

we were led in the field by both Haakon Fossen (University of Bergen) and Haakon Austrheim (Geology Museum, Oslo).

The structure laboratory is finally over the major remodeling efforts and it seems that there are enough people around talking about structural geology and tectonics that the first floor is just exciting to be around. This is in no small part due to the structural geology graduate students. Three new students started in fall 2000: **Scott Giorgis**, **Eric Horsman**, and **Sarah Titus**. Sarah was awarded a graduate student fellowship from the National Science Foundation. In addition, two new postdoctoral fellows will be joining the structural geology group in 2001. **Eric Ferre**, who has worked extensively with the anisotropy of magnetic susceptibility technique, is arriving from France via South Africa. **Sarah Tindall** has also decided to come to Madison after a one year teaching job in Middlebury College. She has worked on block uplifts on the Colorado plateau, and will continue with field research and physical modeling while at the University of Wisconsin.

On a complete aside, the isolation ward is actually becoming THE place to be, at least on Wednesday mornings. All the people stuck here get together for the donuts at this time, with our loose adage coined by ex-isolationist Ron Schott, "Join us for a donut moment in splendid isolation."

❖ John W. Valley

In January 2000, Andrée, and David and I packed a trailer and left Madison two days ahead of a snowstorm for a six-month sabbatical. I was the guest at Caltech of Prof. **John Eiler** (PhD 1994) and **Nami Kitchen** (MS 1995) working with innovative new techniques for continuous-flow mass-spectrometry and laser sputtering. I also worked in labs at UCLA and Stanford, evaluating new ion microprobe techniques for oxygen isotope analysis of vanishingly small samples.

We were visited in Pasadena by UW grad-student **Liz King** who is also collaborating with scientists at Caltech, and who arranged a special family tour of my favorite building, the Gamble house, built by Greene and Greene in 1908 for Liz's great grandfather. I also saw **Julie O'Leary** (BS 2000) who was successfully wooed by Caltech as the first Samuel Epstein graduate fellow. We also saw a lot of our Pasadena neighbors, **Jean Morrison** (PhD 1988) and **Lawford Anderson** (PhD 1975), and we just missed seeing **Scott Sitzman** (MS 1996) and **Mary-Ann Kelly** (MS 1994) who bought the house next door to Jean and Lawford, but only realized their luck when they later saw "Badgers Make Better Geologists" proudly displayed on Jean's bumper.

In March, I cross-country skied around the tree-kill area in Long Valley caldera where magmatic CO₂ is

actively out-gassing. This is one of three calderas where UW post-doc **Ilya Bindeman** and I are studying magmatic evolution, and it is in the shadow of **Jade Star Lackey's** (MS 2000) field area in the high Sierras.

Although we enjoyed cheap unregulated electricity, and did not experience earthquakes or mudflows, we left LA in June, days ahead of a smog-bank and the Republican Convention.

Back in Madison, **William Peck** (PhD 2000) and I completed two papers on early Archean detrital zircons from Western Australia, reporting discovery of the oldest piece of the Earth that has been identified (4.404 Ga). (See a research article on page 23.) These papers conclude that continental crust was already differentiating from the mantle less than 150 m.y. after coalescence of the Earth. The high oxygen isotope ratio of the oldest crystal suggests early surface processes mediated by liquid water and the presence of oceans at 4.4Ga. These results contrast with the common view that early meteorite bombardment heated the Earth and vaporized the oceans to a Venus-type atmosphere. A group at UCLA working with a younger zircon has already confirmed this conclusion. These results fuel speculation about when life first evolved, how many times, and if the first life was fully extinguished by meteorite impacts during the first billion years. On Jan. 11, 2001, the first paper was published in *Nature* and reported on the front page of the *N.Y. Times*. That led to my Jan. 13 appearance on National Public Radio's *Whad'Ya Know* with Michael Feldman. To learn more: see *Zircons are Forever* at: <http://www.geology.wisc.edu/zircon>.

The fall term was taken up with teaching "Introductory Physical Geology" and graduate Metamorphic Petrology, preparing for the 2001 MSA-sponsored Stable Isotope short course that I will run and editing/writing the accompanying book. The Petrology grad-students and I took a field trip to the Adirondack Mountains, including a visit with **Cory Clechenko** to wollastonite skarns that are his thesis area.

❖ Herb Wang

In May I had the pleasure of escorting Dave Hart and Tim Masterlark at the commencement ceremony. Dave's PhD thesis dealt with laboratory measurements of poroelastic properties of rock and Tim's with poroelastic modeling of the postseismic deformation following the 1992 Landers earthquake in southern California. Dave is doing a postdoc with Nik Christensen and Tim is doing likewise with Chuck DeMets.

My book *Theory of Linear Poroelasticity with Applications to Geomechanics and Hydrogeology* was on display at the Princeton University Press booth at GSA in Reno. That was the first time I saw the pub-

lished version and meant that I was finally really done with that project. At that meeting I gave a talk “Zen and the Art of Groundwater Modeling” at a symposium honoring Mary Anderson’s 25 years of service in the department. (*Read more about the symposium on page 35.*) Graduate student, Tyson Strand, presented a talk on a pore-scale, invasion percolation model, which he has been developing.

I continued in my roles as associate dean for natural sciences and faculty director of the Honors Program, Because I helped catalyze a new freshman course called “Alcohol: Behavior, Culture, and Science,” I played first-year student and attended about half the lectures. I learned about the physiology, psychology, and sociology of alcohol consumption along with how alcohol is portrayed in literature, movies, songs, and advertising. I again assisted a discussion section in a freshman orientation course called “Ways of Knowing.” Another interesting activity was to work with the Center for Biology Education in starting a faculty seminar series called “SyMBiosis” (Science and Math for Biologists). The goal is to improve the curriculum in the basic sciences and math for biology students. In the seminar series we heard biologists discuss their research in genomics, neurophysiology, and ecology with the aim of identifying the basic science and math underpinning these subjects.

Thanks to sponsorship by BP Amoco through Jay Nania, chair of our Alumni Board, Darrell Stanley and I attended a conference of the National Association of Black Geologists and Geophysicists in Houston in October. I learned how hydrogeology plays a role in issues of Environmental Justice and I will be coordinating a summer session forum on the subject in June 2001. Tentatively the course will try to cover social, legal, technical, scientific, economic, political, and health issues. I’ll let you know how it went in next year’s newsletter.

❖ Klaus Westphal

Besides planning and managing the museum exhibits and the educational outreach programs, I taught the introductory course “Life of the Past” which, every semester, acquaints about 45, mostly non-science majors, with the history of life on earth. See also the Museum’s “Annual Report” on page 67.

Publications in 2000

Please see individual faculty web pages for listings of faculty publications for 2000, at <http://www.geology.wisc.edu/people/faculty.html>

EMERITUS ACTIVITIES—2000

❖ C.R. Bentley

I have a new job. Last year I agreed to be listed as Principal Investigator on a proposal from UW to assume the ice coring and drilling contract then held by PICO at the University of Nebraska, whose contract was expiring. We had tried 5 years ago without success, but decided to try again anyway. To our surprise we won the contract this time, so, as of August 1, 2000, the University of Wisconsin is responsible for conducting all drilling and coring in ice that is supported by the National Science Foundation and I’m the P.I. (strictly a part-time job). That includes extensive hot-water drilling at South Pole in support of the successor to the AMANDA (Antarctic Muon and Neutrino Detector Array) project. The successor, called ICECUBE will, if NSF is willing to fork out the multi-millions of dollars, greatly enlarge the coverage of the detection network, making it the best cosmic neutrino detector in the world. Francis Halzen and Bob Morse in our physics department are among the leaders of ICECUBE. Bob was the driving force behind the effort to get the drilling contract here, because all the drilling for AMANDA was already being done from Wisconsin through the Physical Science Lab. Bob is Co-P.I. of the Ice Coring and Drilling Services (ICDS).

My own interest, however, is not primarily in ICECUBE but in all the glaciological aspects of drilling. We supported Lonnie Thompson’s successful drilling in Tibet last August and Paul Mayewski’s second season of ITASE traversing and drilling our of Byrd station in 2000-01. More of our drillers are assisting with Michael Bender’s old-air-collection project at South Pole during January, 2001. Next year we will drill holes for emplacement of a new seismograph system in the deep, quiet ice several kilometers from Pole (following a noise study by Don Albert) and produce a humongous number of 100-meter-deep shot holes for Sridhar Anandakrishnan’s West Antarctic exploration seismic program. And some years hence is the core drilling to the bed on the West Antarctic ice divide, a project being led by Kendrick Taylor.

My GLAS work still goes on—we now anticipate a launch of ICESAT carrying the laser altimeter in December, 2001. With any luck I’ll be able to report ICESAT in orbit in next year’s newsletter. But my project for airborne laser altimeter flights over East