface regional Geology in Southeastern, Kentucky. An oil oriented version was presented before the Tennessee Oil and Gas Association meeting in Nashville in June. Bill was co-author of a paper with Mike Curry, a M.S. candidate, titled "Corniferous" (Silurian-Devonian) subsurface regional Geology in eastern Kentucky. This paper was presented at the Kentucky Oil and Gas Association annual meeting in Lexington in June.

U.S. Geological Survey Professional Paper 1151-A was published this year joint authors were D.F.B. Black, W.C. MacQuown, and Ronald J. De Haas. Title of

the paper is "The Relation of Dolomite Associated with Faults to the Stratigraphy and Structure of Central Kentucky".

MacQuown is departmental representative of the Appalachian Basin Industrial Associates (ABIA), an association of 10 schools whose research in the Appalachian (Faculty and graduate students) will be supported in part by a group of petroleum companies. The first of twice-yearly seminars was held in Pittsburgh in September. Bill Brown presented one of the talks dealing with late Pre-Cambrian and early Paleozoic clastics in the Appalachians.

Ron Street gives us the following report regarding his activities. I am sure you all were interested in the July 1980 earthquake in north-central Kentucky and therefore will find Ron's summary of the event informative.

During the 1980-1981 academic year, individuals involved in the geophysics program at UK have contributed a great deal of their time and effort to studying the  $5\frac{1}{2}$   $m_{bLg}$  magnitude earthquake that occurred ~ 50 kilometers to the northeast of Lexington on July 27, 1980. The epicenter of the earthquake,  $38.2^{\circ}N/83.9^{\circ}W$ , places the event near the small community of Sharpsburg, KY, and in an area generally regarded as having a very low level of seismic risk. The fact that the event occurred in such an area, and the fact that it was a  $5\frac{1}{2}$  magnitude event, generated a wide-range of interest among those involved in the assessment of seismic risk in eastern United States.

As a result of a lengthy study, the Sharpsburg earthquake is the best documented earthquake in central or eastern United States, and it is the first earthquake in either region to have its rupture plane independently verified by a detailed and high resolution aftershock study. Some of the particulars for the event are as follows:

1. maximum intensity: VII MM
2. focal depth: 12 - 15 kilometers
3. magnitude:  $5\frac{1}{2}$   $m_{bLg}$ ; 4.7  $M_s$

4. seismic moment:  $3 \times 10^{23}$  dyne-cm
5. source mechanism: right-lateral strike-slip  
striking: N35°E  
dipping: 55°SE
6. source dimension: 2.5 kilometers equivalent radius
7. stress drop: 8 bars
8. damage: 3 to 5 million dollars worth to residences,  
businesses, schools, churches, and a state park.

At the present time, the epicentral area is being monitored for additional seismic activity, and drill hole information, reflection and refraction velocity data, geothermal gradients, revised gravity data, magnetic data, and remote sensing imagery is being reviewed so as to develop a clearer understanding of the event and its geological setting.

Because of the time and effort devoted to the study of the Sharpsburg earthquake, however, other portions of the geophysical program have suffered. Seismic installations planned at Murray and Morehead state universities have had to be put aside. Likewise, the projected updating of the geothermal gradient mapping of the state suggested by Peter Price has gotten sidetracked.

Papers Dealing with the Sharpsburg Quake Presented 1980-1981.

Foley, W. (1980). "Ground-motion and damage observations of the July 27, 1980 Sharpsburg, KY earthquake, part II: Structural damage", paper presented before the Seismological Society of America, Eastern Section meeting of October, 1980.

Street, R. and J. Zollweg (1980). "The Sharpsburg, Kentucky earthquake sequence of July-August, 1980: A preliminary report", paper presented before the American Geophysical Union, Midwest Meeting of October, 1980.

Street, R. (1980). "Ground-motion and damage observations of the July 27, 1980 Sharpsburg, KY earthquake, part I: Peak particle velocities", paper presented

before the Seismological Society of America, Eastern Section meeting of October, 1980.

Wonderly, W. and R. Street (1980). "A report on the earthquake sequence that occurred near Sharpsburg, Kentucky beginning July 27, 1980", paper presented before the 66th Annual Meeting of the Kentucky Academy of Science, Nov. 7, 1980, Lexington, KY.

Here is an item which will no doubt interest some of you who were students way back in the 30's and 40's when David M. Young was a member of the faculty. He resigned from the department in 1945. Dave was Chief Geologist for the Clinchfield Coal Company from 1952 until his death in 1972.

Last year the Virginia Oil and Gas Association established an award to be given the first time in 1981. The award is to recognize an individual who has contributed significantly to oil and gas development in the state during the previous year. At the time of its establishment, the award was named the David M. Young Memorial Award. Young was in charge of exploration and development of natural gas resources for Clinchfield.

The committee which was appointed to choose the first recipient of the award decided unanimously that it would be appropriate to present the first award posthumously to David M. Young for his outstanding pioneer work in development of oil and gas resources within the state of Virginia.

Dave's widow Pauline, his daughter and son-in-law Ann and Allen Gregory; and his grandson, David Young Gregory were present for the presentation.

Many of you will be interested to know that Dr. McFarlan and Gail have returned to Lexington. After spending 13 years in Florida they returned in early December of 1980. They are living at 2023 Fontaine Road and their phone is 606-266-2354. The zip number is 40502. Doc and Gail celebrated their 60th wedding anniversary in September. We think they would be delighted to hear from former students.

An appeal to all of you - You all

It is a fact of life that it becomes more difficult with each issue of the Round Up to keep up with the current address of each member of our group. As you look through the directory please note addresses that you know are incorrect and spend the time and postage necessary to help us keep an up to date roster. When you move let us know.

While we are on the subject of alums and former students how about each one of you sending us a note as to your current activities, location or anything you think your old friends would like to know about you. If we get sufficient response we will make this the focus of the next issue of the Round Up. To help us put your information in a time frame state the year you left the campus.