

**THE SECOND KECK RESEARCH  
SYMPOSIUM**

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## THE KECK GEOLOGY CONSORTIUM

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A National Consortium of ten geology departments established under a grant from the W. M. Keck Foundation completed its second year of operation in December, 1988. The purpose of the grant was to support intercollegiate student/faculty research projects and to promote cooperation and faculty exchanges among the ten colleges. The Colleges represented in the consortium include Amherst, Beloit, Carleton, Colorado College, Franklin and Marshall, Pomona, Smith, Whitman, Williams and Wooster of Ohio.

Six student and faculty research projects involving 20 faculty members and 48 students were initiated during the summer of 1989. The student research projects were continued into the 1988-89 academic year as independent study projects and senior honors theses. The Bahamas, Colorado and Montana projects which were started in the summer of 1987 continued into the summer of 1988. Some of the student research projects that were initiated the previous summer were continued and expanded while a second group of projects were undertaken to explore new areas of research.

The Bahamas project under the direction of Al Curran at Smith College continued research on marine organisms and carbonate sediments on San Salvador Island in the Bahamas. Al Curran along with Roger Thomas of Franklin and Marshall College and a group of students studied the distribution of living and fossilized organisms along the shore and on the reefs. Brian White of Smith and a group of students concentrated on the carbonate petrology of the reef sediments on San Salvador. Three Faculty sponsors including Mark Wilson of Wooster College, an expert on hardgrounds, and Carl Mendelson and Carol Mankiewicz from Beloit, who have worked on Miocene reefs in Spain, visited their students in the field.

The Colorado project, under the direction of Shelby Boardman of Carleton College was moved to Salida, Colorado, to study the crustal evolution and petrology of Early Proterozoic rocks in central Colorado. Bud Wobus of Williams, Stan Mertzman of Franklin and Marshall and Jeff Noblett of Colorado College also directed student research projects in the field. Sam Root of Wooster College was a visiting faculty sponsor on the project. The Colorado students also returned to the Guffey area to compare and contrast the Tertiary volcanics with the much older Precambrian volcanics in central Colorado.

Ed Belt of Amherst college directed the Montana project with John Diemer and Rob Sternberg of Franklin and Marshall. They continued research on the sedimentology, paleobotany and paleomagnetism in the Lebo and Tongue River Members of the Fort Union Formation of Paleocene Age in southeastern Montana. The field area is located in the Powder River Basin near Miles City, Montana. Several of the student projects on fossil plants and sedimentology that were started in the first summer were continued into the second field season. The sediments include sands and siltstones from fossilized river channels and floodplains with interbedded coal deposits from ancient swamps.

Three new projects located in Massachusetts, Minnesota, and Vermont were included in the second summer of the research grant. The Massachusetts project concentrated on reflection seismology in the Connecticut River Valley. The Vermont project focused on structural geology and metamorphic petrology of the Chester Dome, and the Minnesota project was split into two parts, one in structural geology and the other in limnology and surface water chemistry in the Boundary Waters Canoe Area in northern Minnesota and southern Canada.

Four faculty and twelve students used canoes to explore the Boundary Waters Area in northern Minnesota and southern Canada under the direction of Hank Woodard and Dick Stenstrom of Beloit College. Hank Woodard and Steve Weaver from Beloit were joined by six students to study the evidence for displacement along the Burntside Lake Fault Zone. Dick Stenstrom of Beloit, Ed

Buchwald of Carleton College and six students studied the surface water quality and geochemistry of several lakes within the Boundary Waters Canoe Area. They collected over 300 water samples which were analyzed on the ion chromatograph in the water analysis laboratory under the direction of David Dethier at Williams College. The water analyses were used to determine the effects which buffering had on acid precipitation in the wilderness area.

The Massachusetts project under the direction of Bob Burger of Smith College with Tim Vick of Carleton College studied the shape and distribution of aquifers in the Connecticut River Valley using geophysical techniques. The faculty and students formed teams to map the distribution of shallow aquifers with a reflection seismograph. Several new computer programs were developed to plot and model aquifer distribution and flow patterns in the Connecticut Valley. The students continued the computer analyses and the computer modeling on their home campuses during the 1988-89 academic year.

The Vermont project under the direction of Paul Karabinos of Williams College concentrated on the metamorphic petrology and structural geology of the Chester Dome in southeastern Vermont. John Brady of Smith, Jack Cheney of Amherst, and Jill Schneiderman of Pomona College also directed student research projects. They mapped the complex structures in the Chester Dome and collected rock samples for petrographic and microprobe analysis. The study will provide a comprehensive picture for the interpretation of the different stages of tectonism and metamorphism in southern Vermont which will help unravel the complex history of the northern Appalachians.

In January, 1989, Rob Sternberg and Ed Belt hosted a Winter workshop at Franklin and Marshall College for the faculty and students of the Montana project. Mark Sholes of Montana College, Ken Coles of Wooster College and Kirk Johnson from Yale joined the workshop as outside experts to assist the students in their projects. The workshop was considered a complete success and stimulated good discussions among the students and faculty. The workshop provided a model for the new Winter Workshops that will be initiated under the second phase of the grant.

In December, 1988, the W. M. Keck Foundation awarded a second grant of \$600,000 to support undergraduate and faculty research in the expanded Twelve College Geology Consortium. The Geology Consortium was enlarged to include Trinity University in San Antonio, Texas and Washington and Lee University in Lexington, Virginia. The new colleges in the southeast and southwest will add geographic and geologic diversity to the consortium. It will also increase our areas of research expertise to include new projects in earthquake seismology in Texas and the Structural Geology of the Blue Ridge Mountains in Virginia. New Projects in Gaspé, Spain and Washington State will also be included in the second phase of the grant.

The new grant also includes funds to support four Winter Workshops in January and February of 1990 and 91. Workshop proposals have been submitted for a meeting on the history of geology and carbonate geology. Other workshop topics under consideration include computer applications in geology, tectonics of the Appalachians and preservation of organisms on rocky shores.

The student and faculty research projects will culminate in a three-day research symposium at Colorado College in Colorado Springs from April 14 to 16, 1989. On the first morning of the conference, students and faculty will board buses for a geologic field trip in the Colorado Springs area. On Friday afternoon and all day Saturday, the students and faculty from the six summer projects will give talks and poster sessions presenting the results of their research. Following the banquet on Saturday night, Sandra Grass will present remarks from the Keck Foundation and Bill Fox will give a talk on his recent trip to Antarctica.

Once again, we would like to acknowledge the many people who made the research projects and symposium a success. First, we would like to express out sincere appreciation to Sandra Glass and the W. M. Keck Foundation for their many helpful suggestions and continued support of the Keck Geology Consortium. Without their help, the consortium would still be a dream in the hearts of several geologists. Special thanks are due to Hank Woodard and Dick Stenstrom at Beloit College who once again agreed to assemble and publish the proceedings in the second annual Keck Geology Symposium Volume. Bruce Loeffler at Colorado College also deserves our special thanks for

organising and directing the research symposium. Finally, we would like to thank Bill Fox and Pat Acosta at Williams College who coordinated the grant and handled the budgets for the summer projects and research symposium.