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UMD Geological Sciences Newsletter for Alumni & Friends

50th Anniversary plans in motion! May, 2004

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This letter is a pleasure to write. I have just come from a meeting with Charlie Matsch and the planning committee for the Institute on Lake Superior Geology (ILSG). Next year we celebrate our fiftieth year of the geology major at UMD, and ILSG celebrates its fiftieth year as well. The ILSG meeting will be held at the Radisson Hotel in Duluth, May 4-9, 2004. We decided that we would like to celebrate together, and bring back as many UMD alumni as we can. One person emailed me and said that the best reunion she could imagine would be a field trip with OJ. Well, guess who is leading two field trips—Dick, of course. Actually, all the field trips planned (described elsewhere in the newsletter) will be led by at least one Duluth alumni or professor. It will be the opportunity of a lifetime for all of us.

As part of the general meeting, we are planning a special session Friday afternoon, May 7th, entitled, "Recognizing 50 years of contributions to geology and life by UMD graduates". I asked a few grads whom I saw at GSA last week if they would be willing to contribute and they agreed, so there will be some invited speakers for this session, but there will also be a general call for papers given by ILSG in January. You will all receive a flyer. Friday evening the Department will host a reception and buffet for alumni to be held either at the Radisson or at UMD. This would allow those of you who could not come to the meeting another opportunity to renew friendships and professional acquaintances by coming to Duluth for the evening (or perhaps the weekend).

We have had five decades of graduates and we would like to put together a photographic collage from all those years. We are asking you to dig through your photos and send them to us, either in hard copy or digitally (go ahead, embarrass your friends!). We will put a poster together for each decade of our half-century showcasing what you have done both then and now. I only ask that you include names, dates and places, and send both recent and old photos. I wish that we had kept copies of all the slide shows at geology banquets throughout the years. I am getting excited just writing this. (Send all materials to geol@d.umn.edu)

The rest of what I am going to write seems rather mundane to me now; however, you do need an update. The only major change in the Department this past year was Rip retiring. He taught his last Dinosaur class last fall. The rest of us have just been adjusting to one another. I think we needed a year to ~~r~~est up" and catch our breath. So now when you stop by, you should find us in the same offices we were a year ago. (My saying that might seem strange, but there had been so many switches, it was hard to know where people were.)

I am sure that you are all well aware that the University took a significant cut in funding this fiscal year, and we may take another next year. CSE took quite a few of the cuts at the college office level, but the dean did not pass them down to the departments in total. We did take a cut in our SE&E (funds that we run the department on). It hurts but is manageable. I don't think our students have felt it yet (other than their large tuition increases). The faculty has, because we have cut back on money for professional travel. Hopefully this is only for a year or two. I would like to report, however, that our endowments are growing again, which allows us to give more scholarships and travel money to our students. So, all is not bleak.

Keep sending your notes and emails. We sure enjoy them. I hope that we will see many of you in the spring.

ERIK BROWN Continuing work on Lake Superior I'm in the midst of developing new projects using moored instruments that measure dissolved oxygen and carbon dioxide. This should let us evaluate biological activity in more detail than would be possible with ship-based surveys. In addition, we will have information on what happens during the winter months when no one is out on the lake.

Teaching This fall teaching has taken up quite a bit of my time. In addition to developing "Oceanography" lectures in PowerPoint (complete with animated tsunamis dancing across the Pacific and North Atlantic Deep Water sinking in the Greenland Sea), I have the fun challenge of leading one of our department's freshman seminars.

Home The big event at home was construction of a new garage. Our kids had a great time watching the big cement trucks, the excavators, the dump trucks, and the steamrollers swallowing up the proceeds of our second mortgage! Another event was the success of the excess levy referendum in Duluth, which will help keep our public schools from falling into a financial morass. Barbara had a big role in the campaign. I mostly tagged along and tried to keep the kids out of mischief.

Cabin We got up to the cabin with the kids (Andrew, 7; Lianna, 5; and Matthew, 18 months) just about every weekend from June through August. The kids love it and never want to come back into town. I can't say I disagree with them! Unfortunately, the week-long stay we had planned never happened. Maybe next year.

Winter fun We just got our first snowfall. We hope to make a small ice rink in the backyard again this year. It's great to watch the kids outside skating from inside a nice warm house.

TIM DEMKO I've had a busy first year here in the Geological Sciences Department at UMD! My first semester (last fall), I taught a Special Topics course in sequence stratigraphy. It seemed to be well received by both graduate and undergraduate students, even though I kept them in class for ten hours one Saturday (doughnuts and pizza provided)! Last spring I taught the part of the last Mineralogy and Petrology II class that would include sedimentary rocks (see below). I also taught Earth History, which was a real blast because I got to cover everything from the origin of the universe to the origin of primates.

I led a field trip to the Grand Canyon and Colorado Plateau associated with the Third International Limnogeology Congress in Tucson, Arziona in April. There were participants from Russia, Ireland, Spain, Denmark, and Israel, as well as the U.S. It was nice to get so much feedback from a very distinguished group on my work on ancient lacustrine deposits out west. I participated as an instructor in the Wasatch-Uinta Field Camp in Park City, Utah last summer and got to refamiliarize myself with the rocks of northern Utah (I did my own undergraduate geology field course with Penn State there many moons ago). My wife, Laura, and son, Noah, came out to Park City to visit and accompanied the field camp on the trek north to the Tetons and Yellowstone National Parks. Although Noah, who was just about two years old at the time, became a little too involved with a fire grate in the campground, we all had a great time (and the stitches were out before we got home). I spent the rest of summer doing fieldwork in Utah and Colorado looking again at Early Mesozoic lacustrine systems. This fall I've been teaching my new course in Sedimentology and Stratigraphy, where the bulk of sedimentary petrology and sedimentology has ended up in the new curriculum. John Swenson and I also co-taught a course in Field Methods of Depositional Environments and Stratal Architecture which consisted almost totally of a ten-day field trip to Utah and Colorado to examine the Mesozoic strata of the Sevier foreland and Paradox basins. We will teach part two of this course series next fall when we offer a similar course involving physical and numerical modeling of depositional systems.

I'm pursuing several ongoing research projects including: 1) investigation of clastic- and carbonate-dominated lacustrine systems in the Triassic and Jurassic of the Colorado Plateau with new graduate student, Joe Beer; 2) sequence stratigraphy of the Tertiary strata of the Gulf Coast with another graduate student, Marsha Meinders Patelke; 3) sedimentology and optically-stimulated luminescence (OSL) dating of Quaternary eolian and glaciolacustrine sediments in northern Minnesota; and 4) developing undergraduate research projects in dinosaur paleoecology.

CHRISTINA GALLUP I have, with Ph.D. student Kristin Riker-Coleman, M.S. student Leah Gruhn, and undergraduates Nicole Hero, Abbey Huddler, and Crystal Gilbertson, been working on the fossil corals we brought back from the sea bottom offshore of Papua, New Guinea in 2001. These corals grew in shallow waters on a subducting plate and are progressively moving down toward the trench. Leah has found that the corals show seasonal changes in their oxygen isotope ratios, similar to seasonal changes in modern corals. Kristin‘s efforts to date the samples have been hampered by extensive alteration of the uranium-series isotopes in the samples that seems to have reset the isotopes and erased any information that could supply an age. Abbey has found that there is more extensive alteration of coralline aragonite to calcite with increasing depth and presumable age. Our group continues to work toward reconstructing the climatic and diagenetic history of these

samples. Nicole and Crystal have made it possible to continue work on Barbados fossil corals as well, with the goal of reconstructing past sea level change.

The new mass spectrometer that was funded in 2001 has just arrived in the Minnesota Isotope Laboratory (on the Twin Cities campus). It is the newest generation of high-resolution instruments, a multi-collector inductively coupled plasma mass spectrometer, which will allow us to measure uranium-series isotopes with both speed and precision. It should be up and running by spring.

JOHN GOODGE It's been a tremendous year of change, but good on all fronts! About this time last year I was still trying to sort out a new system and gain some traction for how to pursue teaching in a new curriculum and looking for new research avenues to explore. Things have settled ~~–in~~" but not ~~–d~~own" – I feel much more a part of the UMD community, but there is a lot I want to tackle.

I have a new aeromagnetic project in Antarctica starting this year, which will take me down to the ice for another field season beginning this December. We'll be doing some geologic mapping and sampling in the Transantarctic Mountains, but most of our work will be to acquire new aeromagnetic and ground-based gravity measurements across the mountain belt and out across the polar plateau. Our main goal is to begin exploring the ice-covered Precambrian shield of Antarctica, much like geophysical methods have been used to characterize the crustal rocks of Minnesota through the veil of glacial drift. We know very little about the ancient shield interior, but with a combination of sub-ice geophysics and extrapolation of exposed geology we hope to provide a more detailed view of the composition and structure of East Antarctica. Beyond basic characterization, we'll be testing ideas that suggest correlation of Antarctica with other continents, including Australia and North America.

I have had several opportunities to get to the field with classes and other field trips. I'm using those experiences to define possible research projects in northern Minnesota's Archean and Proterozoic terrains, both for myself and for students. A new graduate student, Michael Rieser, will be working with me this year in Antarctica, and he is planning to pursue a structural/petrologic problem in the Mojave geologic province of southwestern Laurentia.

JIM GRANT This was the first year of operation at the Bong WWII Heritage Center in Superior, welcoming in the 2003 tourist season with a three-day D-Day festival. It's no surprise that Christabel is still up to her ears in running the Center. Of course, it looks first class and is first class, but it's nice when you build it and people come. They have and they do. It's especially gratifying to see how WWII vets respond to the Center, and volunteer their invaluable help in operating the facility. I'm still very much involved with the Commemorative Tile Wall which looks absolutely superb and is still expanding. The wall now bears some 270 tiles honoring over a thousand relatives and friends who served during WWII on the front line or here at home.

We managed to get away for a week's skiing at Vail this spring, and had a marvelous time with the slopes almost to ourselves while Denver was immobilized with every snowflake that could make it there. Then this summer we did Nova Scotia, which neither of us had visited before. To be highly recommended! Watching hump-back whales up close and personal from a relatively small boat was a thrill. And riding the tidal bore and the standing waves it generates on the Shubenacadie River was anything but boring. The ad quotes a customer as saying, ~~–t~~here's nothing like it to transform adults into kids instantaneously." It's true.

Ian's new shop is doing really well, and he was featured in an article in September's ~~–B~~etter Homes and Gardens" called ~~–P~~assport to Style." So, there is hope for a kid who majors in Art History after all. He's off to Thailand and Sri Lanka this week on another buying spree. Fiona's business is doing well also, and she is still the communications expert for her Mum, who has learned well how to say yes, dear.

I see in last year's letter that I said I expected to have the revised draft of my paper on experimental melting out in early December. I didn't say which year. I decided more probe data were needed, which really improved it. I made it much more user friendly, and it was accepted by the Journal of Metamorphic Geology. I felt as if I'd been pregnant for nine years. Then, at the end of September, I got an invitation to write a review of the isocon method (Grant, 1986) for a special volume of ~~–P~~hysics and Chemistry of the Earth."

It's an ill wind that blows no one any good, and the budget crunch in Minnesota did me some good in the form of a slightly better than expected retirement deal as the University tried to ease some senior citizens off the payroll. So, as of May 21 next year, after forty years with the University of Minnesota, I'll be of a retiring disposition. With the department in great shape and my retirement fund looking less anemic, I think retirement will suit me just fine. With best wishes for the New Year!

JOHN GREEN Starting my fifth year of retirement, I'm wondering how I ever found the time to teach classes! It is a bit strange now not having had any of the current students in a class, and knowing only a few names. But I seem to keep busy in and out of my little office, shared

with Charlie Matsch. One of my useful duties: diagnosing funny rocks that people bring in. No real meteorites so far.

I'm continuing to help out in advising the Minnesota Geological Survey's bedrock mapping work between Two Harbors and the Beaver Bay Complex. Two new maps, primarily by Terry Boerboom (M.S. 1987) and Jim Miller, came out this fall; two more are in the works. Jim and I are closing in on the final stages of producing our new geologic maps of the Duluth area (last version was in 1963 by R. B. Taylor). These projects are finally using data I've accumulated off and on for almost forty years.

My major civic/recreational activity this year has been continuing to help scout out a route for the Superior Hiking Trail through the City of Duluth. We're now in the process of obtaining various levels of approval from the city, since most of it will be on city land. It will be about 38 miles long and will feature many magnificent, panoramic views, old-growth forests, and tumbling streams as well as a few unavoidable blocks of sidewalk. Construction should begin this winter or spring; I hope many of you will be able to enjoy it soon.

In early March, these activities were interrupted by open-heart surgery, with three blocked coronary arteries bypassed. Fortunately, I never had a life-threatening heart attack, and I received excellent surgical and follow-up care here in Duluth, and with my plumbing fixed I'm back active as ever. Just to prove it, at my 50th college reunion at Dartmouth in June, I climbed nearby Mt. Moosilauke in New Hampshire's White Mountains.

Jan, far from retired, has been keeping up her enviro-political activities with volunteer work with the Minnesota Center for Environmental Advocacy, the Minnesota Forest Resources Council, the Izaak Walton League, and the Duluth Audubon Society.

In August, we took our traditional trip to Maine for family visits including our daughters Martha and Sarah and their families.

Finally, for a real change of scenery, Jan and I flew to southwest Brazil in September for nine days of birding and eco-tourism in the Pantanal region. One highlight was finally getting to see a bit of the world-class flood basalt province, the Parana Traps, at the spectacular Iguazu Falls on the Argentine border.

VICKI HANSEN I very much enjoyed my first year with the Department. Time flies! There is still much to do to feel settled, but classes and research are well under way. A freshman seminar on the Solar System and a department class on Terrestrial Planets kept me busy last spring. This fall finds me teaching Earth's Dynamic Interior and my favorite of all time, Structure. The structure class and I ventured to the Upper Peninsula this fall where we met wonderfully deformed crystalline rocks—something I sorely missed during my time in the south.

On the research front, post-doctoral researcher Dr. Duncan Young and M.S. student Kelly McDaniel joined Ph.D. student Nick Lang and me in attempts to understand Venus' mysterious surface processes. We are currently investigating models for the formation of millions of small shields (1-10 km diameter), whose flows appear to have coalesced to form an ultra-thin, mechanically strong surface layer (shield paint') that covers extensive regions of Venus' lowlands. Our best guess at this point is that the layer is composed of *in situ* partial melt formed as a result of extensive shallow crustal melting or differentiation—a kin to the quartz sweating of high-grade gneissic terrain. We are also exploring models for the formation of extremely long (up to 6900 kilometers—the largest channel currently known in the solar system!) narrow (a few kilometers) channels (affectionately called canali'); these channels might cut the shield paint layer with the formation of each providing clues to the other's formation. We are hoping to wrangle John Swenson into bringing some quantitative rigor to our musings. Kelly is investigating circles on Venus, curious to understand how these hundreds of kilometers in diameter, amphitheater-shaped structures, formed. These features are currently lumped together with similarly shaped highs, called coronae, taken as large tectonomagmatic blisters in Venus' crust; but we suspect they might have a bit of their own story to tell. Duncan attempts to wrestle a detailed story of formation from deformation belts. The belts, like much of Venus, present several geological paradoxes, and in strong contrast to early analysis, deformation belts seem to record long, or at least extensive, tectonic histories.

All in all, we continually return to the most basic lessons of geologic mapping (Gilbert, Chamberlain, and others) in order to rein in our own early-formed opinions, and in attempts to bring rigor to our analysis of the incredible, but remote, data sets collected by the NASA Magellan mission.

TOM JOHNSON This has been a great and interesting year in many ways! Daughter Heidi gave birth to our first grandchild in June – Jonas Ryan Bray. Mother, father, and new son are all doing well. And, of course, Jonas is well above average in all metrics known to babyhood. Son Ryan is giving his father (aka, me) heartburn. He decided after years of developing software for military helicopters that he would like to fly one of the blasted things. So, he up and joined the Air National Guard, with promises of flight school and the opportunity to fly chinook helicopters – those big, slow flying dump trucks that make such lovely targets for the ill intentioned. I am, of course, proud of the rascal for his independent ways and

thinking outside of the box. I only wish he had picked another side of the box to think outside of!

The Large Lakes Observatory had two successful faculty searches the past year. We hired Dr. Benjamin Van Mooy, a microbial ecologist from the University of Washington. Ben will add a great new dimension to our capabilities incorporating RNA, DNA and phosphorus isotope analyses into determining which groups of bacteria dominate the nutrient dynamics of lakes and oceans. Ben will join UMD next fall after a year's post-doc at Woods Hole Oceanographic Institution. Our other hire was Dr. Steve Colman, our next director of LLO! (I decided to step down as director after nearly ten years on the job in order to have more time for my research and teaching interests.) Steve is a Quaternary geologist working in the Marine Geology branch of the USGS in Woods Hole. He is ending a distinguished career in the Survey, and has worked on the sedimentology and paleo-climatology of several large lakes, including Michigan, Baikal and Titicaca. Steve was also a program manager at NSF in 1999-2000 and he served as an administrative visiting scientist in the Past Global Changes Project of the International Geosphere-Biosphere Program in Bern, Switzerland in 1994-95. Steve brings tremendous talent in both research and administration to LLO and to the Department of Geological Sciences at UMD. I am delighted to have him replace me in the director's post, and I eagerly look forward to his arrival next July!

My graduate students are all making me proud with their accomplishments. Jim Russell had two papers published this year on his work on Lake Edward – one just out in Geology, describing a very strong ca. 725 year drought cycle in equatorial Africa. Andy Breckenridge continues to unravel the varved sediment record in Lake Superior, having found a way to distinguish between Glacial Lake Agassiz outflow events and meltwater input from the Laurentide ice sheet into Lake Superior. This is an important result because Agassiz outflow through Superior is likely to impact the North Atlantic thermohaline circulation and the climate of the Northern Hemisphere. Andy is about to submit his first paper on this work to the Journal of Paleolimnology. Lindsay Powers and Isla Castañeda are co-advised by Joe Werne (LLO's organic geochemist) and myself, and are applying advanced organic geochemical techniques (biomarkers, organic stable isotope geochemistry) to the analysis of Lake Malawi sediments. Both Lindsay and Isla will accompany me to Malawi to participate in the Malawi drilling project, now most likely to occur in December 2004. My other two grad students, located on the Twin Cities campus, are Amy Myrbo and Chad Wittkop. They are finishing up their Ph.D. research on sediment records from central Minnesota and southern Michigan lakes, respectively.

I attended two meetings overseas during the past year – one on the Greek island of Paros in the Aegean Sea and the other at Lake Qinghai in China. The meeting in Greece was an AGU Chapman Conference on biogenic silica and diatoms in marine sediments. These contribute one of the primary signals I use in the study of African lake sediments, and the similarities between the marine and large lake systems are many. I learned much from my oceanographic colleagues and gave them a little insight into biogenic silica dynamics in tropical lake systems in return. Kate joined me on the trip to Paros and had a great time with friends while I slaved away in the meeting hall. Steve Colman and I both attended the Lake Qinghai Drilling Workshop in Xining, at the edge of the Tibetan Plateau, in mid-October. We were invited to participate by Chinese scientists who are planning a major drilling project on Qinghai in 2005. We had a field trip to the lake, China's largest, which is located on the plateau (about a three hour drive from Xining). Steve is taking a lead role among the Americans participating in the planning for this drilling, so I suspect before long that we will have students from UMD participating in studies there.

My favorite week of the past summer was spent with Kate in our kayaks on Georgian Bay, northern Lake Huron. We put in at Killarney Provincial Park and paddled and camped for several days among the thousands of islands at the north end of the bay. It was spectacular! The water was clear and warm, the little islands of pink, glacial-sculpted granite were beautiful, and it seemed like we had the whole place to ourselves. No bugs! Blueberries galore! Mossy pine forests! It was a great trip.

CHARLIE MATSCH I started the New Year with a trek up the North Shore to Sugarloaf Cove Interpretive Center with John Green, who was an important contributor to its development. The Center is located near Schroeder on a 34-acre site owned by the State of Minnesota. It has guided nature trails, a stunning cobble beach, and great geology.

Spring included a trip to Macalester College where OJ and I joined a group of OAEs (Old Antarctic Explorers) to honor the contributions of Dr. Gerald Webers to Antarctic Geologic Research. His first field season began in 1961 with reconnaissance exploration of the Ellsworth Mountains in West Antarctica. Dick and I joined him on a return visit to the Ellsworths in 1979-80, when he led an international team in a more detailed study. Later in the spring, I was invited to give lectures at St. Norbert's College in DePere, Wisconsin, where I was hosted by Tim Flood and the Geology Club, and to UW Oshkosh, where Tim Paulsen and Tom Suszek were my hosts. Included in my itinerary was a side trip with binoculars and bird guide to

Horicon National Wildlife Refuge. "You should have been here yesterday," said one of the naturalists. "We were visited by a whooping crane." I had to be satisfied with sandhill cranes.

The month of June was spent on the coast of Maine enjoying my "Maine life" -- beachcombing, sailing, hiking, exploring, visiting friends and entertaining visitors. Back to Duluth for the 4th of July and summer activities that included participation in the grand opening of the Moose Lake Agate and Geological Interpretive Center at Moose Lake State Park just off I-35. John Green, OJ, and I were invited to join other authors of books related to Minnesota's geology, and rock and mineral collecting. The Center has spectacular displays of agates and a well-told geologic history of the state. I recommend it highly.

I hope all the best for you and yours in the new year.

HOWARD MOOERS It's been a busy year. Our three-year project with the Minnesota National Guard has now entered a fourth year. We have been working with the Camp Ripley Military Reserve in central Minnesota to develop and implement a comprehensive water management plan. The Camp Ripley environmental staff has taken a proactive stance on environmental protection. Too often military bases are being closed because of extensive groundwater and surface water contamination. The project has involved surface water and groundwater sensitivity studies along with numerical groundwater and surface water flow models to assess the fate of contaminants and the vulnerability of lakes, stream, and groundwater to military training. In addition, we developed a water quality trend analysis program to establish baseline water quality and monitor the impacts of future military training on water quality. This next year will see the implementation of the water management tools we have developed into day-to-day operations at the Camp.

The past year has also been productive for grad students. Lisa Marlow has completed her investigation of the Late Glacial and Early Holocene paleoenvironments of the Glacial Lake Aitkin and Upham basin in north central Minnesota. Her study has led to a couple of significant revisions of the glacial history of Minnesota. Lisa (along with Phil Larson and me) will be leading a field trip to her study area during the May 2004 Institute on Lake Superior Geology meeting in Duluth. In a nutshell, Lisa has established that the extensive dune fields in her study area are related to episodic draining of the lakes and exposure of near shore and offshore sandy lacustrine sequences rather than to mid-Holocene aridity as suggested by some workers.

Phil Larson is nearing completion of his Ph.D. focusing on the pattern of glacial erosion beneath the Laurentide Ice Sheet from Hudson Bay to its southern margin in Minnesota, which I told you about last year. However, Phil is also working on a fascinating little project on Lake Winnibigoshish in northern Minnesota. An ~580 km^2 dune field located southeast of Lake Winnibigoshish (LW) in the Mississippi Headwaters (MH) watershed of Minnesota has previously been dated between 7.9 and 5.0 ^{14}C kyr bp (Grigal and others, 1976). Its occurrence and age are widely cited in support of widespread eolian activity during the mid-Holocene in the north-central US. However, recent work indicates that only a relatively small portion of the dunefield (~8 km^2) was active during the mid-Holocene, arguing for local-scale forcing of the initiation of eolian activity. The formation of dunes adjacent to LW during the mid-Holocene was largely a function of the lake's anomalous hydrologic setting at that time. Their existence is evidence neither in support of nor against widespread eolian activity and dune formation during the mid-Holocene, either elsewhere in the MH region or more generally in the north-central US.

John Quinn, a scientist at Argonne National Lab, also began work toward a Ph.D. John has extensive experience in groundwater flow modeling and geostatistical techniques and is assessing stratigraphic uncertainty at the site scale in glaciated terrains.

Now for the FUN. In March, Donn Branstrator and I took 21 students to San Salvador Island in the Bahamas for our coral reef studies course. We focused on the geologic setting and an assessment of the health of coral reef ecosystems. We stayed at the Gerace Research Station of the College of the Bahamas and worked primarily on a small reef near the station

called Dump Reef. However, we explored the entire island including the caves, blue holes, and the inter-tidal environments. Oh yes, there were some nighttime activities, too.

Also, Phil Larson and I took 13 students to Iceland in May. The course focused on the geology and culture of Iceland. The weather was typical (cool, rainy, windy), the prices were astronomical, and we all had a great time. The picture shown on the left is the group at Krafla which is located in the NE part of Iceland along the crest of the Mid-Atlantic Ridge: half of the group on the North American plate and half on the Eurasian plate.

RON MORTON Penny and I have now been in our north woods home for just over a year. Quite a change from living in the big city of Duluth; most for the better, some for the worst but overall we are really enjoying the space, quiet, and ~~–f~~reedom" of our 10 acres. I spent most of the summer (and fall) building several flower and vegetable gardens including a large wildflower garden in the back of the house. I also ran, wrote, hiked on the miles of trails on the 2000 plus acres of state land across from us, wrote, cooked, and began hiking the Lake Superior hiking trail. Sounds like I'm retired? No - just on sabbatical (I can hear some of you saying ~~–s~~o what's new").

I began hiking the Lake Superior trail in June with a friend and our goal is to go from where it starts (just north of Two Harbors) to the Canadian Border - 205 miles. We managed 140 this summer. What an incredible experience and loads of fun. It was amazing, also, for the few people we saw.

My sabbatical was taken to finish a writing project which has now turned into two. The original idea was (and is) to write a book, for non-scientists, on the Precambrian rocks of the Lake Superior region and integrate into it stories myths, traditions, and knowledge Native Americans had about these rocks. I am two-thirds done and find myself into a side project to write a book, again for non-scientists, on North America through geological time - this in the form of a calendar year with ~~–d~~iary-like entries" for different days. We'll see how that goes.

Our children are fine, well, and happy. Megan is in the fourth year of a five year co-op engineering program at Northeastern. She is currently on a semester co-op and is ~~–w~~orking" in construction (probably for the first and last time). Chris works as a computer scientist for a large company in Minneapolis that runs a huge data base on health and retirement packages and billings for companies like Target, Pepsi, Intel, and so on. Scary to think of our son writing programs that automatically withdraws money from people's accounts. He thinks so, too, and hopes to start grad school next fall.

I am writing this as I head south to Florida. We are about to land in Orlando so I bid you all the best from both Clover Valley and the land of the ~~–s~~now-what's that?" Y'all be good now and eat your grits.

DICK OJAKANGAS I am thoroughly enjoying retirement. Why? Mainly because I don't have to get to UMD early in the day to teach a class. In fact, I don't have to get to my research office at all, but I do appear occasionally. (It is hard to totally change those 38-year-long habits!) Besides, I still have dozens of uncompleted research projects, if I can find the info in my little cramped space.

I was a co-leader of an Institute of Lake Superior Geology field trip near Iron Mountain, Michigan, in May. Next May 2004, the 50th annual meeting will be in Duluth, coinciding with the 50th anniversary of the Department. I'm already working on a Mesabi Range field trip. Will we see you in Duluth?

Much of my time has been spent on the Roadside Geology of Minnesota book. As I should have predicted, the highway checking and the writing are going slower than planned. Minnesota has a lot of major roads to cover! Don't hold your breath while you wait for it.

I spent two weeks in Finland in August-September as part of a four-member foreign team evaluating 28 Finnish geoscience units, including the Geologic Survey, four university geology departments, geoscience-oriented engineering departments at three universities of technology, and a number of Institutes. Interesting, but a humungous task! We are still working on the final evaluation report at this time. I also had time to work with a Finnish colleague in Helsinki on a paper describing a Paleoproterozoic paleosol in Ontario, on what we interpret as glaciofluvial arkoses.

I was pleasantly surprised at being selected as the Department's 2003 nominee for the College of Science and Engineering's Academy of Science (i.e., ~~–H~~all of Fame"). It involved a large banquet, speeches, the presentation of a seminar (~~–I~~cehouse to Greenhouse: Paleoproterozoic Glaciogenic Rocks, Paleosols and Orthoquartzites on the North American and Fennoscandian Cratons"), and I received a plaque. Fun, but humbling.

Peaches was diagnosed with breast cancer in July. She found a lump herself, nine weeks after a ~~–c~~lean" mammogram. Fortunately, it had not spread, and chemotherapy and radiation will presumably take care of any stray cancer cells. The prognosis is excellent, and she is her usual busy and optimistic self, working hard to meet a publisher's deadline on her 25th cookbook, ~~–C~~ooking with Convection".

Miscellaneous: Gave seminars to the Minnesota Geological Society (Minneapolis) on the Sioux Quartzite and on Iron-Formations. Also gave a talk at a Kensington Rune Stone Conference on graywackes, because the KRS inscription is on a glacial slab of greywacke. (Is it a

fake? No, it is really a graywacke!) Besides the First Lutheran Church Choir, I have also enjoyed singing in the Duluth-Superior Symphony Chorus—the Messiah each December, and Carmina Burana this past October. Cheers!

JOHN SWENSON Much in keeping with the previous two years, 2003 has been a blur of research and teaching activities. As usual, my work with the Office of Naval Research required travel to some interesting places, most notably the south of France (Nice in the spring; Aix-en-Provence in the fall), where it was rainy and cold, and Woods Hole Oceanographic Institute on Cape Cod this summer, where it was sunny and warm! In addition, last spring, I co-chaired a special session at the AAPG Annual Convention in Salt Lake City, and I recently returned from the GSA Annual Meeting, where I presented a paper in a special session on clinoforms. As I write this, I am preparing to present for a special session on continental-margin sedimentation at the upcoming AGU Annual Meeting in San Francisco.

The highlight of my teaching experience was co-leading, with Tim Demko, a ten-day field trip to Utah and Colorado, where we studied depositional environments and associated stratal architecture in the field. The combination of a fantastic group of students and Tim‘s vast experience and exceptional skills in the field made this a truly memorable trip for me. I cannot wait to go back!

My great luck with graduate students continues. Jere Mohr has made superb progress in his physical experiments on clinoform dynamics. His experiments have demonstrated some fundamental and counterintuitive behavior that should have a broad impact on stratigraphers. He is currently preparing a manuscript and will present his results next spring at the AAPG Annual Convention in Dallas. In addition, Darrin Albrecht, who I co-advise with Erik Brown, is putting the final touches on his Master‘s degree in Water Resource Science.

NIGEL WATTRUS Once again my summer was spent "bobbing around" on the Great Lakes. In the past year, my research interests have diversified and I‘m now involved in several non-geological projects! In June, I spent a week on Lake Michigan conducting multi-beam sonar surveys of lake trout spawning habitat with researchers from the Great Lakes Water Institute at the University of Wisconsin Milwaukee. This was very productive and we expect to do more of the same next summer. In July, we conducted similar surveys over reefs in the Apostle Islands. This is part of a two-year interdisciplinary study funded by Minnesota Sea Grant to study factors that influence the success/failure of lake floor structures as spawning and nursery habitat for lake trout. The native lake trout population in the Great Lakes crashed after World War II due to overfishing and the introduction of sea lampreys into the Great Lakes. Efforts to re-establish a breeding population in the Great Lakes have been largely unsuccessful. Our study (which includes researchers from a wide variety of disciplines at several institutes and state and federal agencies) seeks to understand what characteristics of a site determine its suitability as a spawning or nursery site.

Our research into the origin of Lake Superior‘s ~~r~~ings” continues. Earlier this year we presented a poster on the evidence for post-depositional remobilization of the lake‘s sediments at the International Limnogeological Congress that was held in Tucson, Arizona. This fall I traveled to Cardiff University in Wales to meet with fellow researchers to review our research and to develop plans for a series of publications to describe our results. We recently received word that our manuscript describing an immature polygonal fault system in the Holocene sediments of western Lake Superior has been accepted for publication by *Geology*.

The Department recently purchased a Geowall, an inexpensive 3D vizualization system built from a pair of computer projectors equipped with polarizing lenses that are driven by a PC. Howard Mooers and I were recently awarded a teaching grant to develop Geowall modules for the Intro Geology labs. We have already developed a module that uses 3D maps of the St. Louis River valley to illustrate how to use topographic maps and how to recognize geomorphic features on them. Other modules that we are planning to develop include tools to project 3D photographs; create 3D renderings of geologic maps; create 3D visualizations of mantle convection; display the 3D distribution of earthquake hypocenters. Ultimately, we hope to set these modules up so that they can be manipulated by the students themselves.

My family continues to flourish. Sally is in the 8th grade at Ordean Middle School. She loves it and is in to everything that 8th grade offers (?) Sam is having fun in 4th grade this fall. He is taking Tae Kwon Do and is now a red belt (his father had better quit bugging him to pick up his room!). My wife, Jane, continues to teach in the Biology department at the College of St. Scholastica, and this year has started to teach courses in their Accelerated Degree Program which is offered at night. I have taken up woodturning as a way to relax in my free time. It‘s great fun and I‘m learning lots of new tricks. I‘m always looking for donations of wood, so if you‘re cutting down a tree, give me a call!

GEORGE "RIP" RAPP RETIRES

Rip displaying one of his many awards.

After 45 years as a professor (27 at UMD), Rip Rapp has ~~"r~~etired", or more accurately, ~~"g~~one off the payroll" of the University of Minnesota. With Rip's departure, the Archaeometry Lab has been phased out and the graduate program in Interdisciplinary Archaeological Studies has disbanded.

Rip received a Ph.D. in geochemistry at Penn State in 1960. His first academic position was at South Dakota School of Mines and Engineering. Although Rip has been at UMD since 1975, many geology grads do not know much about him because he never taught a required undergraduate course. He supervised many M.A., M.S., and Ph.D. theses and dissertations in the archaeological science program, which he co-founded at UMTC and founded at UMD. Rip came to UMD as the first dean of the College of Letters and Science (1975-83), and became the founding dean of the College of Science and Engineering (1983-89). He returned to his research (which he really never left) as Director of the Archaeometry Lab, which he founded in 1976. Rip also taught the popular introductory course "Life and Death of the Dinosaurs", as well as a broad range of graduate courses in the Interdisciplinary Archaeological Studies program at UMD and UMTC. His research focused on Geoarchaeological projects in Greece, Turkey, Cyprus, Israel, Egypt, Tunisia, and most recently, China, as well as Minnesota. Rip also anchored major projects in pollution geochemistry (acid rain and mercury). His numerous books and articles attest to his major contributions to these fields. In recognition of his contributions to the fields of Archaeology and Archaeological Geology, Rip has received the three most prestigious awards granted in his field. (Those of you who are members of the Geological Society of America are aware that GSA's annual award in geoarchaeology (archaeological geology) is called the Rip Rapp award.) In 1995, in recognition of his accomplishments and contributions to the University, the Board of Regents named Rip a Regents' Professor, their highest honor to a faculty member. As a Regents' Professor Emeritus, Rip is able to retain his University office and some additional facilities. He will continue to work for at least five more years on his various publications and in China, where his most active field project remains the major excavation/survey at Anyang, the world's largest Bronze Age site. In perspective, Rip has pursued an outstanding career as a scientist, teacher, and administrator, an energetic and dedicated professional, an inspiration to many.

Rip will live in Duluth, Minnesota each year from mid-May through the end of September, and just north of Tucson, Arizona from October through mid-May. The best way to contact him is by email <grapp@d.umn.edu> or voice mail at (218) 726-7629. In ~~"r~~etirement" Rip hopes to follow the dictum of Lao Tzi [6th century BCE Chinese philosopher and founder of Taoism], "softness, quietude, and non-existence".

INSTITUTE OF LAKE SUPERIOR GEOLOGY

DULUTH, MINNESOTA

May 4 – 9, 2004

Below is a sneak preview of field trips that are being planned for next year's ILSG meeting in Duluth, Minnesota. A flyer will be distributed by ILSG sometime in January 2004 to their members. For those of you who are not members but would be interested in going on a specific field trip(s), you may contact Richard Patelke (rpatelke@nrri.umn.edu) or go to the ILSG website (www.ilsg2004.org) which will be up and running soon.

Proposed Pre-Meeting Field Trips:

1. **Late Wisconsinan Superior-Lobe Deposits in the Superior Basin northeast of Duluth**
   Field Trip Leader: Howard Hobbs (MGS)
   Wednesday, May 5
   School Bus / Limit 40 (100 miles)

2. **Volcanic Stratigraphy, Hydrothermal Alteration, and VMS Potential of the lower Ely Greenstone, Fivemile Lake to Sixmile Lake Area**
   Field Trip Leaders: George Hudak (UW-O), John Heine (NRRI), Mark Jirsa (MGS), Dean Peterson (NRRI)
   Tuesday-Wednesday, May 4-5 (Overnight at Fortune Bay Casino)
   5 Vans/Limit 40 (500 miles)

3. **Geologic Highlights of New Mapping in the Southwestern Sequence of the North Shore Volcanic Group and Beaver Bay Complex**.
   Field Trip Leaders: Terry Boerboom (MGS), Jim Miller (MGS), John Green (UMD)
   Tuesday-Wednesday, May 4-5
   Overnight in Duluth
   School Bus/Limit 40 (350 miles)

4. **Geology of the Mesabi Iron Range, northeastern Minnesota**
   Field Trip Leaders: Richard Ojakangas (UMD), Mark Severson (NRRI)
   Wednesday, May 5
   School Bus/limit 40 (250 miles)

Proposed Post-Meeting Field Trips:

1. **Glacial and Postglacial Landscape Evolution in the Glacial Lake Aitkin and Upham Basin, northern Minnesota**.
   Field Trip Leaders: Howard Mooers, Phil Larson, and Lisa Marlow (UMD)
   Saturday, May 8
   School Bus/Limit 40 (200 miles)

2. **Classic Outcrops of northern Minnesota: The Sources of and Solutions to 50 Years of Geologic Controversy**.
   Field Trip Leaders and contributors: Mark Jirsa, Richard Ojakangas, Jim Miller, John Green, G.B. Morey, Dean Peterson, Mark Severson, Richard Patelke
   Saturday-Sunday, May 8-9
   Overnight in Ely
   School Bus/Limit 40 (500 miles)

3. **Economic Geology of Archean Gold Occurrences in the Vermilion District, northeast of Soudan, Minnesota**
   Field Trip Leaders: Dean Peterson and Richard Patelke (NRRI)
   Saturday, May 8
   4 Vans/Limit 40 (275 miles)

4. **Geology of the Western Contact of the Duluth Complex, Partridge River and South Kawishiwi Intrusions, northeastern Minnesota**
   Field Trip Leaders: Mark Severson (NRRI) and Jim Miller (MGS)
   Saturday, May 8
   School Bus/Limit 40 (250 miles)

A BRIEF HISTORY OF THE DEPARTMENT OF GEOLOGICAL SCIENCES

With commentary by T.B. Holst and R.W. Ojakangas

In 1950, Bob Heller, a paleontologist-stratigrapher with a fresh Ph.D. from the University of Missouri, started the Department. For several years he taught every course on the books, single-handedly—he was probably in the classroom more than 30 hours per week!

Economic geologist, Henry Lepp, out of Canada via the University of Minnesota, was hired in 1954, and the geology major was approved. There were already many —majors" waiting in the wings, for Bob was a great recruiter. For example, after a 10-day field trip to the Badlands and Black Hills, about half of the 20 students came back as —majors", although they didn't realize it at the time. Dick Beckman and Dick Ojakangas were the first two official geology graduates, in June 1955.

In the summer of 1957, the Department was given a third position. Bob and Henry wanted time to search for the right person, and persuaded Dick Ojakangas, just discharged from the U.S.A.F, to be an instructor for the 1957-58 academic year. Imagine how delighted Bob and Henry must have been, being free of physical and historical labs for the first time! The search ended in 1958 with the hiring of John Green from Harvard, and Dick left for graduate studies.

Department's first Master's Oral Exam - Alan Mattis (January 8, 1972) Pictured are: Charlie Matsch, Bob Heller, Don Davidson, Jim Grant, Tom Chamberlin, Alan Mattis, Dick Ojakangas, John Green, Dave Darby

Bob Heller took a leave in 1963 to head the Earth Science Curriculum Project (ESCP) at the University of Colorado. (When the U.S.S.R. launched the first Earth-circling satellite, Sputnik, in 1957, Congress began pouring money into secondary education so that the U.S. could —catch up" to the Soviets.) Chuck Carson, a geomorphologist (Ph.D. Iowa State), was hired as Bob's temporary replacement.

In 1964, Henry Lepp was enticed away to head the geology department at Macalester College, and Dick Ojakangas, now a sedimentologist with a Ph.D. from Stanford University, was hired in the fall of 1964 as his replacement. Don Davidson (—young Don" or DMD), a structural geologist from Columbia University, was hired in 1965 as the Department continued to grow. At the same time, Bob Heller returned as Department Head and, Assistant to the Provost.

To handle the physical and historical geology labs, Lee Warren was an instructor from 1963 to 1969, George Holliday from 1965 to 1969, and Tom Hanson in 1970-1971. This allowed the regular faculty to concentrate on their lectures and research.

Ralph Marsden, Chief Geologist for the Oliver Iron Mining Division of U.S. Steel, was enticed away from Pittsburgh to become Head in 1967 of this now Precambrian-oriented department, as Bob Heller moved up to become Associate Provost full-time under Provost Ray Darland.

In June 1967, the CIC Geology Field Camp (later renamed the Wasatch-Uinta Geology Field Camp) began with joint sponsorship of UMD, UM Twin Cities, UW Madison, Iowa, and Purdue.

In 1968, Dave Darby, a paleontologist-stratigrapher (Ph.D. University of Michigan), was lured out of the jungles of Peru where he was working for Mobil Oil. (Dave later said, "I thought, why should I go to Duluth, a place I have never even seen? But then, they are also hiring me, sight unseen! Let's give it a try.")

In 1969, Jim Grant, a metamorphic petrologist via Scotland, Queen's University in Canada, and Cal Tech, and then teaching at Minnesota Twin Cities, joined the staff. Charlie Matsch, a Quaternary geologist-geomorphologist from Wisconsin via Minnesota Twin Cities, was hired in 1970.

The Department thus stood during the 1970s with seven full-time tenure-track faculty: Ralph, economic; John, igneous petrology, mineralogy, volcanology, environmental geology; Dick, sedimentology of biotite schists, sedimentology-stratigraphy, Precambrian; Don, structural geology, Precambrian; Jim, metamorphic petrology, optical mineralogy, Precambrian; Dave, sediments, paleontology; Charlie, geomorphology, Quaternary geology ("remember, the overburden has a wonderful story to tell, too"). Clearly, a major orientation was Precambrian Geology. Even paleontologist Dave became so oriented, working on stromatolites. And Charlie acknowledged, gratefully, that his Pleistocene deposits were nearly all derived from the Precambrian basement.

Taken at the 20-year class reunion at Lester Park are: Bob Merrit, Sam Alvar, John Green, Gary Truman, Jack Berkley, C. J. Johnson, Dave Witt, and Henry Djerle. These geology graduates are from the class of 1970.

While the rocks don't change much, interpretations and geology department staffs ultimately do. In the fall of 1979, Don Davidson left to head the department at the University of Texas-El Paso and Ralph Marsden retired. Tim Holst, a structural geologist from Minnesota Twin Cities and then at Hope College, was hired as the structural geologist. Ron Morton, from Carleton University in Canada, was hired as the economic geologist. By this time, there were two geologists in higher campus positions—Bob Heller was the Imperial Grand Poohbah (i.e., Chancellor), and Rip Rapp arrived from the Minnesota Twin Cities campus in 1975 as Dean of the College of Letters and Science.

The Department had, for some time, sought to provide a wide range of courses, even outside the major areas of faculty expertise. Charlie added to his knowledge of water systems with a leave to Denver USGS to study groundwater. Jim added geochemistry courses. Ron and Tim team-taught exploration geophysics, and Tim did a couple of versions of geophysics. But many memories remain of departmental discussions and dreams of hiring a full-blown geophysicist, a geochemist, and a groundwater geologist.

Stability in personnel again reigned throughout the 1980s but with a few important changes. Tom Johnson, oceanographer via Scripps and Minnesota Twin Cities, joined the staff in 1981 (with Alworth funds), but was hired away two years later by Duke University. A part-time tenure-track position was added in 1986, filled by Penny Morton. This position was created by Ron moving to 75% time, and the addition of some engineering money from Dean Rapp of the College of Science and Engineering, with the rationale that the Materials Processing engineers would take mineralogy and surveying. Glenn Evavold was hired in a part-time capacity to teach surveying. Another change in the 1980s occurred on September 30, 1988, when the Math-Geology building was renamed Heller Hall in honor of Bob Heller.

The decade of the 1990s began with Rip leaving his deanship to assume an appointment that was officially 1/3 Archaeometry Lab, 1/3 College of Ancient Studies on the University of Minnesota, Twin Cities campus, and 1/3 Geology Department. At the same time, Tim complicated things by leaving for the "dark side", becoming Associate Dean of the College of Science and Engineering. A series of temporary replacements for Tim followed, teaching astronomy as well as structural geology. Paul Umhoeffer was his replacement for two years. Greg

Ojakangas (from NASA via Cal Tech) taught for four years. Greg also taught geophysics, remote sensing, field methods, and physics. In about 1995, Jim Grant added structure to his admirable repertoire, and Susan Hartley was hired to teach astronomy, after having taught it in the Continuing Education program.

Dave Darby took an early retirement in 1992. At the same time, a severe University-wide retrenchment hit. CSE's share was several hundred thousand dollars from a budget that was 87% personnel costs. Half of Dave's position was lost, and Rip's position was retrenched to 90% time.

The Department decided to hire a groundwater person with the remaining half of Dave's paleontology position, funds from the newly funded R.L. Heller Professorship, and funds from Rip Rapp cutting back. Thus, in 1991, Howard Mooers was hired away from the University of Iowa shortly after he completed his studies at the University of Minnesota, Twin Cities. The Heller endowment also provided funds for Glenn Evavold to teach groundwater contaminant classes.

Then there is the LLO (Large Lakes Observatory) chapter in the history of the department. In 1994, Tom Johnson was hired away from Duke University to be the Director. (We must have liked him when he was here in the early 1980s.) In 1995, Nigel Wattrus (Ph.D. University of Minnesota, Twin Cities), a geophysicist, with ExxonMobil Petroleum, and Erik Brown (Ph.D. MIT and Woods Hole Oceanographic Institute), a geochemist working in France, joined the staff. Both are 50% LLO and 50% Geological Sciences Department.

John Green retired in 1999, and the administration said we could not replace him. (They must have known that he IS irreplaceable!) However, the administration agreed that we could make a new hire in advance of the next retirement, which was to be Charlie Matsch in 2001. Instead of one, we were able to hire two; John Swenson (Ph.D. University of Minnesota, Twin Cities), and Christina Gallup (Ph.D. University of Minnesota, Twin Cities), who was at the University of Maryland. John is in experimental sedimentation basin analysis and groundwater. Christina's expertise is in geochronology and geochemistry.

Charlie's Glacial and Quaternary class at Birch Station (1993)

Dick Ojakangas retired in 2002 and was replaced by Tim Demko from ExxonMobil. Tim had graduated some years earlier with a Ph.D. from the University of Arizona. He is a broad sedimentologist, with an emphasis in sequence stratigraphy.

The Department successfully competed for a new position funded by "Freshman Seminar" monies that came from Central Administration. By mortgaging Jim Grant's pending retirement in 2004, we were able to hire a couple away from Southern Methodist University. Vicki Hansen, a graduate of University of California Santa Barbara, is a structural geologist and planetary geologist with an emphasis on Venus. John Goodge, also a University of California Santa Barbara graduate, is a structural geologist and metamorphic petrologist with an emphasis on Antarctica.

In December 2002, the Department faced its fourth retirement in as many years with the retirement of Rip Rapp.

So, in Fall 2003, the Department includes: Jim Grant (the remaining old-timer), Ron Morton, Penny Morton, Tom Johnson, Howard Mooers, Nigel Wattrus, Erik Brown, Christina Gallup, John Swenson, Tim Demko, Vicki Hansen, and John Goodge. Still "hanging around" are John Green, Charlie Matsch, and Dick Ojakangas, in addition to Rip Rapp when he returns to Minnesota.

WE HOPE TO SEE YOU DURING

OUR CELEBRATION OF 50 GREAT YEARS!

GEOLOGY CLUB

This year the Geology Club held several events for our members, including fiesta-style potlucks, the new tradition of —bowling nights", lunch-time BBQs, and fun-filled game nights. Here are a few other activities that took place throughout the year. The year began with our annual trip to Camp Du Nord. Unlike the past few years, the weekend was filled with snow making for some great snowshoeing. In March, club members and officers worked feverishly to collect donations from local businesses (including Granite Gear, Duluth Pack, The Brewhouse, and Electric Fetus, to name a few) for a fundraiser. By donating a dollar to the Club, lucky folks had their name drawn from a large mixing bowl (no hats were available at the time). Dick Ojakangas was the lucky recipient of a disco ball. When asked what he was going to do with it he replied, —Either give it to my grandkids or hang it in the sauna". Last we heard he gave it to the grandkids, but none of us have been in his sauna to find out for sure! Once again, the annual Spring Banquet went off without a hitch. Lafayette Square on Park Point was packed with crazy geologists for one fun-filled night in April. (For several students, the real fun started when it was time to —clean-up".) Many of us finally took our turn out at Field Camp, while others ventured to the far reaches of the state in pursuit of the perfect summer job. This year we have many new members, and we hope they will remain active and interested for the rest of their collegiate career. There was a good turn out for the annual Club sponsored fall picnic in September. The weather was chilly, but good company kept us warm. In early October, ninety 8th graders invaded the Department for National Earth Science Week. With the help of some great grad students and faculty we were able to keep them entertained for several hours and teach them something about geology, too. Fall means highway clean-up time! Our new stretch to clean is where Highway 2 and Midway Road intersect. Although it's not something to brag about, this year we beat our old record and picked up 14 bags of trash. The tradition of —bowling night" lives on! We changed venues and had our first competition in late October. All who participated agreed it went well. What's in store for the Club next year is yet to be determined, but it will undoubtedly be filled with more crazy adventures, great opportunities to help the community, and valuable time spent with good friends.

Sue Hattenberger

FIELD CAMP 2002

Here's a happy group from UMD at field camp 2003!

Field Camp 2003 was not just another year at the Chateau Aprés. Although the schools were the same, including Michigan State, Illinois, Wisconsin, Iowa, and UMD, the enjoyment was second to none. As the schools melded into one, complaining and appreciating most things as a group, we quickly realized how much fun was to be had.

The faculty included Andrew Wulff at the helm, Penny Morton as the ever cautious safety director, Tim Demko as the genius sedimentologist, Kurt Burmeister as the structure know-it-all, and Brian Hartman as the only young guy allowed to sit in the faculty hot tub. Tim Flood, Phil Brown, and Tom Vogel also dropped some knowledge on us for the last few weeks.

The saying we all heard more than a few times was, —more people get hurt out of the field than in the field". This proved to be false during our first week, as one young geologist had to be taken out by a helicopter. (Note: no one ever got hurt out of the field.) We also experienced weather that most camps in the past did not go through. Not only was it very rainy and cold at the beginning of camp, but we also got a mid-week day off due to snow.

The highlight for most of us was the 4th of July weekend in the Grand Tetons. Mixed with beverages, great campfire stories, and a little guitar, it proved to be the weekend we all needed. All in all, it was an educational experience that could not have been received in the classroom. *Eric Scheidel and Kathy Hafertepe*

ALUMNI NEWS

Visit our web site – www.d.umn.edu/geology

We want to improve communication with you! In addition to the newsletter, we're trying to make the Department's web site a more interactive way of communicating between alumns and the Department. If you haven't already, please take the opportunity to visit our web site – www.d.umn.edu/geology -- and give us feedback. We strive to keep it as current as possible, but let us know if you find anything lacking or in need of update. We also want to make the Alumni section as useful to you as possible. Please send us ideas for how to make this a better resource for you. *We'd also like to take this opportunity to thank Dave Ojard, a geology minor and computer science major, at UMD, who created the layout and design of everything you see on our web pages. Dave spent many hours fine tuning the site and his efforts are greatly appreciated. Dave graduated this past spring and we wish him the best of luck in his future endeavors.*

Keep the news coming! We look forward to hearing from you.
Our email address is: geol@d.umn.edu

Bangsund, William, BS 80, continues to work at Barr Engineering in Minneapolis. For the past few years, Bill's been the geologist for foundation design in connection with wind turbines. Bill still visits Duluth while passing thru town. His address is 10910 Goodrich Avenue S, Bloomington, MN 55437

Bertsch, Ben, (Senior Scientist) is working for Computer Sciences Corporation as a GIS Project Lead. In August 2003, Ben and his wife, Jenn, welcomed their first child, Anastasia. Their address is 2424 Greysolon Road, Duluth, MN 55812

Boerst, Kevin, BS 99 (MS University of Witswatersrand), received his Master's degree from the University of Witswatersrand in South Africa in 2002. After spending the past year working in sub-Saharan Africa with a couple of exploration companies, Kevin is back in the states. His address is N2034 Old 47 Road, Bonduel, WI 54107

Borrell, Joshua, BS 98, is in Iraq with the 4th Infantry Division somewhere in the Sunni triangle. We wish Josh a safe return.

Christopherson (Borek), Mary, BS 97, after working in hydro and as an environmental consultant, Mary wanted to be part of the geological education of our youth and received her teaching license in general science and Earth/space science. Her address is 38240 Casselberry Drive, North Branch, MN 55056

DeLong, Stephen, BS 97, is working on a PhD in geosciences at the University of Arizona. His address is 322 E. Adams Street, Tucson, AZ 85705

Duly, Susannah, BS 95 (MS University of Michigan), is working at Blafland, Bouck, an environmental consulting firm in Ann Arbor, Michigan. Her address is 215 West Main Street, Stockbridge, MI 49285

Erickson, Mark, BS 98, is on the Board of Directors at the Paul Bunyan Nature Learning Center in Brainerd, Minnesota. He is working on an interactive educational display of Minnesota's geology for elementary age school children, teachers, and parents. His address is 4812 Bon Arbor Lane, Brainerd, MN 56401

Flaada, Brandon, BS 97, after working in the Twin Cities for DPRA as a hydrogeologist, has moved back to Duluth where he continues to work for DPRA. Brandon and his wife, Meggan, will have had their first child by the time you read this newsletter. Their address is 4266 Birch Valley Road, Hermantown, MN 55811

Flannery, Joe, MS 90, is head of the GIS group at Natural Resource Group, Inc. in the Twin Cities. NRG, Inc. does environmental permitting for oil and natural gas pipelines around the country. His address is 7139 Columbus Avenue S, Richfield, MN 55423

Granley (Zapp), Melinda, BS 98, is working on her Master's in WRS as well as working as a research specialist at Lake Superior Research Institute (UW-Superior). In 2001, Melinda married Jered Granley, a UMD accounting graduate. Their address is 5312 Oneida Street, Duluth, MN 55804

Grygo, Andrea, has moved to Maine and is working on her Master's degree at the University of Maine. Her address is 55 Davis Street, Apartment 5, Old Town, ME 04468

Haas, Chris, BS 84, is a Senior Program Manager at The Retec Group. His address is 3362 Pioneer Place, Stillwater, MN 55082

Hamilton (Stubbs), Jacqueline, BS 91, will finish up her Master's next fall at the University of Minnesota, Twin Cities. Her address is 1130 Delaware Avenue, St. Paul, MN 55118

Heinzel, Chad, MS 99 (PhD Northern Illinois University) and **Linda Reichle-Heinzel**, BA 97, have moved to North Dakota where Chad is a professor in the Geosciences Department at Minot State University. Their new address is 100 University Avenue West, Minot, ND 58703

Huber, Jim, MS 87 (PhD University of Minnesota Duluth) has started his own consulting business as a palynologist/archaeological geologist. He has been busy with projects in Minnesota, Kentucky and Illinois as well as giving talks to local groups. His three girls are also keeping him busy with dance, plays and scouting. His address is 2573 58th Street, Vinton, IA 52349

Huff, Melinda, BA 02, has been busy working on her Master's degree in WRS at UMD. Melinda and Jason had a baby boy, Jonah, on November 8, 2003. Their address is 49 East 4th Street #3, Superior, WI 54880

Idris, Mohd Kamil, BS 86, sent warm wishes to the Department last Christmas. He works for Hei Tech Padu Berhad and continues to live in Malaysia. His email address is mohdkamilidris@hotmail.com

Jahn, William, BS 99, has been elected as Secretary/Treasurer of Mesabi Range Geological Society for 2003/04. Bill's address is 4172 Kingston Road, Duluth, MN 55803

Johnson, Leif, BS 00 (MS South Dakota School of Mines), received his Master's in 2003. His address is 1623 8th Avenue, Two Harbors, MN 55616

Johnston, Carol (Adjunct Professor) and **Boris Shmagin** have moved to Brookings, South Dakota where Carol is a professor in the Department of Biology and Microbiology and Director, South Dakota Center for Biocomplexity Studies, EPSCOR at South Dakota State University. Boris is a research associate with the Water Resources Institute. Their address is 1624 Overlook Ridge Road, Brookings, SD 57006

Knickerbocker (Blakesley), Vicki, is employed at the University of Minnesota in the Center for Holocaust and Genocide Studies as an outreach coordinator. Vicki is also pursuing a doctorate degree in educational leadership at St. Mary's University. Her address is 801 5th Avenue NE, Brainerd, MN 56401

Lachance, Eric, is working for Inco in Sudbury, Ontario. Eric and Patricia were married in May 2003 and are expecting their first child. Their address is 1118 Arthur Street, Sudbury, Ontario, P3A 3C4 CANADA

Larson, Phil, BS 93 (MS Dartmouth), is teaching geology courses as a sabbatical replacement for the 2003/04 school year at Mankato State University, and he is nearing completion of a PhD at UMD. His address is 1915 West Kent Road, Duluth, MN 55812

Leveinen, Jussi, MS 94, is a Senior Geologist with the Geological Survey of Finland and has been appointed as a reader, i.e. a docent, of hydrogeology at the University of Helsinki. His email address is jussi.leveinen@gsf.fi

MacDonald, Mike, BS 86, was headed to Mali for two years with the Peace Corps when we last heard from him in December 2002. His address is 5303 Sherman Street #94, Wausaw, WI 54401

Maki, Scott, BS 80, works at the Hiawatha National Forest in Michigan as a GIS Coordinator. His address is 5411 Chaison Road, Gladstone, MI 49837

McMaster, Steve, BA 94, is employed with the Nebraska Department of Natural Resources as a water resources planner. Steve and Andrea were married in April 2002. Their address is 2634 C Street, Lincoln, NE

Munson, Jenna, BS 00, is in her third year of a PhD program at Scripps Institution of Oceanography in San Diego. She spent two months in Africa this past spring in connection with her thesis. Jenna's address is 9355 Discovery Way, Apartment J, LaJolla, CA 92037

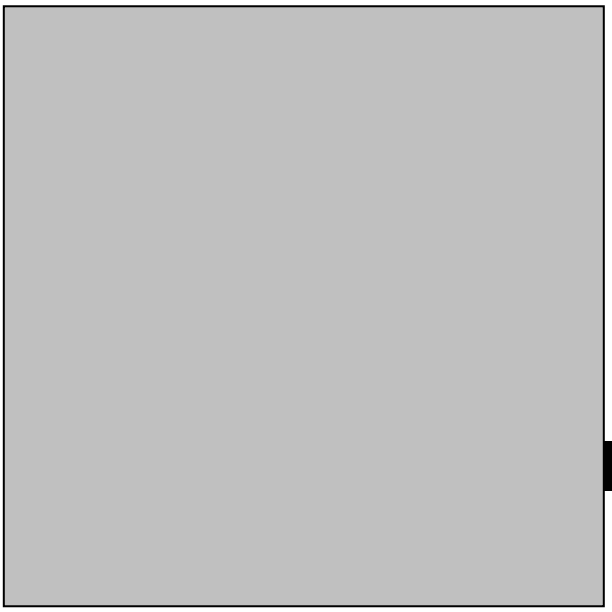
Nebel, Mark, MS 83, has taken a position as a GIS Program Manager with the United States Forest Service in Susanville, California. Mark, his wife, Amy, and their two children, Roxie and Parker, left the Wisconsin north woods for the confluence of the basin and range, Sierra Nevada, and Cascade Mountains in northeastern California. Their address is 462-800 Christie Street, Janesville, CA 96114

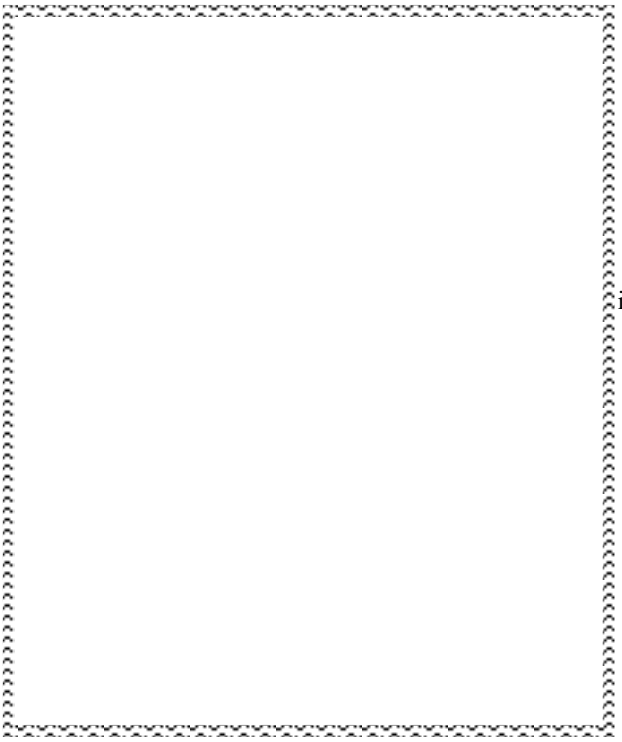
Nerison, Jared, BA 99, works for Pinnacle Engineering, Inc. as an environmental geologist. His address is 561 1st Avenue, Wanamingo, MN 55983

Nocton, Scott, BA 89, after 13 years as a hydrogeologist in private consulting, is now employed with the Minnesota Department of Health as the district hydrogeologist for the northwest region. Scott and his wife, Chris, have three daughters: Jordan, Paige and Isabelle. Their address is 20484 Lord Road, Merrifield, MN 56465

Peterson (Metzen), Elizabeth, BS 85, has moved back to Duluth with her family. She hopes to make it to Thursday seminars! Their address is 331 Kenilworth Avenue, Duluth, MN 55803

Pieper, Rod, BS 03, and his wife, Kimberly, welcomed a baby girl, Montana, in July 2003. The Pieper's address is 831 East 4th Street #410, Duluth, MN 55805





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Scholarships and Awards

The *Outstanding Graduate Teaching Assistant Award* was presented to **Lisa Marlow** in the amount of $200 for the 2002-03 academic year.

The *Hugh Roberts Scholarship* is an award given to the outstanding junior geology major, determined by scholarship. This award is given in memory of Hugh Roberts who was an internationally known consulting geologist from Duluth. **Jennifer Frikken** and **Matthew Riederer**.

The *Robert C. Bright Field Camp Scholarship* is given in memory of Robert C. Bright, who was a paleontologist in the Department of Ecology on the Twin Cities Campus. Professor Bright was instrumental in establishing the Wasatch-Uinta Field Camp in 1967 and was its first director, a position he retained until 1972. The 2003 recipient of this $500 scholarship is **Jill Flater**.

The *SME Tools-Of-The-Trade Award* is given to outstanding sophomores on the basis of promise in the Mineralogy/Petrology sequence and Geomorphology. Awards are given to students in the form of $200 worth of geological field gear. **Joshua Dark, Jennifer Frikken, Abbey Hudler,** and **Matthew Riederer** were presented this award at the 2003 SME Minnesota Section Mining Symposium luncheon, which was held in the spring.

The *Roderick Syck Field Camp Scholarship,* established by his family in his memory, is awarded to the UMD student with the highest achievement at field camp each summer. **Lucas Stolp** was awarded $500 for his efforts at Wasatch-Uinta Field Camp in 2003.

The *Robert L. Heller Field Camp Scholarship* is in memory of Robert L. Heller, who founded the Geology Department and became Chancellor of UMD. Four scholarships were awarded to UMD geology majors attending field camp, on the basis of scholarship and need. The 2003 recipients were **Mason Disrude, Jill Flater, Matt Haacker, and Luke Johnson.**

The *Lempi M. & John W. Pagnucco Scholarship*, established by Lempi (Erickson) Pagnucco to support field camp expenses for UMD students, awarded scholarships to **Mason Disrude, Stephanie Goshey, Sue Hattenberger** and **Ryan Smith**.

The *"Rip" Rapp Field Camp Scholarship* awarded four $500 scholarships to **Aaron Fritz, Dan Phelps, Reid Rechel** and **Lucas Stolp**.

The *Charlie Matsch Field Camp Fund* awarded three $500 scholarships to **Christopher Braaten, Kathy Hafertepe** and **Eric Scheidel**.

2003 GRADUATES

BA	BS	BS	MS
Scott Bohling	Lindi Carlson	Nathan Coller	Ryan Gabel
Christopher Braaten	Zachary Erickson	Mason Disrude	Matthew Giambrone

Zachary Gonsior
Michael Loch
Rodney Pieper
Lucas Stolp
Kimberly Neilson

Additional Recognition

Richard Ojakangas was recognized as an outstanding alumnus at the Second Annual Academy of Science and Engineering Dinner and Award Ceremony held at UMD on September 26, 2003. The Academy of Science and Engineering was established to give public recognition to distinguished alumni and special friends of the College of Science and Engineering, who have brought distinction to themselves through their participation, commitment, and leadership in their chosen profession.

Erik Brown received the Chancellor's Award for Distinguished Research in Spring 2003.

Matthew Riederer received an Enbridge Scholarship in the amount of $1,000. The recipients of this award must be in their junior or senior year and are selected on academic achievement and undergraduate research.

Jennifer Frikken received a Differt Scholarship in the amount of $2,000. The recipients of this award must be majoring in the areas of mathematics and the sciences with high scholastic merit and potential.

Kristin Riker-Coleman was recognized at the 2003 Geology Banquet for going above and beyond traditional TA duties. She received a gift certificate at one of the finer restaurants in Duluth (along with some babysitter funds) for a well-deserved evening out.

Lucas Stolp was selected to receive a rock hammer donated by Estwing for his exceptional performance in Geologic Field Methods.

The Department of Geological Sciences and Large Lakes Observatory made nine presentations at this year's Geological Society of America annual meeting which was held in Seattle, Washington. They were:

1. Graduate student **Greg Joslin** and Adjunct Assistant Professor **Jim Miller** presenting "Stratiform Pd-Pt-Au Mineralization in the Sonju Lake Intrusion, Minnesota".
2. Assistant Professor **John Swenson** presenting "Clinoform Response to Sea Level: Phase Relations between Shoreline and Rollover, Development of Compound Clinoforms, and the Timing of Margin Progradation".
3. Associate Professor **Erik Brown** and Professor **Tom Johnson** presenting "The Lake Malawi Climate Record: Links to South America".
4. Professor **Tom Johnson** and graduate student **Lindsay Powers** (Large Lakes Observatory) presenting "Changes in Inferred Primary Productivity from Recent Sediments from Lake Malawi, East Africa".
5. Assistant Professor **Tim Demko** presenting "Sequence Stratigraphy of a Fluvial-Lacustrine Succession in the Triassic Lower Chinle Formation, Central Utah, U.S.A.
6. Associate Professor **John Goodge** presenting "Plate-Margin Reactivation of Ancient Cratonic Shields".
7. Professor **Vicki Hansen** presenting "In Situ Partial Melting and Crustal Differentiation on Venus: Evidence of Global Scale Metamorphism?"
8. Associate Professor **Howard Mooers** and graduate student **Phil Larson** presenting "Holocene Drainage Evolution of the Mississippi Headwaters, Minnesota: Implications for Mid-Holocene Eolian Activity in the North American Midcontinent".

9. Undergraduate students **Erik Gulbranson** and **Owen Anfinson** presented a poster ―Non-Marine to Marginal-Marine Transgressive Sequence of the Cretaceous Dakota Formation in Northeast Utah".