

Faculty Activities in '99

• Mary Anderson

In January, I returned from a wonderful two-month long sabbatical in Japan. Check out my web site (go to my personal homepage) to see some of the photos, including one with former hydro **Erik Webb**, who gave me some valuable tips on living and travelling in Japan. (I will be returning to Japan in June 2000 for the Western Pacific Geophysics meeting and have persuaded Erik as well as former hydros **Charlie Andrews** and **Chunmiao Zheng** to present papers.) I finished my sabbatical mostly in Madison but did manage a trip to Washington, D.C. for a meeting of the Committee on Opportunities in Hydrologic Science, of which I am a member, and another to LaCrosse, WI, for the Wisconsin AWRA meeting and a trip to Boston for the spring AGU meeting where I was very honored to be awarded Fellowship status in AGU. In July, I traveled "down under" for my first trip to Australia where I was a keynote speaker at Water Congress'99 and got some exposure to Australian water issues (as well as the Australian flu).

In August, I took over as department chairman and quickly got deluged by meetings of various sorts. Chatting with lots of former hydros (including **Craig Eisen**, **Bob Sterrett**, **Bill Woessner**, and **Todd Rayne**) at the alumni reception at GSA in Denver was one of the pleasant sorts of meetings. I taught Transport Modeling during the Fall semester and found that I have too much material for a 1 credit course. Hence, future offerings will be for two credits. Both **Wes Dripps** and **Tim Eaton** passed their PhD prelim exams and **Yu-Feng Lin** (PhD candidate in Geological Engineering) passed the PhD qualifier. Both Wes and Yu-Feng are investigating various aspects of recharge measurement and estimation (a problem I first explored with former hydros **Ken Bradbury**, **Mary Stoertz**, and **John Faustini**), while Tim is researching the hydrogeologic properties of the Maquoketa Shale as part of his work with the WGNHS. Ken Bradbury (WGNHS) is serving on both Wes and Tim's committees and former hydro **Randy Hunt** (USGS) is also on Wes' committee. Wes' project provided the impetus to broaden our collaboration with the USGS office in Middleton, WI, and allowed Wes to develop a first class monitoring system in the Trout Lake Basin in Northern Wisconsin. In between all of these activities, I worked on a literature review on the use of temperature measurements in hydrogeology, a subject in which I became interested as a result of conversations with Japanese colleagues. All in all it was a varied and extremely busy year.

• Jean Bahr

Research efforts in my group during 1999 emphasized two primary areas: 1) transport and transformation of groundwater contaminants and 2) studies of groundwater-surface water interactions related to preservation and restoration of wetlands and springs. In the first area, we continued field and laboratory studies of in-situ biodegradation. This work has demonstrated the importance characterizing the spatial variability in redox conditions in both uncontaminated and contaminated portions of aquifers in order to evaluate the potential for bioremediation. **Maddy Schreiber**, whose dissertation work included tracer experiments, microcosm studies and modeling of in-situ and enhanced biodegradation, completed her PhD in the summer and then began an appointment as Assistant Professor at Virginia Tech. **Pete Taglia**, who joined this project in the summer of 1998, spent the summer and fall working the bugs out of in-situ microcosms for use at our Fort McCoy field site. **Kurt Zeiler** is investigating heterogeneous transport and contamination at another site, the former Badger Army Ammunitions complex near Baraboo. **Ann Dansart** has been assessing the role of fossil permafrost features as preferential pathways for contaminant migration from agricultural fields to the water table. With a fellowship from the Department of Energy, **Tara Root** is attempting to use a large database of groundwater chemistry to improve constraints on flow paths from the proposed nuclear waste repository at Yucca Mountain.

In the second area of emphasis, two grants from the WI Dept. of Natural Resources were funded in 1999 to continue studies of hydrogeologic controls on springs in the Token Creek and Nine Springs Watersheds. Graduate students **Sue Swanson**, **Laura Parent**, and **Steve Domber** are involved in these projects. This work indicates the importance of incorporating detailed hydrostratigraphy and preferential flow paths in models designed to evaluate the effects of development on springs and wetlands. These results provide some of the basis for refined conceptual and numerical models that will be employed in an interdisciplinary study of the effects of urbanization on water resources. **Kristin Anderson**, who started graduate work in the fall, will work on this EPA-funded project. **Shaili Pfeiffer**, who began her MS program in the fall of 1998 is also working on a wetland project, this one a study of groundwater contributions to a riparian wetland along the Lower Wisconsin River funded through the International Crane Foundation.

The hydro group headed south for spring break on a field trip to see the Edwards Aquifer in Texas. On the way down we stopped to see a demonstration of novel slug test methods by researchers at the Kansas Geological Survey including UW hydro group alumnus and recent U. Kansas PhD **Geoff Bohling**. On the way back to Madison we explored caves in Missouri.

An invitation to discuss graduate education at a meeting sponsored by AGI in Houston gave me a chance for a short visit with alumni **Lisa Shepherd**, **Peter Drezwiecki**, **Kyle Lewallen**, **Ross Vandy**, and **Martha Gerdes**. During the summer I had a chance to see Lisa again, as well as **Jim Aiken**, at the Twin Cities area wedding of former students **Matt Swanson** and **Laura Pugh** (WRM). I was looking forward to a little free time after completing my term as chair of the WRM Program in August. However, I soon found myself immersed in two new (and exciting) committee assignments: a National Research Council review of the proposed Everglades restoration and a study group for the Global Change Research Program charged with formulating a research agenda for the global water cycle.

• J.F. Banfield

1999 was an extraordinarily busy year, marked most clearly by an unprecedented amount of professional travel. This was primarily due to participation in workshops (2), presentation of talks at national and international conferences (9), and presentation of lectures promoting work of our geomicrobiology and low-temperature mineralogy group (11) at universities and national facilities (ranging from the Australian National University, to NASA, Johnson Space Center, Houston, to as far north as Reykjavik, Iceland). Many of our group members also presented talks at national meetings (31 in total!). We also managed several trips to our Iron Mountain and Mt. Lassen field sites in Northern California, as well as one field trip to our granite weathering profiles in Australia.

Research progress in our group has been focused in three main areas. Firstly, we continue to work on nanocrystalline materials, exploring the ways in which small particles differ in their thermodynamic properties and kinetic behavior from large crystals. This is extremely relevant to Earth science because of the large volumes of few to few tens of nanometer-diameter particles produced by weathering and biomineralization reactions. It is also relevant to materials science and solid state chemistry (in fact, our first publication in the *Journal of Physical Chemistry* appeared in 1999). Work in this area involves **Heng (Dr. Hengzhong Zhang)** and **Michael Finnegan** (a new student).

Secondly, we are working on silicate and phos-

phate mineral weathering through study of natural granite weathering and soil profiles and laboratory experiments. This work involves **Sue (Dr. Susan Welch)**, M.S. student **Anne Taunton**, and undergraduate senior thesis student **Cara Santelli**. Astrobiology and the search for biosignatures is also a focus of our efforts, involving several group members mentioned elsewhere, as well as scientist **Dr. Bill Barker**. A related new direction within this work is biomineralization. A significant redirection toward this topic occurred in 1999, drawing into our group new student **Jeffrey Brownson**, new Weeks Postdoc **David Fowle**, and new postdoc **Masha (Maria) Nesterova**. New post doc **Matthias Labrentz** has begun a new initiative to understand microbial precipitation of iron oxides in near-neutral ground water. **Yohey Suzuki** is leading our effort to combine the geochemical, mineralogical, and biological approaches to reveal the ways in which organisms cause uranium biomineralization, and the impact of microbes on uranium mobility in the environment.

Finally, we continue to unravel the microbiology and geochemistry of our acid mine drainage site at Iron Mountain. This work has benefited from the addition of new Ph.D. student **Greg Druschel** (working on geomicrobiology of sulfide dissolution and sulfur oxidation chemistry) and two microbiology senior thesis students (**Michelle Lutz** and **Steve Smriga**). **Phil (Dr. Philip Bond)** has almost completed an enormous effort to sort out the bacterial and archaeal populations at the site and has established himself as perhaps the world expert on insitu molecular biological study of microbial communities. **Tom Gihring** has tried to abandon Iron Mountain for the far more beautiful Mt. Lassen field site, where he will continue his work on arsenic and biological arsenic transformations (but he occasionally misses that wonderful acid mine drainage aroma). In all of these studies, we are moving towards more biochemical approaches (in pursuit of functional molecules) and hope to have our first genome sequence for an Iron Mt. archaeal isolate in January, 2000.

In addition to mineralogy, gems, and geomicrobiology-related courses (2) taught in 1999, I began a collaboration with **Phil Brown** and **Tom Gihring** to develop the Department's second completely on-line course. This has been developed (largely by Phil and Tom, to date) from the internationally known UW-Madison "Why Files" site (Science Behind the News). The course will be first taught in Spring 2000. Connection between this effort and the UW-Madison K-infinity outreach program of **Dean Millar** will allow us to reach beyond the university to offer Earth science-related educational materials to the secondary school system and general public.

Overall, 1999 was an amazing year. Our research is

exciting, our group is terrific, and 2000 promises to be better than ever.

• **Philip Brown**

My research program in Economic Geology continues to focus on the nature and role of fluids in the Earth's crust.

Tim Lee completed his M.S. research studying the origins of the mineralization in the Paddington gold deposit in Western Australia. The Paddington deposit lies just north of the famous Kalgoorlie gold field and provides a fairly simple geological and structural setting that hosts several generations of veins. Gold mineralization is associated with several of the vein sets and Tim used fluid inclusion analysis to address the question of how do the vein forming fluids differ between generations and what role does structure play in localizing ore. This study was undertaken in collaboration with several researchers from the University of Western Australia—the latest example of a 10 year collaboration between UWA and UW-Madison.

I have returned to an interest in applying infrared spectroscopy to analyzing fluid inclusions and have a student doing a senior thesis using the infrared beam line at the Synchrotron Research Center in Stoughton. The proximity of this rare analytical facility provides an opportunity to undertake some unusual fundamental research.

Clark Johnson and I have been working for the past three years on developing accurate 3D renderings of the geology and topography of the United States as a whole and more detailed looks at specific well known areas like some of the National Parks. We are delivering the results of the modeling and rendering as interactive, manipulable 3D computer objects that our test groups of Geology students have found intriguing and instructive. At present Clark and I have a campus funded project to complete and distribute a CD-ROM that will provide both a significant teaching aid and cater to the 'wow look at that beautiful map' feeling that most geologists experience.

Jill Banfield and I spent a fair bit of the second half of 1999 preparing materials for an Internet only course entitled *Science Behind the News* which is being offered for the first time in the Spring 2000 semester. This course is based on the award winning web-site developed by the Graduate School and the News Bureau here on campus entitled *The WhyFiles*. This has been a lot of work but gives us the opportunity to reach out to a new segment of the population and explain the Why of some earth and environmental subjects. The course is available to UW students and interested persons from around the world.

The future health of Geology and Geophysics in

the universities requires not only cutting edge research but also the willingness to innovate and keep our courses relevant both in content and delivery style. Computer-aided or augmented instruction is here to stay and some aspects of geology are particularly well suited to this delivery medium. As an example, Virtual Field Trips can be used to visit famous localities that could never be visited in person in the course of an undergraduate curriculum. Several examples of such trips can be seen by visiting my personal web site at <http://www.geology.wisc.edu/~pbrown/index.html> and following the links.

On a personal note, my family continues to be well. **Kris** is a librarian at Memorial High School, **Jason** has begun his freshman year at Carleton College, **Peter** is currently in 10th grade, and **Karin** is completing her middle school career. All three are serious swimmers and at times the smell of chlorine can be overwhelming!

• **Charles W. Byers**

I had a good time working on the Ordovician this year. **Norlene Emerson**, PhD candidate with **Toni Simo**, is studying the brachiopod distribution in the Decorah-Galena interval, and relating it to the sequence stratigraphy and chemostratigraphy. I'm her shale and lithostratigraphy advisor. Two undergrad students, **Rich Krause** and **Chris Ott**, carried out senior theses on the stratigraphy of the Guttenberg Formation. I presented our work in an Ordovician symposium at the North-Central GSA meeting in Champaign. We see the carbonates of the formation shoaling eastward and being cut off by an unconformity; the Iowa Survey folks see them deepening eastward and covered by a submarine condensation surface. Pistols at dawn!

The department is in the process of revising its undergrad curriculum. As chair of the curriculum committee (a.k.a. Chief Cajoler), I spent a lot of time negotiating. Reform is a delicate task. We wanted to make the course sequence more uniform and integrate more chemistry and physics into the courses themselves, but deciding what to take out is the sticky point; all professors know what the most important subject in the curriculum is their own! In the end we decided to plunge all new majors into a field-based course on structure and geomorph, followed by a single semester of mineralogy/petrology. The new plan has been approved by the faculty and the divisional committee; the first course will run in the fall.

On the home front, we hit a major milestone—teenager-hood—when **Wesley** turned 13 this January. Now he's counting the days until he can drive. He thinks it will be in three years, but I'm thinking more in terms of the next magnetic reversal.

• **Alan R. Carroll**

My students and I continued research on lacustrine sedimentary basins, and on the sedimentology and paleoceanography of the western U.S. Permian continental margin.

Last summer **Meredith Rhodes** and **Jeff Pietras** initiated fieldwork on the Eocene Green Formation in Wyoming. The goals of this project are to interpret the evolution of lacustrine facies in the context of Laramide basin tectonics and Eocene climatic patterns, through a combination of field and laboratory studies. We have also begun collaborative work with **Clark Johnson** and **Brian Beard** on the radiogenic isotopic record of lacustrine carbonate facies, with the objective of elucidating the paleohydrology of Lake Gosiute. Preliminary results show considerable variation in $^{87}\text{Sr}/^{86}\text{Sr}$ ratios, related to changes in sedimentary provenance and degree of weathering. **Mike Smith** has begun work on improved radioisotopic dating of tuffs that are interbedded in the Green River Formation, in collaboration with **Brad Singer**. We hope to obtain age resolutions of 100 k. y. from sanidine separates, which is an order of magnitude better than previously published work. These dates will allow greatly improved estimates of sediment accumulation rates, direct testing of Milankovitch-scale cyclicity, and synoptic reconstruction of the evolution of Green River Formation lakes in different basins. **Marwan Wartes** completed his MS thesis on Permian lacustrine and associated nonmarine deposits of the Junggar-Turpan-Hami basins. This study has provided the first definitive evidence that huge Permian lakes in this region originated through Early Permian rifting, probably followed by Late Permian thermal basin subsidence.

Colin Walling began fieldwork in Wyoming and surrounding areas on the Permian Phosphoria Formation, focusing on possible eolian transport of silt. Eolian dust transport has important implications for climate, due to the potential for windborne iron to increase marine productivity and thus reduce atmospheric CO_2 (the "Martin hypothesis"). Because arid environments were widespread in Pangea, windblown dust may have contributed significantly to marine carbon burial. The Phosphoria offers an excellent opportunity to test this hypothesis due to the association of silty facies and high organic matter enrichment in a well-preserved marine shelf. To help trace the origin of this dust we will conduct d^{18}O analyses on quartz silt grains in collaboration with **John Valley** and **Mike Spicuzza**. A low-temperature origin for the quartz grains would imply that they originated from deflation of the exposed Wyoming shelf during sea level lowstands. An eolian origin has also been proposed for silty facies of the approximately coeval Brushy Canyon Formation in



Alan Carrol and Dave Clark at the Alumni Banquet, May 6, 1999.

west Texas, which is the subject of an ongoing collaborative research project involving **Toni Simo**, and Ph.D. candidate **Marybeth Wegner**, and Exxon. We have used biological marker compounds in organic-rich facies to chart the position of an oxygen-minimum layer, which migrated upward on the Delaware basin slope through time in response to marine transgression.

• **Nik Christensen**

1999 was a busy year. Our high pressure laboratory is now in full operation. New research projects include (1) studies of lower crustal composition and delamination in the Dabie ultrahigh-pressure metamorphic belt, central China, (2) an investigation of seismic anisotropy of mantle diamond bearing eclogites from the Slave Craton, Northern Canada, and (3) high pressure velocity measurements of rocks from Nanga Parbat, north western Pakistan collected by **Anne Meltzer**, the department's Weeks Visiting Professor. Ongoing projects include NSF supported research on crustal structure and composition of New Zealand, the ACCRETE project along the coast of British Columbia, as well as a geophysical transect in the central Rockies.

This fall I taught a new graduate course with **Basil Tikoff** in Structural Petrology. Graduate students are again being trained at the UW in universal stage techniques, with a new emphasis on understanding rock deformation and strain. In addition, I taught the optics portion of Mineralogy. Committee duties included being the chairman of the Geological Society of Americas' George P. Woollard Award Committee and associate editor of the *Journal of Geophysical Research*.

Mike Tompkins is back in our laboratory working on his Ph.D. thesis with support from BP Amoco. **Darrell Stanley** is busy with seismic attenuation investigations. **Chris Long** and **Helmut Düerrast**, both post-doctoral

research associates, are working on mantle seismic anisotropy and pore pressure studies, respectively.

• Chuck DeMets

The past year was extremely rewarding from a professional standpoint. Using high-precision geodetic techniques to measure crustal deformation, I added one new field area (Jamaica), obtained funding for another (southern Mexico), and obtained renewed funding for a third (Jalisco, Mexico). Coupled with ongoing measurements in the Dominican Republic and an ever-expanding research program into global-scale crustal deformation using GPS measurements, my research docket will be overflowing for years to come. Results from the active field areas are excellent and I am becoming ever more proficient at modeling the measured displacements to learn about deformation within the tectonic plates, and earthquake processes near deforming plate margins. Balancing the demands of my academic and personal lives was challenging as usual, particularly given the energy levels of my kids **Catie**, **Alex**, and **Sydney**. They must take several energy pills after opening their eyes each morning!

• John Fournelle

1999 zoomed by in the probe lab. We zapped, imaged, mapped and quantified lots of interesting objects, ranging from Baraboo pipestone, zircons and quartz grains from Skye and Yellowstone, pseudotachylytes from Norway, to siltstone from Wyoming and anhydrite from Mt. Pinatubo. Characterization of specimens being analyzed for study by other high tech equipment seems a consistent thread: are the grains one or more generations? Where is the ___ (fill-in-your-element here) in my sample? "Hot" elements for geologists seem to be K and U. For a researcher from Material Science, the element was Pb in cast iron (there at the ppm level). I continued to work in the Mo-B-Si system with folks from Material Science and finally solved some puzzles, thanks to the new software (below). I'm applying some of these techniques to geological problems, i.e. attempting to develop an analysis for every element in tourmaline (except the impossible Li).

The year ended with a long awaited upgrade in November of the microprobe software by Advanced Microbeam of Vienna, Ohio. I had been increasingly frustrated with the limitations of the original software, particularly given the myriad of capabilities of the Cameca SX51 itself. Probe for Windows, written by UC-Berkeley probe lab director **John Donovan**, is a step above the usual 'one-size-fits-all' probe software and permits the researcher to do many things hitherto difficult if not impossible. For example, we now can

make a backscattered electron image of a complete thin section in four minutes; for glass analyses, we now can apply a rigorous correction for element loss/gain based upon the count vs time curve of the element; we have a sophisticated background modelling capability, included curved backgrounds, important particularly for Boron analysis; and we can make irregular shaped x-ray maps of non-rectangular objects. But the learning curve is very steep, and it took 2-3 months for me to feel comfortable with the basic operations.

I continued to work with two students doing senior theses. **Andrew Klatsch** has been chemically characterizing the glass from Andean volcanoes, which is a byproduct of a Master's thesis here recently by **Bruce Jackson**, who studied cores from a lake in western Argentina. **Ryan Jakubowski** has been applying a variety of techniques to volcanic anhydrite from Pinatubo, with co-collaborators **Sue Welch** and **Jeff Swope** (Purdue). This has resulted in the first ever X-ray determination of volcanic anhydrite, which Ryan presented in a poster at GSA in Denver.

This year, I helped initiate a Departmental Oral History project, with the collaboration of the University's Oral History project. The goal is to try to interview all of our emeritus professors. I interviewed **Dave Clark** before he left for sunny California, and set up plans to interview **Bob Gates** early in 2000. I continued my Aleutian mapping-geology-geophysics oral history project and interviewed a couple of dozen of the principals, including UW alumnus **Bill Bryan**.

• Dana Geary

Our paleontology research group is active in several areas. Several of us continue to work on Mio-Pliocene paleoenvironments and molluscan evolution in Lake Pannon. Colleagues **Imre Magyar** and **Pál Müller** and I published seven papers on various aspects of Lake Pannon this year. Imre Magyar was back for two visits in 1999, during which time he continued his cardiid morphometric work as well as the phylogenetic study of cardiids that he is doing with Weeks postdoc **Jay Schneider**. **Hilary Sanders** spent her final field/museum season in Hungary and is now collecting data and preparing to write up her thesis on the genus *Congerina* in Lake Pannon.

I decided to expand my lake research to North America, so this summer two of my students, **Matt Kuchta** (M.S.) and **Eron Drew** (senior thesis), joined up with **Alan Carroll** and two of his students for field work in the Green River lake deposits of Wyoming. Matt's thesis is on the bivalves and gastropods of the Green River, particularly their intraspecific morphological variability and paleoecological significance.

Eron is doing taxonomic and paleoecological work with ostracodes.

Even closer to home, **Norlene Emerson** is doing an excellent job on her PhD research on Ordovician brachiopod species ranges, in spite of the fact that she has three advisors (**Toni**, **Charlie**, and **Dana**). **Paul Mayer** is pursuing his PhD research on Silurian paleoecology and biostratigraphy.

Finally, I still love those Neogene Caribbean molluscs. In collaboration with **Warren Allmon** (Paleontological Research Institute), **Jonathan Hendricks** did a senior research project on the genus *Conus* from the Pinecrest shell beds. New graduate student **Jim Freiheit** will study *Strombus* from the Dominican Republic and elsewhere in the Caribbean. I am happy to renew my research interests in this area, particularly because it will reopen my connections with former students **Ross Nehm** and **Laurie Anderson**.

With respect to teaching, I think I spent most of the spring semester in AB20, teaching Geology 110 and co-teaching Geology 100 with **Charlie Byers**. I co-taught Invertebrate Paleontology in the fall with **Rex Hanger**, who was hired in a temporary slot after **Dave Clark's** retirement. Having Rex around the department has been totally wonderful for me and for all the paleo students. Also in the fall, **Alan Carroll** and I co-taught a seminar on lakes.

In June, we held a retirement banquet for **Dave Clark** at Olbrich Gardens. The party was very nice, with many colleagues and even a couple of former students in town for the occasion. We certainly miss Dave around the department.

In late October, I went to GSA in Denver, accompanied by **Sarah** and **Molly**. With **Peter Harries** (University of South Florida), I organized a symposium entitled *High Resolution Stratigraphic Approaches in Paleontology*. Our motivation was to honor one of the pioneers of this field, **Erle Kauffman**, who also serves as mentor, advisor, and friend to us (and many others). We were very pleased with the symposium, which included excellent papers on geochemical, quantitative, and taphonomic approaches to high-resolution stratigraphy, as well as more classic, field-based approaches.

On the home front, Sarah and Molly are doing just great. Sarah entered kindergarten in the fall, while Molly started at Montessori. They are growing fast, of course, and just as wonderful as ever!

• **Clark Johnson**

Major changes occurred in the heavy isotope group, the major one being funding and purchase of a new \$800K mass spectrometer, and design of a new laboratory to house this instrumentation. Funding for this major undertaking came from NASA, NSF, the university, and

Department gift funds. The new mass spectrometer, called a MC-ICP-MS (Multi-Collector Inductively-Coupled Plasma Mass Spectrometer), will allow analysis of high-ionization potential elements that are not easily done with the current TIMS instrument (Thermal Ionization Mass Spectrometer), including elements such as Iron, Hafnium, Osmium, and Thorium. Major new research projects that this new instrumentation will be applied to include searching for extraterrestrial life and early life on Earth using Fe isotopes as a "biosignature", combining U-Pb geochronology and the "genetic-tracer" information of Hf isotopes on single zircons to evaluate large-scale terrane models, using Os isotopes to trace intra-crustal recycling in primitive orogenic arcs, and determining magma residence times using Th isotopes. Continuing work on the old (and still very useful) mass spectrometer included Fe isotopes, studies of volcanic rocks in the Great Basin, and sedimentary provenance studies with Alan Carroll's group. Visitors to the lab included **Mike Gerdinich** (Univ. Michigan) and **Bernie Sani-Edukat** (Univ. ND).

These projects have been pursued by the essential **Dr. Brian Beard**, new post-doc **Joe Skulan**, and graduate students **Ron Schott**, **Garret Hart**, **Tim Zeichert**, **Meredith Rhodes**, and **Jeff Pietras**.

• **Louis J. Maher**

Geol 100 and 101 occupied my teaching time both during the year and the summer session. I ran the main Baraboo field trip three times during the year; each semester I took a van load of beginning students to map in Ableman's Gorge.

Alumnus **Charlie Schweger** visited in January, giving a very interesting talk to the Quats about the various interglacials in Alaska and the Yukon. **Dr. Kamal Hussein**, a professor from the University of Damascus, spent seven months at the pollen lab working on Quaternary materials from Syria. He showed me the definite advantage of using heavy-liquid separation to extract pollen from the very calcareous evaporites in the dry interior. **Ewan Wolff**, a senior from Bates College, Maine, spent four months here learning some palynology. We took a core from Hayton Marsh (near Valders) in May; rain, mosquitoes, a cranky landowner, dragging a heavy coring frame through knee-deep mud, and difficulty in obtaining and extracting cores, made it the worst coring day of my career. After that, winning the OOPPS Award for "winning the OOPPS Award every seventh year" was a distinct relief!

I have been working on a number of pollen sites in the Colorado Front Range with alumnus **Jim Benedict**. This year we looked at data from four sites and discovered a pattern of change in which the spruce/pine pollen

ratios decrease in a regular manner forward through the Holocene. Combining this information with influx data from Redrock Lake, suggests that pine migrated into the higher-elevation sub-alpine forests during the Holocene, doubling the rain of pine pollen grains every 4000 years. This has to be taken into consideration when interpreting the vegetation and climate changes in the area. I gave a talk on the subject at the Denver GSA Meetings in October. And a couple of weeks later I got to attend a meeting of the Global Pollen Database in Boulder. On its Sunday field trip, we visited Redrock Lake where I distributed reprints of my 1972 paper along with several additional sheets showing how the changing spruce/pine ratios would alter my original interpretation.

• **Dave Mickelson**

This was a busy year for the Quats. Our SLIP (Southern Laurentide Ice Sheet Project) is moving along. **Paul Cutler** has been enhancing the model of the Green Bay lobe and developing a model for the Lake Michigan lobe. We are continuing to compile landforms over a broad area into a G.I.S. to support the modeling effort. Three students are working in the Uintas on various aspects of Quaternary history. It has also been interesting to begin mapping Door County along with a grad student and with **Al Schneider**, who is retired from UW-Parkside. Other parts of Wisconsin haven't been forgotten either—one student is working along the state line south of Madison and another in Sheboygan County. **Tuncer Edil**, in Civil Engineering, and I have been working on a shore erosion project with folks at the University of Michigan and the Ohio Survey (including U.W. alumnus, **Scudder Mackey**). More information on these projects and our upcoming trip to Iceland, is on our Quat web page, which can be reached via the department web site.

Last summer I finished my four-year term as president of the INQUA Commission on Glaciation, but didn't get to the INQUA meeting in South Africa. Administration began in earnest late in the summer when I took over as Chair of the Geological Engineering Program. The lack of an administrative assistant during fall made it quite time consuming. Hopefully, this will improve once someone is hired. A high point of the summer was a trip to Norway that started with a little work with a UW grad student and with **Eiliv Larsen** of the Norwegian Geological Survey. **Vin** and I then got married over there and traveled for about a week, then had a few days in Amsterdam before coming back and setting up our household together.

We enjoyed going to Denver for GSA in October and seeing many UW alumni. We hope to see more of

you at various events in the future and invite you to join our Iceland glaciers field course next summer!

• **Toni Simo**

1999 was very productive—a year full of travel and new experiences. Research focused in new and old projects. New projects include work in cores from ODP Leg 182, drilled on the continental slope of southern Australia, seismic imaging of an exposed Wolfcampian shelf margin, and the Oligocene shallow and deep water carbonate of southeastern Spain. These projects incorporate sedimentologic, sequence stratigraphic and chemostratigraphic aspects. Some of the projects I am working on are in hydrostratigraphy and mechanical stratigraphy of shelf carbonates with field areas in Wisconsin and elsewhere. Environmental sedimentology is becoming to be an important "new" science and I find myself very interested in the topic. Of course, west Texas continues to be a wonderful place to do fieldwork and I continue research in Permian carbonates and siliciclastics.

Two trips were significant. The first one was to participate in a NSF initiative to identify new priority research initiatives. The workshop had 10 sedimentologists representing all the disciplines in sedimentary geology. The interactions among the different areas and the conclusions reached were really interesting. The second trip was to Colombia, Venezuela and Brazil as an SEPM a Distinguished Speaker.

• **Brad Singer**

After adjusting to the extremes of reverse culture shock upon my return to the U.S. following six years in Geneva, Switzerland (when I left the U.S. in 1993 the economy had just headed deep south!) I set out to build a new rare gas laboratory in Madison. With generous support from the Graduate School, Weeks Foundation



Toni Simo, Christine Rossen, Lloyd Pray at the Alumni Banquet social hour.

and the NSF, I am happy to report that after 13 months of work (with considerable help from staff members **Lee Powell, Bill Unger, and John Randall**), the lab is nearing completion with the recent arrival of the mass spectrometer. I managed to arrive just in time to find a talented graduate student, **Monica Relle**, who joined me in working on a project to determine the duration and fine-scale temporal structure of the last reversal of the Earth's magnetic field using the $^{40}\text{Ar}/^{39}\text{Ar}$ method to date lavas. This NSF and Weeks supported research took Monica, myself and colleagues from the USA, France, and Spain to the islands of Tahiti in the south Pacific and La Palma in the Canary Islands in search of lava flows erupted in rapid succession during the Matuyama-Brunhes reversal. Monica has worked hard to prepare what will become the first samples measured in the new lab. News on the results next year!

I have also begun an exciting collaboration with **Alan Carroll** focused on generating a precise chronostratigraphy for the world-famous Eocene Green River Formation in Wyoming. Alan and I are co-advising **Mike Smith's** MS thesis project in which we hope to obtain $^{40}\text{Ar}/^{39}\text{Ar}$ ages of several tuffs interbedded with sediments deposited from Lake Gosiute during the last period of global "hothouse" climate. This will be the first study of its kind to tie the paleoclimatic and tectonic records preserved in an ancient terrestrial lake basin to the better known global marine record. I can't wait to get back to Wyoming (where I did my PhD and met my wife) to collect samples with Alan and Mike next summer.

On the home front, my daughter **Zoe** celebrated her 5th birthday and is now in kindergarden in Muncie, Indiana where my wife **Teri Boundy** is also an Assistant Professor of Geology. Zoe enjoyed all her many visits to "Badgerland", especially learning to rock climb at Devil's Lake with **Gordon Medaris** and **Nancy Korda**.

• Clifford Thurber

1999 was a tough year to get through, but the hard work appears to have set things up for a fantastic year in 2000. The spring flew by, kept busy by my new duty as associate editor for JGR and intensive recruiting efforts that brought two new post-docs (**Florian Haslinger** and **Renate Hartog**) and a new graduate student (**Megan Mandernach**) to Madison over the summer to join my research group. The summer was mostly spent traveling, with a trip to Hawaii to collect data and make preparations for a seismic field project, a trip to Cyprus for an international workshop on seismic tomography and earthquake location, and a family vacation in Alaska. The fall's activities included making arrangements for the start of the Kilauea East Rift field project

and hounding authors to complete their chapters for a book I am editing (not to mention finishing my own two chapters for the book). The year was capped off with a bang, as five years of effort to obtain support to carry out seismic field work at Parkfield, California finally payed off. The project will set the stage for the San Andreas fault-zone drilling project, which is in President Clinton's budget on its way to Congress as part of the huge "Earthscope" project.

• Basil Tikoff

Well, time does fly when you are trying to get a laboratory renovated, teach new courses, submit funding proposals, and advise. I am not sure where the last academic year went. I am finally settling into the "isolation ward," the somewhat dubious title for the part of the first floor that is not physically connected to the rest of the building. I am beginning to enjoy the occasional disruptions of the security guards passing through at night and checking my ID (security precautions, I am told): It makes me feel like I am back in college.

Scientifically, things are going well. In addition to the standard host of rejected proposals, I was awarded a Packard fellowship during the last year. This five-year fellowship will fund the structural geology group to study deformation of the lower crust and the uppermost mantle. As part of that work, **Cheryl Waters**, a new PhD student with a Masters degree from the University of North Carolina, will be working on the granulites of central Australia. (Note: This is not a way of getting out of a Wisconsin winter—it is too hot to go there during the Australia summer.)

Maitri Venkat-Ramani, a Masters student, is finishing up her work on the Loreto Basin, Baja California, Mexico. She is working on a larger project coordinated by ex-Badger **Paul Umhoefer**, who introduced us to the field area. (Note: This IS a way of getting out of a Wisconsin winter—although this winter is not looking very severe with 50 degree days in late February.) The work so far has found that folds form in oblique divergence, when material moves apart. This result is counter-intuitive, but seems to occur and is predicted by the strain theory. I am also continuing to work on the western Idaho shear zone, the boundary between the "suspect" terranes of the western United States and the North American craton. **John Gillaspy**, an undergraduate who helped with the fieldwork last summer, and myself are busy putting together a presentation in London this spring.

I am also beginning to work with several other faculty members in the department. **Clark Johnson** and myself have submitted a proposal to address the Baja-BC controversy. I am also beginning to work on the

project in the Green River basin, Wyoming, coordinated by **Alan Carroll**.

• **John W. Valley**

1999 was a transition year for me. The spring and summer terms marked the end of my three year position as department Chair and the fall began my sabbatical year. The final duties as Chair included hosting the department's very complimentary External Review Committee, presiding at the highly successful Alumni Reunion, and presenting the proposal for an addition to Weeks Hall.

The addition to Weeks Hall has been proposed by every Chair starting in 1987 and will alleviate many needs. Since moving into Weeks Hall, the department has never had enough laboratory or classroom space. Furthermore, the success of the Museum and the changing needs of the Library require expansion and more student study space, respectively. In 1999, the Geology and Geophysics Alumni Board decided to make the addition its top priority and this has been met with strong matching support by **Chancellor David Ward**, **Deans Phillip Certain** of Letters and Science and **Virginia Hinshaw** of the Graduate School, and the trustees of the Wisconsin Alumni Research Foundation.

In August, I traveled with **William Peck** to Edinburgh, Scotland to begin the first studies of oxygen isotope ratios in zircons using an ion microprobe. This research combines the results of studies of oxygen isotopes in zircon that I started in 1993 and developments of ion probe technique that I began during my last sabbatical in 1989. William and I analyzed zircons from many terranes including: young rhyolites from Yellowstone, Pre-cambrian gneisses from the Grenville Province, and the newly discovered oldest zircon on earth from western Australia. The Grenville studies are the culmination of William's PhD research which will be completed this year. William has discovered a new igneous domain within the Grenville, marked by high $d^{18}O$ magmas, and has proposed that it results from subduction of sediments along a continental margin during the Elzevirian Orogeny at 1.2Ga. The oldest zircon ($>4.3Ga$) was discovered last May by co-worker, **Prof. Simon Wilde**, at Curtin University. More is reported on these projects elsewhere in the newsletter, see "Zircons are Forever."

The Yellowstone project is being conducted by **Ilya Bindeman**, a post-doctoral fellow working with me. During the past 2Ma, Yellowstone was the site of three of the largest known volcanic eruptions, each up to 2000 times greater than the 1980 eruption of Mt. St. Helens. Ilya has found that oxygen isotope systematics are generally equilibrated in rhyolites, but that profound

disequilibria exists during periods of low $d^{18}O$ magmatism that follow each of the largest caldera-forming eruptions. These results have led to a new model for the genesis of low $d^{18}O$ rhyolites at Yellowstone.

Ilya and I are testing the generality of their new model in the Timber Mtn-Oasis Valley caldera complex of Nevada where they started fieldwork last October. Low $d^{18}O$ rhyolites from the Timber Mtn complex include those on Yucca Mtn that have been tunneled in preparation for the proposed high-level nuclear waste repository. It is anticipated that a spin-off of this work will be answers to questions relating to hydrothermal activity at Yucca Mtn. Concerns have been raised by a controversial proposal that Yucca Mtn is the site of ongoing hydrothermal activity that could compromise the safety of any repository. Ilya and I are analyzing zircons that were proposed to be hydrothermal in origin in order to test key tenets of the proposal.

• **Herb Wang**

After five years of having the project nag me, my book on poroelasticity is at the Princeton University Press for production.

Along with my service as associate dean and faculty director of the Honors Program, I co-taught Tectonophysics with **Cliff Thurber** and a seminar with **Mary Anderson** covering benchmark papers in hydrogeology in the fall. The student presentations brought out a lot of interesting biographical information about the authors of the benchmark papers. I was also a discussion section leader with an undergraduate peer mentor of a freshman Honors course called "Ways of Knowing," which is a one-credit introduction to UW-Madison. One week I brought department alumnus **Stuart Rojstaczer** to the "Ways of Knowing" discussion. Stuart is now Professor of Hydrogeology at Duke and he was in town promoting his new book *Gone for Good*, which contains his many observations about university life.

On the research front, **Dave Hart** and I, with **Tim Eaton** and **Ken Bradbury** of the WGHNS put in a couple of observation wells and a pumping well to characterize the hydrogeology of the Maquoketa shale in Waukesha Co. **Tim Masterlark** has found that his poroelastic model of the 1992 Landers earthquake in southern California does a good job of predicting the location of the Big Bear earthquake, which occurred three hours later. **Tyson Strand** has been creating percolation models of multiphase fluid flow to simulate a laboratory sandbox experiment.

• Klaus Westphal

Besides planning and managing the museum exhibits and the educational outreach program, I taught the introductory course *Life of the Past*. Earlier this year, I received the Toyota Motor Sales USA/National Science Teachers Associations's *Tapestry Award* in recognition of the Museum's *Paleontological Experiences for Teachers* training program. See also the Museum's "Annual Report" on page 53.

Publications in 1999

Please see individual faculty web pages for listings of faculty publications for 1999, at <http://www.geology.wisc.edu/people/faculty.html>

EMERITUS ACTIVITIES—1999

• C.R. Bentley

My academic program continues to wind down. **Ben Smith**, who has been tracing the northern shear margin of stagnant ice stream C to understand better the history of the ice stream, finished his Master's degree in December. Despite his careful analysis, including corrections for accumulation-rate variations that he derived from the depth of the internal radar-reflecting horizons, there is still no clear pattern of stagnation. He will remain in the Department working on GLAS-related activities through next summer, then plans to begin his Ph.D. program at the University of Washington next fall. **Chen Liu** finished his post-doctoral work by completing the data analysis from the radar sounding survey of ice stream D and has moved on to a commercial job in California.

I still continue my participation with the NASA "GLAS" team, helping to design the satellite-laser-altimeter experiments for "ICESAT," which is scheduled to be launched into a high-inclination (about 86°) in July, 2001 (or perhaps a couple of months late). If all goes well, ICESAT will provide rates of change of surface heights with an accuracy of a few centimeters a year over all of the Antarctic and Greenland ice sheets. This spring I plan to submit a joint proposal to NSF for airborne laser-altimeter experiments over East Antarctica as a form of ground-truth experiment for GLAS. With great luck, that could give me the excuse I need to travel to Antarctica again in the new millennium.

• Carl J. Bowser

The beginning of the new millennium heralds a number of significant changes in my life at the University, but more on that later. Like any self-respecting year at the UW some things change, some don't. This year was no exception.

For the first time last spring I shouldered the load in offering Introductory Oceanography in collaboration with **Kim VanScoy** in Atmospheric and Oceanic Sciences. Departing from past norms Kim and I spent considerable time teaching the labs as well as giving lectures. It was a fun experience as it got me closer to students on a one-on one basis, an otherwise difficult goal in large enrollment, elementary classes. A guest appearance in the White Lake course provided an opportunity to spend a couple of days in Canada leading a field trip, and to introduce **Brad Singer** and **Basil Tikoff** to this classical geological area. This fall found me teaching Elementary Geochemistry and the Sapelo trip. The Sapelo group included a better than average group of grads from across the environmentally oriented programs on campus. Excellent weather, student enthusiasm, and five faculty members made this one of the most memorable in years.

My research continues along three separate lines of work, the LTER project and two projects with the USGS. The LTER project is going well, having passed our NSF site review in October with flying colors. We're trying to collect our results from 19 years of operation into a book to be published by Oxford Univ. Press. Among my tasks are to complete a chapter summarizing our groundwater research and to take photographs for the cover of the book. Trips to Vilas County now include stops at the Rhinelander airport to overfly our site in hopes of getting shots suitable for the book.

The USGS projects include my long-term collaboration with **Blair Jones** on mass-balance analysis of stream and groundwater chemistry, and a wrap up of our work on the Colorado River primary production study at Lees Ferry, AZ. Sadly the Bureau of Reclamation has moved more to a political/economic stage in their work on the Colorado River, and they don't seem as interested in supporting anything more than long-term monitoring of sand movement and fish populations in the river. **Marzolf** (USGS) and I are seeking alternative ways to develop tools to help us understand biogeochemical processes in the tailwater reach of the Glen Canyon dam. A chapter in an AGU book on the river work (including the cover photo), presentations at AGU in San Francisco, ASLO in Santa Fe, and NABS (North American Benthic Society) in Colorado and a USGS open file report provide an ample "paper trail" of our work.

Summer of 1999 was somewhat different for me, and may have foreshadowed my future summers. The month of July was spent with my family and friends on an extended trip "out west" with stops in Omaha, NE (daughter), Jackson, WY (**Dave Stephenson**), Ashland, OR (**Phil Hart**, ret. UW Pharmacy), a family reunion to celebrate Judy's parents 60th wedding anniversary in

South Lake Tahoe, and finally a photo journey that took me from Wyoming through the backbone of Utah's plateau country into New Mexico via Ship Rock, Albuquerque, and White Sands to end up in Santa Fe to participate in a week long photography workshop.

In Santa Fe, I worked with **Eddie Soloway**, one of the Santa Fe Workshop's premier photography instructors. After over 40 years of carrying a camera around with me to photograph "geologic scenes" on my many trips, (what self-respecting geologist wouldn't), and realizing that taking pictures was more of a challenge than I had realized. I decided it was time to hone my skills at the craft under the direction of those who make a career of it. The experience was tremendous and revealed how much more there is to photography than pointing your camera at a scene and letting the camera choose the focus, exposure, etc. At least my "right brain" was declared in working order, and I continue to get support from those who appreciate the creative elements of photography. I hope you like the cover of the newsletter.

Finally, after 36 years of teaching at Wisconsin I decided to "retire" from the University. On January 3 of the new millennium, I became one of the growing numbers of emeritus faculty at the UW. The backlog of manuscripts to finish, and a few to start, continued involvement with the research on the LTER project and with my USGS colleagues provide ample "work" to keep me busy. I'll continue to direct the geochemistry laboratory, and find plenty of other distractions to keep me busy (if that's what retirement means). When not otherwise doing "geologic work" I'll find more and more time to express myself through the medium of photography. My daughters have been forewarned to expect random visits from **Judy** and I to enjoy some of the "perks" of having grandchildren.

• **David L. Clark**

In June, I ended 42 years of teaching (two at SMU, four at BYU, and 36 at UW) and joined the growing ranks of the department emeriti staff, packed my bags and moved to Santa Rosa, California. Before this all concluded, the department (with the guidance of **Dana** and **Charlie**), gave me a nice retirement dinner complete with recollections, gifts and letters from many of my 78 former graduate students. There was a nice turnout including three of my grandchildren and a couple of former students who traveled considerable distances to attend. Needless to say that I never really anticipated retirement and still can't believe that this is the way one ends a career, but it happened. And while I'm still working on a couple of manuscripts, reviewing the text for a book, and answering questions for a

variety of folks who have stayed in contact concerning previous work, I now spend most of my time enjoying the ocean (25 minutes away), the exotic California plants, lounging around the pool and spa in my backyard (at least until it started raining last month), and laughing at the northern California winter storm warnings. (The last winter storm included almost an inch of rain with temperatures plunging into the 40's.) Between winter storms, that are to be finished for the year in a few more weeks, we enjoy exploring the Coast Ranges, sitting on the beach, and doing a few things on our new house.

My final semester in the department included giving away approximately 1000 volumes, placing all of the Arctic material in the repository, and asking **Klaus** to take charge of my extensive conodont collections. While I miss the association with former staff and students and the library, retirement isn't all that bad and I wonder why I ignored the inevitability of it for so many years!

• **C.S. Clay**

Some things change from year to year. It may be global warming. Lake Mendota froze 1/13/2000 and opened 3/7/2000. Mendota appears to be freezing later and opening earlier each season.

Research in acoustical oceanography continues with trips and a paper with **Chris Feuillade** on scattered sound. Last spring, I traveled to NRL-Stennis Space Center to consult on under water sound and give a seminar on properties of the fractal seafloor. In the fall, I took a second trip to NRL-SSC to be a member of an external review committee. Laboratories treat members of external review committees rather well. One wonders if they hear the advice.

Last summer **Jane** and I made a science trip to the Woods Hole Oceanographic Institute. On the way, we visited Frank Lloyd Wright's "Falling Water", Nyack (**Liangs**, my engineer at Columbia University), Hastings on Hudson (**Ettinger**, our N.Y. house, and old Haunts), Cape Cod (**Halperns**, an MD from Jane's unit), Duxbury (**Stantons**, a research associate at UW). Thus, we visited many friends.

Otherwise, music, bands, orchestra, daily practice, concerts, and lessons keep us busy. Both Jane, clarinet, and I, baritone and trombone, played concerts and solos. Jane is getting better with bridge. I enjoy collaborations with younger scientists and science trips. These activities keep our minds and fingers working. Books, friends, and family are comforts and joys. I still have the aftermath of "shingles" and our old joints ache. So, we seem to need more rest, relaxation, and work outs at the gym.

• Cambell Craddock

Dottie and I continue to enjoy good health and to live quietly in retirement. We both remain active in our church, and I conducted the service one Sunday in June. In April we went to Scotland to attend a relative's wedding in Dunkeld Cathedral, the construction of which began in the first millennium. In June we attended a garden party in Glen Ellyn, Illinois, to celebrate my father's 95th birthday. We also made trips to visit our children and their families in Plymouth, MN, St. Paul, MN, and Atlanta, GA. We vacationed for a week at a relative's cabin in northern Wisconsin.

Much of our time has been invested in the pursuit of family genealogy. Some of you know that I was adopted as an infant in Chicago in 1930. Since 1991, with the help of several friends, we have searched for my birth family. In September we at last obtained the birth certificate of my birth mother **Alice**. The Social Security Death Index revealed that Alice died in 1995, but it allowed us to find her obituary. She was buried in Houghton, Michigan, two weeks before I passed by with my final Lake Superior field trip. In October we contacted, and then visited, her survivors—a twin brother and niece in northern Minnesota, and a step-sister in Houghton. All these folks live in COLD places, so my genes must have pointed me to Antarctica, Alaska, and Spitsbergen. We have also learned that one great-grandfather was a tin miner in Cornwall, England, who emigrated to America in 1872 and settled first in Houghton. This story continues to unfold. So far my ancestors are English, Scottish, and German; but I am American. Now I am out of the closet.

• Robert H. Dott, Jr.

1999 was the University's sesquicentennial year, so I found some special activities to occupy me. I wrote a Sesquicentennial Timeline for the department, which all alumni should have received. This document supplements **S.W. Bailey's** fine history of the department up to 1980, although it has a very different format. The Alumni Reunion in May tied in with the sesquicentennial, so I spent considerable effort researching the early history of the department. The pioneer work of our forebears in the Lake Superior Iron Districts early in the 20th Century really put us on the map, so to speak. The intellectual genealogy of **Irving, Van Hise, Leith, and Mead** created a remarkable legacy, which contributed some fundamental principles of structural and metamorphic geology that attracted worldwide attention as well as students from many countries. I spoke about this at the reunion, published a first article about it for lay people in May, and I am now wrapping up a longer

article for a specialist audience.

Also for the reunion, I gleaned some highlights from the old *Outcrop* yearbooks and prepared a series of posters, which were displayed at the banquet in May and again for our departmental party at the GSA meetings in Denver in October. Sooner or later, you probably will see them some place.

For a symposium at the GSA Rocky Mountain Section meeting in Pocatello, Idaho in April, I was invited to give a retrospective kick-off talk about my ancient dissertation work on Pennsylvanian strata in northern Nevada in the early 1950s. The invitation to hear about such old work came as quite a surprise, but doing it turned out to be great fun. As usual, that meeting was well populated by Badger alums, including **Tom Morris, Bart Kowallis, Scott Ritter, Eric Bestland, Craig White, Jeff Keith, Joe Reece, Gary Gianniny, Pat Shanks, George Desborough**, and one or two others I have forgotten. For the national GSA meeting in Denver, I was talked into speaking about the early Wisconsin School of Precambrian Geology. There were far too many Badgers at that meeting either to remember or to list.

Besides poking around in archives, I also give an occasional lecture or field trip, but mostly for non-specialists. Spreading more geological awareness seems to me a worthy effort for a pensioner. Another way I am trying to do this is by coauthoring a *Roadside Geology of Wisconsin*. **John Attig** of the Wisconsin Geological and Natural History Survey and I hope to complete this project in 2000. It will be published in the *Roadside* series of the Mountain Press of Missoula, Montana. I actually do just plain fun stuff, too. For example we had an outstanding Dott family reunion in August up on the Precambrian Shield on the border of Minnesota and Ontario with lots of canoeing, fishing, swimming, etc. **Nancy** and I travel a lot to visit our six grandchildren and other family members, too, for they are widely scattered over the map.

In October, Nancy and I went to the 50th Anniversary celebration of Lamont-Doherty Earth Observatory of Columbia University. Lamont was just getting started when I was a PhD student at Columbia in the early fifties, and, although never directly involved there myself, I have known many Lamonters over the years. Weather was gorgeous and we had a ball both at the Observatory on top of the Palisades of the Hudson River (Triassic) and later in Manhattan.

Two particularly notable events occurred in 1999 that must be mentioned. Long-time colleague, **Eugene N. Cameron**, died in April (see an accompanying article). Gene was the chairman of the department when I arrived in 1958, and we enjoyed many pleasant professional and social times together; he had a considerable

positive influence upon my early career. A much happier event was **Edith Konopka's** defense of her PhD dissertation on March 1st. It was a long haul for both of us, but with a very satisfying outcome. Edith was the last student to earn a graduate degree under my supervision. Guess I really can retire now.

• **Bob Gates**

I don't remember when I last contributed to the Newsletter, but as I do travel in the winter I was probably out of the country during the ten days we have to submit it.

When I am not traveling I try to keep in shape at the athletic club, playing golf, and biking. I continue to exercise my mind by taking courses at the University's "Learning in Retirement" group, PLATO. The last science course I took was on the first three seconds of the Big Bang.

In 1997 I missed the newsletter as I was on a five week Odyssey tour of South America starting in the Amazon rain forest at Manaus and traveling clockwise to Rio de Janeiro, Buenos Aires Igassu Falls, Montevideo then across to the Pacific via Bariloche to Puerto Mont. Next time I could skip the east coast, but from Puerto Mont to Quito was a great experience and prompted me to return there last summer.

After three trips to the Hawaiian Islands since retirement I finally got to the "Big" one, Hawaii in 1998 and got to see some active volcanos. Beaches and golf courses are not as good as Maui, but the coast line, whale watching, and snorkeling are spectacular.

Igassu Falls in Brazil inspired me to visit Victoria Falls and some of the rest of South Arica. Victoria Falls and Igassu are similar geologically, but the elephants and rhinos up stream from Victoria make it different. From Victoria Falls to Cape Town there are more game preserves than I could count but a return visit would be for a longer look at the south coast from Port Elizabeth to Cape Town—a good place for a winter vacation if it weren't 17 hours by air away.

Back to Maui in March of '99 with my step-daughter, **Tracy**, who conned me into bicycling from the top of Haleakala and snorkeling until blistered and doing other activities that 30 year olds do. The change of pace from traveling with the geriatric set was so nice that Tracy and I took a three week vacation last summer in Peru and Ecuador, one week in the Peruvian rain forest, another at Cusco, Machu Pichu, and the valley of the Incas, and finally a week cruising the Galapagos.

To complete 1999 I moved into a new condo that I had built for me in October. To start the new millennium right in a week I am leaving for a three week hiking trip in northern India and Nepal.

• **Gordon Medaris**

Retirement is even more enjoyable, but alas, much busier, than I anticipated. Two weeks in March were spent in Syria, where I lectured at Damascus University and collected mantle and lower crustal xenoliths from the Cenozoic As Shamah volcanic field (returning with 240 samples for analysis!). **Nancy** and I sneaked away in July with my daughter, her boyfriend, and Nancy's nephews for a delightful climbing trip to the Black Hills (Rushmore and the Needles)—a magical place, where we delighted in delicate stances on feldspar phenocrysts of the Harney Peak granite. I returned to Romania in September for more field work on eclogites in the S. Carpathians and to present a couple of papers at a meeting of the Romanian Mineralogical Society, followed by a week in Prague to get my annual fix of Czech beer, culture, and garnet peridotites. Over Thanksgiving, Nancy and I travelled to Texas to celebrate the holiday with her family, and to explore new (for us) climbing areas in Oklahoma and Texas—the Wichita Mountains (OK) and Enchanted Rock (TX) are primo spots, to which we will surely return. Amongst all this, I'm continuing to work on the Baraboo Quartzite and related topics, extending the investigation to the Flambeau, Barron, and Sioux Quartzites. In May I presented a paper at the 45th Inst. on Lake Superior Geology on the chemistry, mineralogy, and origin of Baraboo, Barron, and Sioux pipestone, and this year will describe the geochemistry and mineralogy of a saprolite (paleosol) beneath the Barron Quartzite and its implications for Paleoproterozoic climate in the region. I continue to be fascinated by how much remains to be discovered in the Baraboo and related quartzites.

• **Lloyd Pray**

1999 marked my completion of ten years as an Emeritus Professor at UW-Madison and my 80th birthday. During the past decade I have enjoyed a close continuing interest and relationship with the department including participation in a number of sedimentary geology field trips with **Toni Simo** and others, especially to favorite haunts of mine in the Sacramento and Guadalupe Mountain area of West Texas and New Mexico. As the decade neared completion I'm doing less and less personal research, even in my favorite areas, but follow with interest the work of former students and others by attending conferences and field trips. There has been no let-up in requests for letters of recommendation or evaluations of former students and it's satisfying to respond for persons I respect.

Carrel and I have been favored by continuing good health. Sure we are wearing out, but slowly, so far. The tapering off of personal time spent doing geology has

permitted more time for interactions with our large family, more time for gardening and tending to surroundings at our small farm and more opportunity for Carrel and myself to travel. With three of four sons, their wives and 10 of our 12 grandchildren living in Montana, California, and Ohio travel there has been frequent, as well as to a family cottage on the south shore of Lake Superior. Overseas trips, such as to Great Britain, Spain, Hawaii, and New Zealand have been fun. A spring 1999 trip around the Horn of South America filled a long-held urge (all of you who revel in rugged glaciated mountains in pristine settings should get to the new Chilean National Park, Torres del Paine.) Late this year we had fine trips to Ireland, Maine, Montana and to California at Rose Bowl time. We were there!

I have been fortunate, surprised and pleased to be recipient of several geologic awards as I neared and reached 80. In 1998 I received AAPG's Distinguished Educator Award and the first Wallace E. Pratt Award for Resource Stewardship from Guadalupe Mountains National Park (fine field behavior of my many thesis students in the park counted here). This year I was

shocked and delighted to receive SEPM's Twenhofel Medal. Nice to live so long! My sponsors for these "trophies" included former students. I'm reminded of the wisdom of the saying, "a saving grace of academie is the incredible tolerance of students."

I hope to see many of you geology grads at the April AAPG-SEPM meeting in New Orleans.



MaryBeth Wegner, Dave Mickelson, George Field, Jeff Peitras, and Ron Schott on the Alumni Reunion Field Trip, May 8.

Committees

Council (Salary Committee)—Anderson, Brown, Bahr, Simo, Thurber
Finance—Johnson (Weeks), Simo (Grad), Brown (Computer/101), Anderson
Staff/Personnel—Geary, Bowser, Christensen, Anderson
Graduate Studies/Admissions—Simo, Bahr, Tikoff, Singer
Undergraduate Studies—Geary, Banfield, Carroll, Tikoff, Mickelson
Alumni and Public Relations—Wang, Dott, Mickelson, Anderson
Computer—Brown, Bahr, Bowser, Abernathy

Special Committees

Curriculum—Byers, Bahr, Christensen, Thurber, Tikoff, Valley
Museum—Simo, Byers, Geary
Carroll Mentor Committee: Simo, Johnson, Brown
Singer Mentor Committee—Johnson, Mickelson, Valley
Tikoff Mentor Committee—Johnson, Mickelson, Simo
Geochemistry Search—Banfield, Bahr, Johnson, Singer, Simo
Geophysics Search—Thurber, Carroll, Tikoff, Christensen, DeMets, Alumbaugh (GLE)
Space Management—Bahr, Banfield, Mickelson, Simo, Tikoff, Valley, Unger, Anderson

Special Duties

Chair—Anderson
Building Manager—Maher
Building Addition—Valley
DARS Coordinator—Carroll
Faculty Meeting Secretary—Bailey
Friends of the Museum Liaison—Byers
Grievances—Geary, Byers
GSA Representative—Bowser
Historian—Dott
Honors Program/Minority Program—Carroll, Simo
Individual Majors—Mickelson
ISIS Coordinator—Brown, Meinholz
L & S Advising Center—Bowser
Library Coordinator—Wang
Microprobe Liaison—Brown
Newsletter—DeMets, Diman, Dott
Senators District 58—Anderson (Wang), Byers (Christensen)
Sexual Harrassment—Bahr, Simo
Speaker Program—Christensen, Mullins
Thin Section Lab Liaison—Valley
Timetable—Byers, Meinholz
Undergraduate Advisors—Banfield, Carroll, Mickelson, Tikoff
Vans—Unger, Gosse