collaborating with Patrick Camus at ThermoNORAN in Middleton, using his electron backscatter diffraction apparatus. Third, a manuscript based on Eric Carson's MS, tephrochronology of the Cold Bay, Alaska area, has been accepted by *Quaternary Science Reviews*.

I was called upon extensively by researchers in Prof. Chang-Beom Eom's group in Material Science to evaluate MgB2 thin films they were attempting to synthesize in the race to new superconductors. This pushes the capabilities of our electron microprobe and requires operating the instrument at rather low accelerating voltages (down to 3 keV) at times. In June I conducted a 2 1/2 hour interview with emeritus professor Lloyd Pray. I presented a report of my Aleutian oral history project at GSA in Boston.

❖ Clay Kelly

Please see *New Faculty* for Clay Kelly's report.

❖ Louis J. Maher

I taught Geol. 101 (General Geology) and Geol. 722 (Quaternary Pollen Analysis) in the spring. During the fall I did Geol. 101 again and helped Basil Tikoff with Geol. 202 (Introduction to Geologic Structures), one of the new majors' courses. Geol. 202 involved a lot of field trips, both local and out of state. I really enjoyed the excursion to the Badlands and the Black Hills. The weather was perfect, the geology was excellent, and my very capable Geol. 101 TAs handled the lectures I missed in Madison.

Eric Grimm, an old friend and colleague from the Illinois State Museum, mentioned that he was finding pollen fluctuations in a number of his sites in Illinois that appeared to match an anomalous interval in my diagram from Devils Lake. The curve of pollen from ash trees rose when spruce declined at the end of the glacial period. Then ash abundance dropped drastically while spruce pollen increased for a time before ash continued its postglacial rise. In the original Devils Lake C-14 chronology, the zone of low ash pollen dated from just after the destruction of the Two Creeks Forest by the Great Lakean ice advance that deposited till over the forest bed along Lake Michigan. The total influx of pollen during this interval was quite low in Devils Lake which suggested a time of cool wet weather. I have always been proud of the Devils Lake C-14 dates that were done by Margaret Bender at the Center for Climate Research's C-14 lab here in Madison in the late 1970s. They were dates run on the bulk sediment, but the 4-inch diameter cores allowed the sample to come from an interval of just a few centimeters, and the smooth curve of increasing age with depth looked very convincing. But in recent years Accelerator Mass Spectrometry (AMS) has allowed a tiny organic sample, such as a single seed or needle, to be dated. It has been noted that bulk sediment dates are often older than AMS dates, probably because the bulk samples may contain rebedded material. Eric Grimm was using AMS for his Illinois sites, and the low ash pollen interval appeared to be about a thousand years younger than in Devils Lake. Luckily, the original Devils Lake cores were still in the cold room in the basement of Weeks Hall. I spent part of the summer working with those cores looking for organic matter to date. The place of each pollen sample was marked with a short length of plastic drinking straw, so I could locate

At the GSA Quats dinner, left to right, from the top: Danny Douglass, Lou Maher; Jeff Munroe and Sarah Principato; Steve Gaffield, Rich Whittecar and Todd Rayne. Photos by Dave Mickelson.

the exact places to extract samples for AMS dating. Three weeks later the results came back. The interval of low ash tree pollen came in a thousand years younger than originally thought. Its calibrated C-14 age matches the time of the Younger Dryas cold period in the GISP2 ice core from Greenland, and it now is the most convincing Younger Dryas record in the Upper Midwest. Interestingly, Devils Lake does not seem to have any record of a climate fluctuation that correlates with the glacial readvance that preserved Wisconsin's Two Creeks Forest Bed. I am a little disappointed to find a record of the globally recognized Younger Dryas interval but none of my favorite local Wisconsin readvance.

My web site *Geology by Lightplane* **http://www.geology.wisc.edu/~maher/air.html**, that I set up in January, recorded 12,000 hits by the end of the year. Alumnus Kent Kirkby at the University of Minnesota kindly produced a batch of CDs for me at cost, and I was able to distribute disks like reprints at the GSA meeting in Boston and the Midwest Friends of the Pleistocene meeting in Thunder Bay. The web site requires a very fast connection to work well. With the CD you can put it in your computer's CD reader and get very fast transfer. As I said, the CDs are like reprints; if you want a free copy simply write and ask.

❖ Dave Mickelson

The year 2001 was as busy as usual. The Quats changed quite a bit because Jeff Munroe finished his PhD, Kelly LaBlanc and Scott Brown finished their MS theses, providing me lots of evening reading! Our Laurentide Ice Sheet project with Pat Colgan rolls along, although Paul Cutler's departure for a job with the National Academy of Science has slowed the modeling aspect down somewhat. As I write this, a new postdoc, Andreas Bauder, is sitting downstairs. He will continue the modeling begun by Paul. Ben Laabs (BS, 1999) returned with an MS from Northern Arizona and has been working on the same project. I represented the department and the GLE program at a Chair's conference hosted by Exxon-Mobil In Houston. I was pleased to find that Mike Trygesstad, a recent Geophysics student was my host.

In June, Vin and I traveled to Germany, where we had a meeting of our Scandinavian Ice Sheet project. Cornelia Winguth, who is doing the modeling for that project met us there as did several others from Norway (including Eiliv Larsen, who many alumni know) and Sweden. A new student, Jessica Darter, is working on the geologic aspects of the flow lines. After a pleasant stay with Juergen Ehlers and family Vin and I drove to Poland for a conference and field trip (**http://www.geology.wisc.edu/~davem/Poland_Images_Home.html**). We then took a week to drive south to Slovakia and the Czech Republic. Our Uinta project continued, and I visited Eric Carson's field area in July with Jim Knox. Vin and I also spent time on the Lake Superior shoreline with Tuncer Edil and students Leslie Pearson and Lindsay Anderson.

The Sheboygan County project is nearing completion as Anders Carlson finished mapping there in August. Door County is finished, but maps and report remain to be done. A highlight of the fall was attending Pat Colgan's Boston Harbor GSA field trip and having dinner with about ten former "Quats" (photos, preceding page). I hope to see many of you at GSA in Denver next fall and I hope we can find a time to have dinner together! We never got our holiday cards written, so a late "best wishes" to all of you for the no longer New Year!

❖ Nita Sahai

My research program has grown nicely since the last time I wrote an update for this publication. Three papers in peer-reviewed journals and four invited oral presentations at conventions have resulted from my recent work. I now have a PhD candidate student, Katya Delak, and a MS candidate student, Katie Thornberg. Using ^{29}Si NMR and microcalorimetry supported by my theoretical calculations, Katya is studying the nature of interactions between silica and small organic compounds called amines, in both the aqueous and the solid phase. Her work has implications for how diatoms produce biogenic opal (amorphous silica) tests from sea-water, for biomimetic silica synthesis, and for the nature of biomembrane-mineral surface interactions. We are collaborating with Profs. Bob Hamers and Bob West and with Dr. Charlie Frye in the Chemistry Department on this project.

The nature of biomembrane-mineral interactions is relevant to geomicrobiology in cases where bacterial and fungal cells are in contact with mineral surfaces, and for medical applications such as understanding the etiology of silicosis. This is a respiratory disorder caused by the inhalation and retention in the lung of fine quartz (_-SiO_2) dusts. Intriguingly, dusts of stishovite (six-fold coordinated SiO_2) and of other oxides such as rutile (TiO_2), corundum (Al_2O_3) and hematite (Fe_2O_3) are benign.

Katie is involved in a problem of local interest to Wisconsonians, the natural occurrence of arsenic contamination in groundwater—in collaboration with Prof. Toni Simo of this department and Dr. Madeline Gotkowitz of the Wisconsin Geological and Natural History Survey. We will characterize the mineralogy and chemistry of the pertinent arsenic-bearing phases using HRTEM and determine the leaching rates of arsenic from each phase. Both Katya and Katie are bright, motivated students and it is a pleasure to work with them.

I am also continuing my research on the catalytic