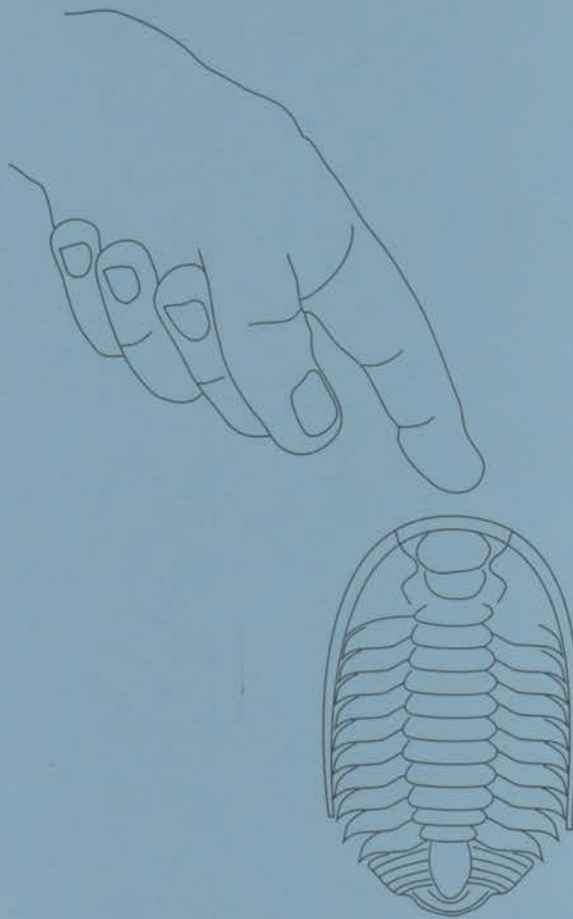


Carleton Geology Newsletter

Volume XXVII

2002

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Published By
The Department of Geology
Carleton College
Northfield, MN 55057

The cover design is from this year's Geology T-shirt. The Latin saying means "This is my favorite animal."

The Carleton Geology Newsletter is edited by Timothy Vick

If you have a change of address or other correction to our address list please notify:

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E-mail: addresses@carleton.edu

Department of Geology
Carleton College
Northfield, Minnesota 55057

July 8, 2002

Dear Friends,

Greetings from the land of cows, colleges, and contentment! It has been a busy, exciting year here, and the geology department is still going strong. We graduated 22 wonderful seniors this year and as always, we are delighted and amazed to see how much they've grown and accomplished during their time here — it is such a pleasure to be surrounded by these students. I encourage you to read the titles of their comps projects; you'll see that they have done some impressive things. We had students doing field work in Italy, the Phillipines, Colorado, and even Northfield!

This has been a year of important transitions for us, with the retirement of Ed Buchwald, and the appointment of Shelby Boardman as the next Dean of the College. In addition, we've hired two new people — Cam Davidson and Jenn Macalady — who will begin this fall.

Ed Buchwald retired this year after an amazing career spanning 35 years. We had receptions at the GSA meeting in Boston last fall and another during reunion weekend two weeks ago. Ed has, as many of you are well aware, been an exceptionally effective teacher, mentor, and leader of generations of Carleton geology students and teachers. Ed became the chair of the department two years after arriving and he has taught just about every course we've offered, which helps explain the amazing breadth of his knowledge of geology. He has led the department through the hiring of Shelby, Mary, Clint, Bereket, and myself. He was instrumental in the design of the geology lab spaces in Mudd, displaying a keen understanding of the effect of architecture on human interactions. Ed has spent the equivalent of an entire year on geology field trips, and as a result, he elevated the art of camping to a sublime level. Ed's professional life was devoted to local and regional environmental issues as well as improving science education in general and environmental education in particular. Ed has added his wisdom and thinking on this topic working with the National Academy of Sciences, the National Research Council, the American Geophysical Union, the Geological Society of America, the Minnesota Dept. of Education, the Minnesota Environmental Education Advisory Board, and a vast array of other organizations — he is clearly recognized as a national leader in this important work aimed at improving the quality of education throughout the entire educational system.

Shelby also takes leave of the department next year, to become the next Dean of the College. Shelby will help smooth the leadership transition as Steve Lewis steps down and Robert Oden assume the role of president. Shelby was widely perceived throughout the entire campus as the obvious choice for the Dean's position, and we're very proud of him, while at the same time we will feel his absence from the department.

With the departure of Ed and Shelby, we lose two of the stalwarts of the department — people who played central roles in building what is probably the finest undergraduate geology program in the country. At the same time, their departure means the arrival of new people, and we are excited about the prospects presented by our two newcomers.

Cam Davidson comes to us from Beloit College and will be teaching Petrology and Mineralogy (alternating with Bereket), Structural Geology, Intro, and various advanced classes. Many of us have come to know and admire Cam through Keck projects, and we could hardly be more pleased to have him join our department. Cam got his Ph.D. from Princeton and did a post-doc in Switzerland; much of his current research is focused on the petrology, structure, and tectonics of British Columbia and Alaska (where he is at this moment with two Carleton students).

The other new faculty member is Jenn Macalady ('91), a geomicrobiologist who joins us on the heels of post-docs in Berkeley and Madison, having received her Ph.D. from UC Davis. Jenn will teach a new class in Geomicrobiology and the Soils class. Her research covers an amazing range of disciplines and centers on the role of microbes in geological environments, using tools of geochemistry and molecular biology. She will be setting up a new lab in the basement, growing and studying all manner of microbes. Jenn is also my wife, and her arrival here is a source of great happiness for me.

Having spent considerable space on the personnel changes, let me just briefly mention a few things about the rest of the department. Mary has just been named to succeed Ed as the Lloyd McBride endowed professorship in environmental studies. Bereket just successfully completed his third year review and bought a house in town. Clint returned in the spring after a year's sabbatical during which he traveled the Australia several times and worked on several papers that will soon be published; he also got a cute dog named George, who has quickly become the darling of the department. We were also very pleased to have had Bill Dinklage ('89) spend the year with us, teaching Intro, Structures, and Petrology, filling in for various of the faculty on leaves. I spent the fall in Italy with another group of 24 geo majors and had a fabulous time; still working on the house as time and weather permit. Tim Vick and Betty Bray continue to be wonderfully adept at running the department and keeping everyone happy.

As always, thanks to all of you who provide help and support to our students during the course of the year — the network of geology alumni is really important to us.

Best Wishes,

Dave Bice

DEPARTMENTAL NEWS

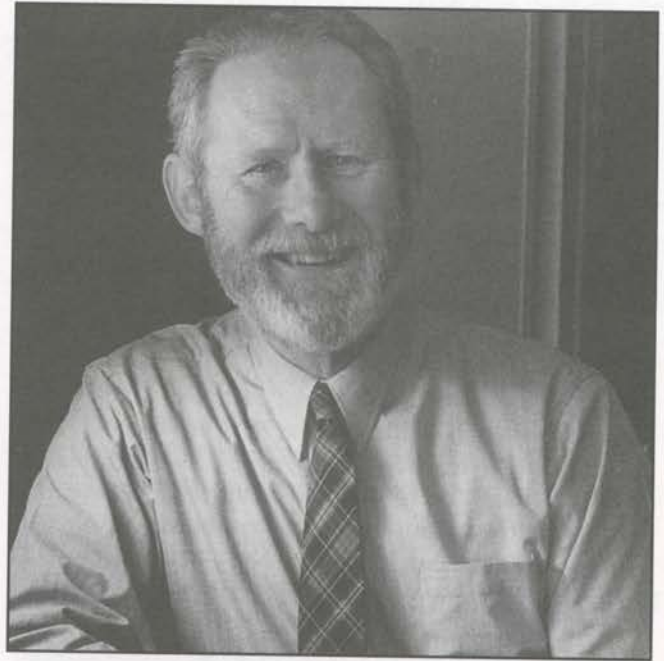
Ed Buchwald Retires After 35 Years In The Geology Department

This summer marks the official retirement date for Ed Buchwald, who for years was our senior faculty member and mentor. Ed has actually been easing into retirement with a "phased retirement" plan, so he has been working half time for the past three years.

After earning his B.S. in geology at Union College in Schenectady, N.Y., Ed completed his master's degree at Syracuse University with a thesis entitled "Sedimentary structures of the Fiddler's Green Dolomite (Upper Silurian, central New York)." His Ph.D. thesis, which earned honors at the University of Kansas, was entitled "Types and distributions of sandstones in the Belly River and Edmonton formations (uppermost Cretaceous) of the North Saskatchewan River area, west-central Alberta, Canada." Ed also was a postdoctoral teaching fellow at McMaster University in Hamilton, Ontario for a year before joining our department at Carleton in 1967.

Below is a graph showing our history of class sizes. The classes of 1934 through 1971 averaged 5.0 geology majors per year, while the classes of 1972 through 2002 averaged 21.0 majors per year. The graph excludes many students who weren't geology majors but spent a lot of time in our department or participated in allied programs such as Environment And Technology Studies.

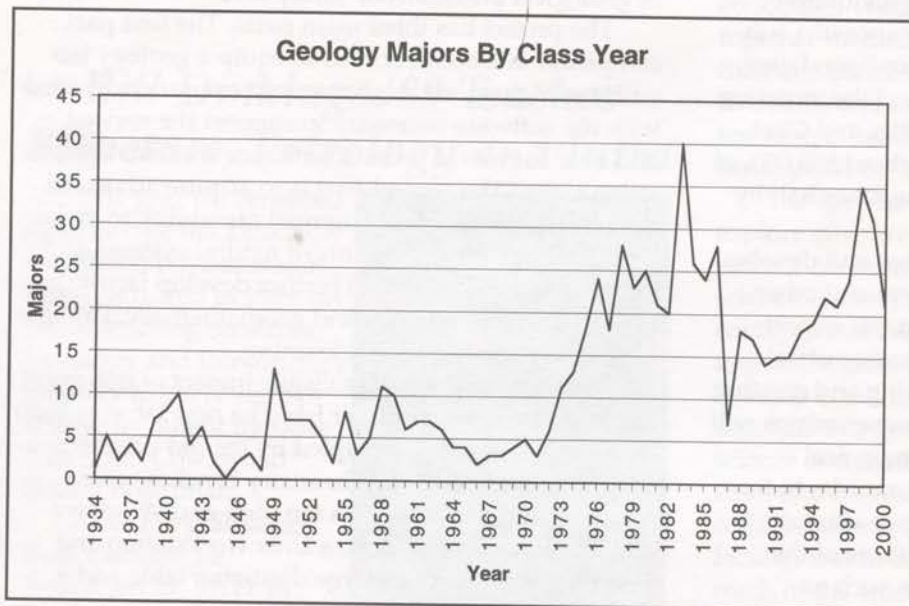
Obviously, we crossed a threshold sometime around 1970. During the 1970's and following years a number of factors influenced our ability to attract and retain students in the Geology Department. There was an explosion in student interest in environmental



issues during the 1970's and the department faculty instituted many new curricular features, such as the freshman seminar "Geology In The Field." Our department has benefited from wonderful institutional support and a fine pool of motivated, smart students. Our team spirit, physical facilities, support staff, and teaching colleagues contributed and made the whole thing work.

But whatever other factors also contributed, a great deal of credit goes to Ed and his faculty colleagues for building our department into the proud one it is today. Our record of producing very capable graduates who go on to significant accomplishments after college (and not just in geology!) is the envy of most other undergraduate geology departments.

Many people enjoyed being able to greet Ed and wish him well in person at receptions held in his honor at the Geological Society of America meeting in Boston last fall and alumni reunion here on campus in June. Here is Ed's "sign-off" message to all of us:



Dear Alumni,

Thank you all so much for the wonderful sentiments at the several receptions celebrating my retirement from Carleton. I am also enjoying the book of memories that Betty Bray has put together for me. It includes messages from many of you about your time with me during your undergraduate years.

Carleton was a wonderful place to spend a lifetime teaching geology and environmental studies. I cannot imagine a better group of colleagues, students, and administrators. It all contributed immensely to the enjoyment of my career and my sense of accomplishment. I am confident that the geology program will continue to be the exceptional education experiment that it has become.

Cynn timer and I are looking forward to making up our own calendar of events from now on. In the immediate future is some volunteer work at Agate Fossil Beds National Monument and with the Maltby Nature Preserve here in Minnesota. Our children live in Boston, New Orleans, and Salt Spring Island, British Columbia, so we have lots of great places to visit! I hope to see many of you at Carleton Alumni Weekends. Thanks for all the memories.

Sincerely,
Ed Buchwald

Quantitative Skills Project Is A New Initiative

The Geology Department has initiated a new program to promote development of quantitative skills in our curriculum with the assistance of a substantial grant from the National Science Foundation. Principal investigators on the grant, and the initiators of the thrust, are Mary Savina, Dave Bice and Clint Cowan. The budget for the project is about \$55,000, of which half is provided by NSF and the other half by Carleton.

The goal of the project is to enhance and develop the quantitative skills of geology majors and other Carleton students who take courses in our department. The plan calls for integrating mathematical methods into our curriculum by revising and creating four mid- and upper-level geology courses which will focus on mathematical modeling of geological phenomena. The plan also will encourage including more quantitative elements in other core courses required for the geology major. The effects of the project will migrate into other courses such as

Introductory Geology as teachers and lab assistants who have had the new courses integrate their new knowledge into the less specialized courses.

One of the two new courses being offered has already been taught. A course entitled "Oceans And Atmospheres" which focused on digital modeling of major earth processes debuted last year, taught by Dave Bice. Another new course called "Modeling in the Geosciences" will be derived from an earlier course in chaos theory in geology, and will be taught by Clint Cowan. Courses which are being substantially revamped to integrate more digital processing will include Hydrology and GIS/Remote Sensing.

Already we have seen an effect from the pedagogical shift in the number of senior comprehensive projects involving mathematical modeling. No less than six (a third) of this year's seniors are using techniques such as spectral analysis and fast Fourier transform as building blocks of their projects, employing skills learned in Dave Bice's Oceans And Atmospheres course.

According to lead project author Mary Savina, "We developed this project in response to evidence that too many geology students struggle with mathematics courses and our concern that geology faculty are not well equipped to reinforce and extend geological applications of mathematics in geology classes and to support students doing mathematically sophisticated research in geology."

"Carleton's geology program has historic strengths in its field and laboratory components, which in most cases are 'problem-based' explorations of real geological phenomena. This project will balance the field and lab components of the curriculum with a similarly intentional, problem-based quantitative component based on mathematical modeling of geological phenomena," Mary said.

The project has three main parts. The first part, completed in December, was to equip a geology lab with ten high-speed, high-memory computers, loaded with the software necessary to support the revised and new courses in order to enhance students' quantitative skills. The second part is to acquire advanced field instrumentation to augment our ability to make links between measurements of natural systems and models, and the third is to further develop faculty expertise in mathematics and geomathematical applications to support student learning.

The most immediately visible impact of this grant has been the new computer lab. The new lab was built in the space formerly occupied by the old geochemistry lab. The hoods and chemistry benches were removed and replaced with ten high-end Windows and Macintosh computers, a Unix workstation and peripherals including a large digitizing table and a

scanner. New furniture and carpeting completed the lab and it quickly became the hub of student work activity in the department. It has turned into a very attractive and comfortable workspace that everyone likes.

The field equipment being purchased includes a spectroradiometer, used for measuring light radiation at ground level to calibrate satellite data we obtain from the government, and electronic soil probes.

Math work isn't what it used to be. To a casual observer touring our labs it's easy to miss the people doing the mathematical modeling. Looking for huddles of pasty-skinned nerds punching calculators and filling yellow pads with elaborate equations of function signs and Greek letters leads nowhere. Instead, the people to notice are the ones using computers to create colorful maps of multiple geologic and cultural attributes over various types of space, or possibly the folks puzzling over computer screens showing complicated flows coursing through different natural realms. There is plenty of mathematical computation going on, but the dirty work has been assigned to the computer and the people are focussing on geological concepts. The name of the game here is articulation of natural relationships and creation of graphical descriptions of attributes, processes, and distributions.

The evolution of digital modeling techniques from being expensive, difficult technologies into ones that are practical and accessible for undergraduates is one of the most profound shifts in geologic education since the advent of plate tectonics. Mathematical modeling and digital technology are giving us wonderful new tools for analyzing our world, and at the same time they have infused a new excitement into our teaching and our department. Wahoo - Here we go!

Bill Dinklage '89 Teaches Structure, Petrology and Intro

This year we benefited from having Bill Dinklage, a Carleton physics major who graduated in 1989, on board teaching Structure, Petrology and Introductory Geology to cover courses ordinarily taught by Dave Bice, Clint Cowan and Shelby Boardman.

After Bill graduated from Carleton he completed his Ph.D. in



Geology at the University of California, Santa Barbara. Bill's dissertation was entitled "Extension of a convergent orogen: Structural evolution of the high-pressure/low-temperature Schist Belt, Brooks Range, Alaska."

Along the way Bill has also taught geology on the faculties of Wittenberg University, Ohio, and Moorpark College, Allan Hancock College, and UC-Santa Barbara in California.

Next fall Bill will begin a tenure-track geology position at Utah Valley Sate College in Orem, Utah, teaching Introductory Geology, Earth Materials (equivalent to our mineralogy and petrology courses), and he hopes to develop curricula and research focusing on energy resources and the environment as well.

Bill's wife Betsy also is a member of Carleton's class of '89. They have two children, Sky, 2, and Zachary, 5 months.

Thanks for your help, Bill, and best wishes for great success in your new job in Utah!

Carleton Hosts Workshop On Teaching Quantitative Skills In Geoscience Programs

Carleton College hosted a workshop for teachers of mathematics and geosciences at the undergraduate level July 24-27. The workshop was sponsored by The National Association of Geoscience Teachers, Carleton College, and The College of William and Mary, with funding from the National Science Foundation.

The development of strong quantitative skills is an essential aspect of undergraduate science education. The goals of the workshop were to bring together mathematicians and geoscientists to examine their complementary approaches to teaching quantitative skills and to develop materials that advance the teaching of mathematics in a geologic context throughout the curriculum.

The specific goals of the workshop were to explore effective methods for teaching skills such as estimation, representation, and modeling in a geoscience context; to explore the quantitative aspects of concepts that are integral to solving a wide variety of important geologic problems (e.g., mass balance); to develop activities addressing key mathematical concepts in a geoscience context useful in both geoscience and mathematics classes; to identify effective strategies for teaching quantitative skills; to address collaboration between mathematics and geoscience faculty; and to begin team projects that will extend the reach of the workshop.

Participants left the workshop with a summary of key quantitative skills, issues, challenges, and concepts, a collection of activities created by the participants, a list of effective strategies for teaching quantitative skills, and plans for ongoing projects and membership in an on-line discussion group.

The workshop was open to faculty teaching geoscience, geoscience education, mathematics, and mathematics education at the undergraduate level. Groups of faculty from the same colleges were encouraged to attend as teams to maximize the benefit to their home schools.

The planning team for the workshop included Cathy Manduca, Director of the Science Education Resource Center at Carleton, Mary Savina '72, Professor of Geology at Carleton, Heather Macdonald '76, Professor of Geology at The College of William and Mary, Sam Patterson, Professor of Mathematics and Associate Dean of Carleton College, Janet Anderson of Hope College, and Susan Wood of J. Sargent Reynolds Community College, and Margie Mason, School of Education, College of William and Mary.

Mary Savina Named McBride Professor Of Geology And Environmental Studies

[Carleton College News Bureau]

Professor of Geology Mary Savina was among five faculty members The Carleton College Board of Trustees recently promoted to endowed chair positions at the College, as announced by Elizabeth McKinsey, Dean of the College. The five are: Mary Easter, the Rae Schupack Nathan Professor of Dance and the Performing Arts; Gary H. Iseminger, the Stephen R. Lewis, Jr., Professor of Philosophy and Liberal Learning; Mary E. Savina, the McBride Professor of Geology and Environmental Studies; Dana J. Strand, the David and Marian Adams Bryn-Jones Distinguished Teaching Professor of French and the Humanities; and Carl D. Weiner, the William H. Laird Professor of History and the Liberal Arts.

Mary graduated magna cum laude from Carleton in 1972 with majors in geology and history. She earned a master's degree in 1975 and Ph.D. in 1982, both specializing in geomorphology, from the University of California, Berkeley. She returned to Carleton as a faculty member in the geology department in 1978. From 1987 to 1990, while on an extended leave from Carleton, she was lecturer at the Research School of Earth Sciences at Victoria University of Wellington in New Zealand. Savina

currently serves as professor of geology.

The person who has held the McBride Chair to this date is Ed Buchwald, who is retiring at the end of the 2001-2002 school year.

Cam Davidson To Fill New Tenure-Track Position

We are pleased and excited that next year we will be joined by Cameron Davidson teaching mineralogy, petrology, structure and tectonics in a new tenure-track position. Cam is currently an associate professor of geology at one of our sibling Keck schools, Beloit College in Wisconsin.

Following his bachelor's degree at the University of Wisconsin-Madison and his Ph.D. at Princeton, Cam spent three years as a research associate at the University of Basel in Switzerland. He and his family then returned to Princeton for a short stint before moving to Beloit in the fall of 1995. His research interests include metamorphic petrology, structural geology, and tectonics, specializing in studying the effect of diffusion on mineral equilibria, and unraveling the complex tectonic history of parts of Alaska, British Columbia, and the Alps.

Jenn Macalady '91 To Teach Soils

Another new faculty member joining our department this September is Jenn Macalady ('91), a geomicrobiologist who recently completed post-docs in Berkeley and Madison. She will teach a new class in Geomicrobiology and the Soils class.

Jenn's research covers an amazing range of disciplines and centers on the role of microbes in geological environments, using tools of geochemistry and molecular biology. She will be setting up a new lab in the basement, growing and studying all manner of microbes.

Jenn originally came to Carleton as a student from Golden, Colorado. Her senior comps was entitled "Evidence for one or more bolide impacts at the Triassic-Jurassic boundary." She earned her Master's in 1998 with a thesis entitled "Effects of widely-used agricultural chemicals on soil microbial activity and community structure," and her Ph.D. in 2000 with her thesis entitled "Microbial ecology and stable isotope biogeochemistry of methane oxidation," both at the University of California at Davis.



The Hydrology class paused for a group picture in front of San Antonio's most famous landmark, The Alamo. From left in the back row are Tim Vick, Dave Hunzicker, Eric Nemitz, Andrew Gendaszek, Benji Drummond, and Dave Nickerson. In the front row: Mary Savina, Liz Clark, Hillary Gittings, Lauren Chetel, and Missy Hall.

Hydrology Class Takes Winter Term Field Trip

While in the past our advanced classes during winter term have generally not been able to take field trips, this year the Hydrology class taught by Mary Savina set a new precedent by taking a mid-term break field trip to San Antonio, Texas.

The nine students in the class spent four days in the San Antonio area examining the hydrology, practical and political issues surrounding the use of water from the Edwards Aquifer. Forsaking our traditional van marathon/camping field trip format, the class flew to San Antonio, "camped" in an economy motel, and used a rental van for day trips.

The Edwards is a porous limestone aquifer which underlies the city of San Antonio, quite different in character from the sandstone and less porous limestones which serve as aquifers in the Northfield area. Historically it has been the city's sole source of water. However new issues have arisen as the city has grown, sprawling out over the aquifer's recharge area and increasing the demands for water. The city faces difficult choices as developers and their customers push to have housing and commercial developments allowed in the recharge zone on the north side of San Antonio.

Of particular interest to the class were tours by two local geologists who are expert in the Edwards

Aquifer. Michelle Lee gave us an excellent tour of two limestone quarries in the Edwards owned by Martin Marietta Corp., and Geary Schindel gave us a day-long tour of sites belonging to the Edwards Aquifer Authority including wells, pumping stations, and monitoring stations.

Speakers And Posters This Year

We'd like to warmly thank the many folks who gave of their time and work to help us enrich our program with talks and poster displays during the 2001-2002 school year.

Poster displays loaned by alums included:

Fawna Korhonen '97: "Low variance sapphirine-bearing assemblages from Wilson Lake, Labrador;"

Carol Ormand '89: "An analysis of fault systems in an experimental stratigraphic basin, with a comparison to the Mid-Continent Rift System;" and

Eric Cowgill '91: "Has 475 Km of left slip on the Altyn Tagh Fault resulted in north-dipping subduction of western Tibet beneath the Kunlun Shan?"

In addition we also displayed many other posters done by current students for classes and Keck projects.

Speakers giving public talks in our department this year included:

Jeff Mow '81 discussing his career as a national park ranger in the Alaskan wilderness (see separate story on page 13.

Richard Doyle of the University of Tasmania, Australia, "Soils and geology of Tasmania and implications for rural tree death;"

Dyanna Czeck: "Predicting fabrics in ductile deformation zones;"

Cameron Davidson, "The growth of continental crust: a view from Northwest British Columbia;"

Julie Newman: "Deformation along an upper mantle shear zone: implications for the strength of the lithospheric upper mantle;"

John Valley, University of Wisconsin-Madison: "A cool early Earth: evidence for continents and oceans 4.4 billion years ago;"

Michael F. Goodchild, "Placing liberal arts learning in a geographic context: examples from the earth and social sciences;"

Eiler Henrickson '43: "Geologic adventures in Alaska;"

Christina Gallup, University of Minnesota-Duluth: "Uranium series dating of fossil corals: testing Milankovitch Theory predictions for the last two glacial cycles;" and

Jenn Macalady: "Life in acid: geochemical cycling by extremely acid-loving microorganisms."

Two Students Upgrade Carleton's Meteorite Display

Hilary Gittings '02 and Amalia Doebbert '03 have just completed an independent study project where they applied their expertise as geology majors to Carleton's historic Goodsell Observatory Meteorite Display.

The two students researched the history of the collection, chemically analyzed some of the meteorites, and prepared new educational captions for the displays.

"Their work will make this collection a far better tool for teaching about the origins of the solar system," said Carleton astronomer Prof. Joel Weisberg. "We have many school groups and members of the public coming to the observatory who will benefit from Hilary and Amalia's excellent work in the years to come."

The Goodsell Observatory hosts public open houses the first Friday night of each month (cancelled if cloudy). Guests are welcome to view stars, planets, and nebulae through the observatory's telescopes and to peruse the upgraded meteorite display.

Network For Lesbian, Bisexual, Gay And Transgender Alums

The Network For Lesbian, Gay, Bisexual and Transgender Geology And Natural History Alums provides students and alums with career information, fellowship and support. The network was founded in 1990 and now has 31 members from coast to coast.

The network has the twin objectives of helping reduce isolation among alums and helping to provide a more open, accepting and informative environment on campus for students in geology and related fields.

The network consists of a confidential list of names and addresses, circulated only to members of the network, maintained by Marilyn Yohe '88, Dan Spencer '79, and Tim Vick. Inquiries about joining may be addressed to any of them.

LGBT folks might also be interested in the general alumni group called Out After Carleton. We are happy to provide contact information for them as

well. Out After Carleton is now working with the Office of Alumni Affairs in planning the second "Family Reunion" October 11-13, 2002, for all LGBT alums and allies. Information is available from the Office of Alumni Affairs, 507-646-4205.

Liz Cassel Named Duncan Stewart Fellow

Congratulations to Elizabeth Cassel '03 who recently was named Duncan Stewart Fellow for the 2002-2003 school year!

The fellowship was established in 1976 by Daniel Gainey '49 in honor of Duncan Stewart, professor of geology at Carleton for nearly 25 years. It makes available funds to cover research expenses. The principal criteria for selection are excellence in scholarship, a high level of intellectual curiosity, potential for scientific growth, a demonstrated ability to work independently and involvement in departmental activities.

Liz, a resident of Billings, Montana, will extend the number of Stewart Fellows to 73.

Man Indicted For Murder Of Julie Williams '94

CNN, April 10, 2002

WASHINGTON (CNN) — Nearly six years after the bodies of two women were found with their throats slashed in Shenandoah National Park in the Virginia mountains, an incarcerated Maryland man has been indicted on charges of capital murder and a hate crime in their slayings.

With the victims' fathers looking on, U.S. Attorney General John Ashcroft announced Wednesday that a federal grand jury in Charlottesville, Virginia, has indicted Darrell David Rice of Columbia, Maryland, in the 1996 slayings of hikers Julianne Marie Williams, 24, and Laura "Lollie" Winans, 26.

Rice is serving an 11-year sentence in federal prison in Petersburg, Virginia, for attempting to abduct and kill a female bicyclist in the same park in 1997.

Ashcroft called the killings of Williams and Winans "hate crimes" and said Rice could receive the death penalty. "He intentionally selected his victims because of his hatred of women and homosexuals," Ashcroft said at a Justice Department press conference. Rice stated "that he hates gays" and that the victims "deserved to die because they were lesbian ...," according to a court document submitted by

federal prosecutors. The document also said the government would prove Rice "intentionally selected women to intimidate and assault 'because they are more vulnerable than men.' "

The killings occurred sometime between May 24 and June 1, 1996, according to the indictment.

More complete information about the indictment is available in the news section of the Geology Department web site.

Geology Department T-shirts Available By Mail

I have lots of geology T-shirts available that I can mail out. The cost is \$10 plus \$3 postage payable to Carleton College.

The 2002 shirt is light blue with black ink with a picture of a trilobite and a hand pointing to it and saying "Hoc animal maxime placet," Latin for "this is my favorite animal." All sizes available. 100% cotton.

The 2001 shirt is a very nice reddish cedar color with a volcano design which says "Carleton Geology 2001" on it. 100% cotton. I have a couple of Mediums, and quite a few L and XL remaining.

The 2000 shirt is bright yellow with black printing. The design is a geological take-off on the theme of Charlie Brown's striped shirt in the "Peanuts" cartoon series. 50/50 cotton/synthetic, S, M, L and XL are available.

Even now, there are STILL a few 1997 shirts here. They are light tan with brown ink. The cartoon on the front shows two stick figure people saying "Gee!" and "Oh!" the cheer of the Geo broomball and ultimate teams. On the back of the shirt is a Peanuts cartoon about the relationship between geologists and mud. XL only. 100% cotton. — Tim Vick

2002 Awards

Mortar Board

Matt Kuharic

Katja Meyer

Phi Beta Kappa

Elizabeth Clark

Matt Kuharic

Katja Meyer

Sigma Xi

Lauren Chetel

Matt Kuharic

Katja Meyer

Laurence McKinley Gould Prize in Natural Sciences

Katja Meyer

Honors in Independent Study

David Hunzicker

The Jefferson Natural Sciences Teaching Award

Melissa Hall

Duncan Stewart Fellow

Elizabeth Cassel

National Science Foundation Fellowship

Noah Finnegan '99

EPA Star Fellowship

Karen Bobbitt Gran '96

Alex Barron '00

Technos International Week Fellow

Heather Hilchey

University and College Design Association Award Of Excellence

Benjamin Drummond

Swimming and Diving Team National Competition

Amalia Doebbert

Senior Papers - 2002

Graduating senior geology majors, their hometowns and titles of comprehensive exercise projects:

Chris Andreassi, Temple Terrace, FL "The significance of periodic laminations in Early Ordovician Stromatolites"

Heather Borkowski, York, ME, "Early Pliocene Climate in the Mediterranean: Geochemical Analysis at Trave Sud, Italy"

Kizzy Charles-Guzman, Brooklyn, NY, "Effects of local land use on the water quality and physical habitat of the Rice Creek Watershed, MN, USA"

Lauren Chetel, West Newton, MA, "Grain shape as an indicator of depositional environment in modern and ancient quartz sands, Merrimack Embayment Barrier System, Massachusetts and Jordan Sandstone, Minnesota"

Elizabeth Clark, Springfield, IL, "Analysis of deformational and metamorphic history of cordierite schist, East Gulch, Colorado"

Benjamin Drummond, Seattle, WA, "Blue Ice: An illustrated guide to a glacier/a book and website"

Andrew Gendaszek, Lambertville, NJ, "Mid-Cretaceous Climate and Interannual Variability: Results from a Fully Coupled General Circulation Model"

Hilary Gittings, State College, PA, "Erosion of extension Tyrrena Patera deposits, Mars: Mechanisms, volumes and implications for the Martian paleoclimate"

Melissa Hall, Duluth, MN, "A field based stream study unit for middle school earth science students"

Andrew Hartley, Duluth, MN, "Speleothem analysis and implications for climate change during the past 100,000 years"

David Hunzicker, Middleton, WI, "Evidence of periodic climate forcing in a 672 year drought severity reconstruction from moisture-stressed Ponderosa pine (*Pinus ponderosa*) in west-central Montana"

Matthew Kuharic, Meredith, NH, "Calcium carbonate and stable isotope analysis at Punta di Maiata, Sicily: Evidence for the eccentricity triplet in the Pliocene Trubi Formation"

Katja Meyer, Maple Park, IL, "Dynamics of recent sedimentation and carbon storage in the Cannon River Wilderness Park, Northfield, Minnesota: implications for the global carbon cycle"

Aleshia Mueller, Backus, MN, "Natural disaster preparedness: Earthquake forecasting methods and community involvement; uniting scientists, administrators and the public"

Eric Nemitz, Cape Elizabeth, ME, "The Dry Union Formation of Howard, Colorado: Documenting the Sangre de Cristo Uplift"

David Nickerson, Big Horn, WY, "Reconstructing a Morrison paleoriver: A model of regional river conditions using preserved sedimentary and fossil evidence"

Michael Robinson, Bothell, WA, "The Odd Couples: Origin of the Late Miocene limestone-marl couplets at Monte dei Corvi, Italy"

Alyssa Thomas, Bend, OR, "Making sense of the drilling debate: Implications for oil drilling in the Arctic National Wildlife Refuge, Alaska"

Class of 2003

Marc Antinoro	Teaneck, NJ
Liz Cassel	Billings, MT
Nicole Davies	Spain
Amalia Doebbert	Glenwood, MN
Adrienne Hacker	Springfield, MO
Nancy Harris	Sturgeon Bay, WI
Ben Harrison	Bainbridge Island, WA
Melissa Keevil	Ashland, OR
Chuk Kittredge	Barre, MA
Tiffany Larsen	Clear Lake, IA
Devin McPhillips	South Glen Falls, NY
Marshall Sundberg	Emporia, KS
George Tangalos	Rochester, MN
Graham Zorn	Ashland, WI

Class of 2004

David Auerbach	Salem, OR
Kristin Bergmann	Gaithersburg, MD
Sean Bryan	Cincinnati, OH
Gillian Davis	Cape Elizabeth, ME
Jeff Dorr	Storrs, CT
Annaliese Eipert	Seattle, WA
Joseph Graly	Berkeley, CA
Heather Hilchey	Minnetonka, MN
Kristen James	Alexandria, VA
Lisa Kanner	Amherst, MA
Lindsey Kleppin	Anchorage, AK
Bess Koffman	Yelm, WA
Sarah Leibson	Rochester, NY
Breanyn MacInnes	Greensboro, NC
Sarah Margoles	St. Louis Park, MN
Lauren Miller	Fairway, KS
Leah Morgan	Essex Junction, VT
Brandon Murphy	St. Louis, MO
Gabe Nelson	Lake Nebagamon, WI
Kristin O'Connell	Minneapolis, MN
Ellen Winters	Bettendorf, IA

Coldigioco Diary

[By Amalia Doebbert '02]

October 3, 2001 - The program over here has been filled with fun adventures. We have traveled a lot and learned a lot about the geology of the Alpine and Appenine orogenies. Periodic vacations, usually after finishing projects, allow us to travel to different places or just relax. The food is fantastic; Dave Bice is our chef and we wine and dine in true Italian fashion. Here's a little summary of what has gone on over here since the middle of August.

For the first week and a half of the program we stayed close to Coldigioco. We became familiar with the local stratigraphy and then did a mapping project around a town called San Vittore, about an hour away. The highlight of this project was the gelateria (ice cream shop) in San Vittore. It was especially appreciated because the weather was very hot. Trips to the reservoir near Coldigioco to swim were popular evening activities.

Our second field location was in the Dolomiti (Southern Alps). Just getting there was an interesting experience, we spent several hours caught in a traffic jam on the autostrada. Adjusting to the cold temperatures meant wearing warm clothes and dealing with snow on the first day of September, but the scenery was spectacular. Aside from one cold rainy day the weather was beautiful as well. As well as fieldwork there were snowball fights at the Marmolada glacier, lots of hiking, some climbing of WW II military shortcuts (known as Via Ferrata or the "Iron Way"), and staying warm by hanging out in the bar/ristorante at the campground.

The next voyage was to Toscana (Tuscany), with a short stop along the way in Vinci to visit a Leonardo da Vinci museum. The geology here was varied, but probably the most interesting thing we saw was a marble quarry that has been operating since Roman times (refer to the "Q-bert" picture by Tim's office). The trip was overshadowed by the World Trade Center terrorism, however. We were shocked to stop in town on the way back to camp and see the news on the television, and much of the rest of our spare time on the trip was spent trying to get a handle on events taking place in the US and the rest of the world.

Our last long trip for geology was to Hvar, Croatia. This is an island on the Dalmatian coast, and like everything else around here mostly limestone. The two days we spent doing geology there were very laid back, and then we had our "mid-term break". Most of us stayed there and spent our time snorkeling in the crystal clear Adriatic, sunning, staying out late at night and sleeping in. We met a lot of tourists from other English speaking countries, and some who

weren't. Most of the Croatians spoke at least some English so language wasn't a big barrier. The overnight boat rides there and back were long, but going was a great experience.

Since getting back from Hvar on the 26th, we have stayed closer to home for fieldwork; we took a few day trips the Sibillini Mountains about an hour away. On the 28th we had only a half day of fieldwork and held a Festa di San Michele (our town's patron saint); not very many people were eager to start writing reports the next morning. Having finished our reports, we are now in the midst of a 2-day vacation.

A handful of people are in Munich at Octoberfest, a few more are in Rome, and the rest of us are finding things to do around here. Some of the activities in Coldigioco this vacanza (this is what we call vacations around here) will be sure to include grape harvesting, as the winemaking season is upon us.

And that's the news from Coldigioco. Hopefully life at Carleton is treating you all well, and the school year is off to a good start. Enjoy the spacious geo labs with so many of us in Italy!

October 25, 2001 - Coldigioco Update

The adventures just don't stop in Coldigioco. The weather remains unseasonably warm although daylight has gotten short. The food is good as always and we have plenty of cultural experiences through interactions with our Italian friends.

Our field work in the Sibillini mountains nearby consisted of day trips, and we saw some pretty cool faulting there. Included in what we covered were exposed fault scarps from Jurassic normal faults. It's pretty incredible that they are still visible and there were a lot of amazing ammonite fossils in slope deposits that formed on the scarps.

Our next trip was to Furlo, where we stayed a couple of nights and logged turbiditic sections of the Scaglia Rossa limestone formation (this formation contains the K/T boundary). This occasionally tedious task was made more interesting by the curiosity of the locals - groups had a range of experiences that varied from being gawked at to being offered wine. We were accompanied on this trip by Sandro's six-year-old son Max. Max provided endless entertainment with his tree climbing exploits, talkative nature, and his dinosaur egg. He hid the "egg" (actually a round stone) on the first night of the trip at the campground. Scott and Kristen, our food prep staff, added eggshells and plastic dinosaurs the next day and Max was astonished to discover that his egg had "hatched".

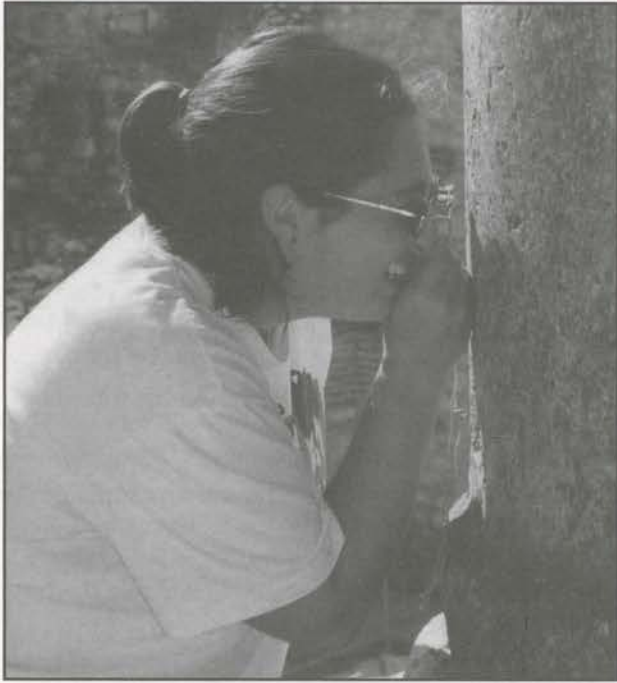
The last vacation found people on excursions to Naples/Pompeii, Florence, and the Abruzzo

(Spaghetti Western) region while those who remained in Coldigioco worked on projects such as chess sets. A good time was had by all. Our work after returning from our various vacations consisted of practice at sample preparation and analysis, and we are now on our last vacation of the program. When we start back in to work we will be doing our independent projects. People have really spread out to do these projects, in fact some are as far away as Sicily. There are a wide variety of topics being covered so the results people get should be very interesting.

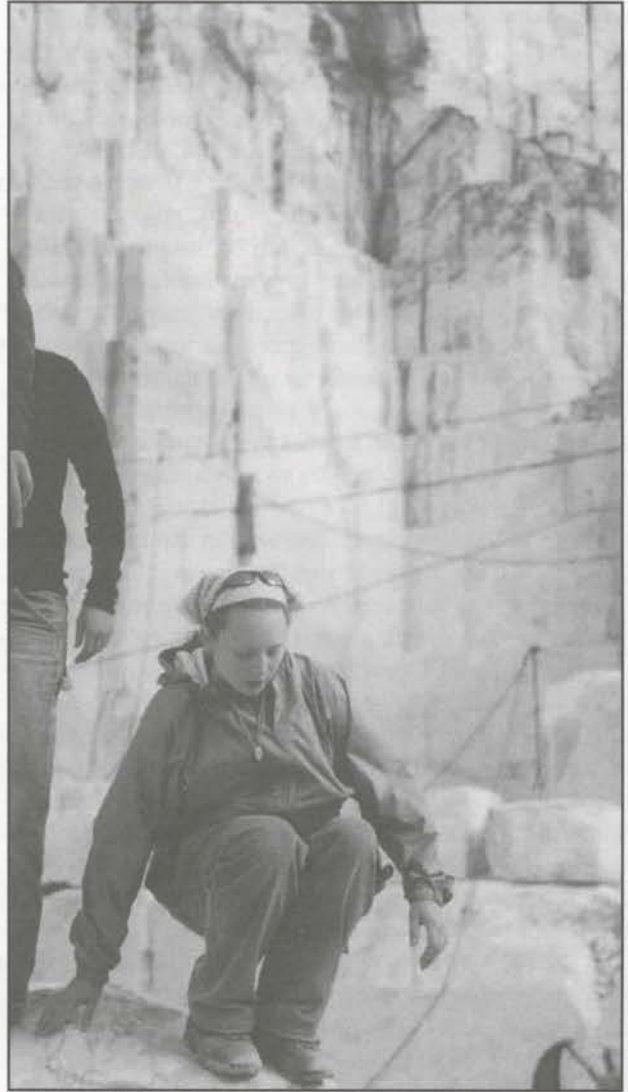
It is sad and a little frightening that we will be done with this program in just a few days. The time has really flown by. Many people have plans to travel afterward despite the political situation right now; in fact for many of us getting on a plane for home is the most intimidating part of being over here.

So, that's it from Italy. We hope you all had a good mid-term break and enjoy the rest of the term. We'll see you this winter!

Ciao from the citizens of Coldigioco!



Lauren Chetel '02 checks out the marble in an Italian column.



Katja Meyer '02 climbs over huge blocks of marble in a Tuscany quarry.

We had a fine day for the hike on the Marmolada Glacier.



Jeff Mow '81 Speaks On His Experiences As A National Park Ranger In Remote Parts Of Alaska

[by Noah Brenner '03 writing for the Carletonian]

February 15, 2002 - In a talk with Ed Buchwald's class on Wilderness In America (part of the Environment and Technology Studies Concentration) on Thursday, Jeff Mow proved the versatility of his Carleton education. Mow '81 spoke about his career as a park ranger working in some of the most remote parks in Alaska, calling it "a segment of my life that has been like a journey."

This journey also included stints as a geology professor at a community college, a seasonal worker with the USGS, a field instructor with the Yellowstone Institute, and the EMT, fire chief, and mayor of the small town in the Arctic.

Mow graduated from Carleton with a special major in Environmental Education, and went on to graduate school at the University of Michigan in geology. After teaching at a community college for a couple years, he headed to Glacier Bay, Alaska, to become a seasonal ranger there.

At Glacier Bay his days were spent "patrolling some of the most remote beaches in the world." "Our job was to be the eyes and ears of park management there," said Mow.

Mow's first meal at Glacier Bay was harbor seal, which a Native Alaskan brought to the rangers' cabin. The cabin floated on pontoons on the water to keep grizzly bears out of it.

From Glacier Bay Mow went to Chilkoot Trail National Park. The Chilkoot Trail was a 33-mile hike taken by gold prospectors to get to the Yukon Territory in Canada during the Yukon gold rush.

The trail includes the famous "Golden Staircase" at Chilkoot Pass. Here lines of prospectors scaled the steep slope with huge packs, often making many trips. If one fell there was nothing stopping them from sliding all the way back down to the bottom. "Hiking the Chilkoot Trail is a rite of passage for many Alaskans" said Mow because many Alaskans had relatives who traveled the route during the gold rush.

From the Chilkoot Trail Mow went to Gates of the Arctic National Park where he was Chief Ranger.

"In the Arctic your sense of scale changes because there is no reference point," explains Mow. "You don't realize how much you use trees until you don't have them."

Gates of the Arctic is unique in that there are still Native Alaskans living within its borders. Although now stationary, they were the last nomadic people in the U.S.

"The elders retained the nomadic mindset," said Mow. "They saw no reason not to pick up and move the entire modern town if a better location could be found."

In the Arctic Mow became mayor of the community of Bettles. The town, with a population of 33, had no roads. He compares his time in the Arctic to his friends' time in the Peace Corp. "Their ways of thinking about life and the world around them are so different in the Arctic. It was a foreign culture for me."

Currently Mow continues to work with National Park Service but in slightly less exotic locales. He is the Bevinetto Congressional Fellow in Washington, D.C. where he advises Congress on issues concerning the National Park Service.

"The thing I will miss the most about Alaska is the people," concluded Mow. "Despite the fact that Alaska is so large, over half the people live in Anchorage. It is hard to go to the Anchorage Airport and not run into a few of your friends."

"Camp Carleton Geology" Has A New Complexion

Shortly after Carleton students clear out of the Geology labs for the summer the labs are invaded by new and quite different groups. It's the geologic component of a series of summer programs for accepted students and high school students of color.

The largest and most intensive geology program is called Environmental Science At Carleton, a three-week program for high school teachers and students. The program, directed by Mary Savina and Outreach Program Director and Assistant Dean of Admissions Todd Olson, brings eight high school teachers and 26 students from the Twin Cities area to campus.

This year the teachers and students studied nutrient cycles and the effects of acid rain in northern and southern Minnesota watersheds. They did most of the field and lab work here, but also took a 4-day field trip to northern Minnesota.

Another group of ten students of color, all of whom are already accepted into Carleton's freshmen class enrolling in September, is on campus for a month getting a jump start on college level math and science.

Known as the Pre-Freshman Math and Science Program, it encourages minority, first-generation, and low-income students to seriously pursue majors in math and science. It is not a remedial program but rather a preview of college level academic work. The students study several math and science areas including two days per week in environmental geology classes taught by Bereket Haileab.

Fifty more students of color who have just completed their high school sophomore years spent a week sampling a liberal arts education at Carleton. These students have been nominated by their teachers and principals and are seriously considering college as an option.

Known as the Carleton Liberal Arts Experience, or CLAE, the program provides an introduction to a variety of subject areas including environmental geology, presented by Bereket Haileab.



Photos by Yumi Irako



NEWS FROM ALUMS

1941. Lloyd Pray sent a nice note saying, "In 13 years after retiring, I'm still interested in geology and am pleased with the increased emphasis in the last decade of field geology experiences - world wide - for Carleton students and staff. Just returned from the 2002 AAPG-SEPM meeting in Houston where I enjoyed contacts with former students and other geologists (including **Clint Cowan '83**). Onward to the field. It can teach well."

1942. Dode Wonson writes she's keeping busy with volunteer work, friends, and bridge. Dode also mentioned she was looking forward to her 60th reunion in June!

1945. Dick McCarthy reports he's now coping with macular degeneration and needs a machine to read and write. But that doesn't prevent him from being active in the Civitan Service Club projects from time to time. He says, "About all I can identify in my rock collection is specular hematite. I gave my lapidary machine, diamond saw and gem stuff to a Hopi craftsman, who does very well at the Santa Fe Indian Market."

1947. Georganna Dean Dickson is happily anticipating her 55th reunion this June. She writes, "Never thought I'd live this long!"

1949. Lee Carpenter sends a greeting celebrating that every day is something new. We're not sure about the significance, but **Bill Roth** writes, "The end is near!"

Douglas West is sharing his time between Illinois and Long Boat Key, Florida.

1950. William Culley, Jr. is officially listed on his business card as a retired steel salesman and future motorhome travel specialist with the firm Livewell, Doolittle and Sleepmore. Sounds like he's gone from one type of rolling to another. Here's hoping business is really good! We received a note from Mrs. **Charles Hauck** saying Charles is in a nursing home now.

1953. Gary Ernst is teaching Elementary Geological Science, Introduction to Earth Systems, the Geologic Development of California and Petrologic Phase Equilibria at Stanford University. Gary adds that his research involves igneous and metamorphic petrology and geochemistry of the White-Inyo Range and portions of the Klamath Mountains in California.

"Overseas," he says, "I work with grad students and postdocs on ultrahigh pressure subduction assemblages in east central and western China, the south Urals, and northern Kazakhstan. And, I'm way behind in everything!"

1954. Pat Bickford writes that he's "just received a

new grant from NSF to study the chronology and thermochronology of anorthosite emplacement and its relation (or lack thereof) to multiple episodes of high grade metamorphism in the Adirondack Mountains of northern New York." Pat's partners on the project are Jim McLelland of Colgate University and John Valley of the University of Wisconsin-Madison.

1955. Joe Mancuso is having a great time in retirement playing golf and traveling. He writes, "I'm keeping my hand in geology by attending field trips and conferences. I just returned from a trip to Arizona and Mexico visiting copper mines." Joe expects to be on campus for reunion this year, and is looking forward to seeing you all at the 50th in 2005!

1956. Richard Buchheit was on campus last June for the class's 45th reunion. He says he has "only a vicarious involvement in mining and geologic issues, except for some mineralogy explanations of gemstones for our daughter-in-law who has a jewelry store. I expect to learn all there is to know about rocks and geology of Umbria, Italy, in May." He adds that retirement is great, but the fishing could be better...

1957. Dick Westphal writes that he's enjoying his retirement. "Helen and I really enjoy spending the winters in our home in Arizona," he says.

1958. Dave Southwick reports that "On January 2 I retired as professor of geology at the University of Minnesota and Director of the Minnesota Geological Survey. My wife Susan and I moved almost immediately to New Mexico, where we are adapting very well indeed to life in the Land of Enchantment."

1959. Hans Nelson was appointed as an adjunct professor at the University of Texas at Arlington last year, and this year as a Visiting Professor at the University of Granada in Spain. He writes, "My wife and I will begin work as professors at the CSIC research institute in the University of Granada, Spain, this August. I will continue my research in deep water paleoseismology of the Cascadia Subduction Zone and San Andreas Faults, and the deep water submarine fans of the Gulf of Mexico."

1960. Michael McLanahan, while President and CEO of McLanahan Corp., is also active on a number of other boards of directors including the National Association of Manufacturers, the National Mining Association, the National Coal Council, the Pennsylvania Economy League of Central Pennsylvania, Mt. Aloysius College, and the Pennsylvania Foundry Association.

1961. **Jeff Hanor** was on sabbatical leave from LSU during the spring 2002 semester. "I spent a good part of it at the University of Michigan working with Lynn Walter, a former student of mine, and her graduate students. Got to see some of the interesting things **Kati Szramek '98** is working on there. It was the first time I have had to scrape ice off the windshield of my car in several decades."

1962. Thanks to **Clark Arnold** for your address update.

1964. **Peter Rowley** writes, "Nearly a year ago (May 2001), my short teaching career (9 months) ended at Southern Utah University, Cedar City, UT. I posted my grades and started my own S-Corporation, Geologic Mapping Inc. Its niche is to employ geologic mapping and field geology to solve practical problems and to map quadrangles for state geological surveys. Most of the problems have been in Nevada and Utah groundwater hydrology. I have been busier than I would have dreamed, although I do freebies too such as write papers for publication and facilitated the Mackin Conference last October, and the GSA Rocky Mountain Section."

1967. **Laurel Clarke Babcock** sent an email recently saying, "We moved from Houston to Albuquerque last fall, and are really enjoying life in the 'Land of Enchantment.' There is so much to see and do here, and very little to cover up the geology! We live in the foothills of the Sandia Mountains, and enjoy walking on the foothill trails every morning, free of Houston humidity, even though we are often thoroughly squeaked out by the cheeky local prairie dogs. We are both involved in volunteering at local museums, and I'm currently sewing backdrops for a textile exhibit and learning about sculpture garden maintenance. Last summer we volunteered at Petrified Forest National Park in northeastern Arizona—a chance to focus on Triassic geology, as well as Ancestral Pueblo history and desert ecology, and a good introduction to living in the southwest." **Mark McBride** writes that he has lots of diversity in his work... "I'm helping get ready for a big dispute with the EPA regarding air emissions (Geology turns out to be a good starting place for a lot of other activities), and also have a new paper coming out about management of lead-contaminated soils."

1969. The Geology Department has been pleased to have **Alan and Susan Hartley's** son **Andrew** with us as a geology major these past few years, and Andrew is now graduating and on the verge of a new chapter in his geology career (graduate school at the

University of Minnesota). His sister **Kate** is heading for the College of St. Benedict, for a biology (pre-physical therapy) major, and has been awarded both an academic scholarship and a cello scholarship. Meantime, Alan writes that he's working on a lexicon of the Lewis and Clark expedition for publication (hopefully) in 2003. Susan is teaching geology and geography courses at Lake Superior College as well as doing astronomy classes at UMD. She adds, "I will venture into the realm of on-line teaching next year: one LSC geography class and a graduate level earth science teaching course offered at the College of St. Scholastica (thanks to a grant from NASA)."

1970. **Judy Vandenberg Boudreau** gets a warm thanks for coming down from the cities to speak to Mary Savina's Hydrology class last winter with **Jim Berg '77!** The class enjoyed seeing someone with real experience and getting a glimpse of a possible future of a Carleton grad. Judy says, "Midlife certainly has its challenges but I feel I've grown from them. Our (relatively young) boys are excited about traveling baseball, coached by **Rocky Chrastil** and **Roy Ginsburg '75.** And I've joined a masters swimming group coached by **Dave Cameron '99.** Fun!

1975. **Libby Anthony** writes that she begins a year-long sabbatical this summer, celebrating it with a July field season in Kenya. "Life is good," she says.

Emily Wrubel writes, "I'm teaching at an alternative high school this year and it's not for me! A lot of kids hate science, so it's really at the bottom of the list for kids who hate school! I'm applying for a return to middle school science. I had a surprise visit from **Lisa Galblum** this fall with her husband and son. It was great to see her! Her family is great but I feel responsible for her being a Californian.... I made her travel there with me in '76 and somehow she never left..."

1976. **Philipp Muessig** finds himself amidst budget crises, budget cuts, labor strikes and contract disputes, but he says, "I'm still happy here in this small non-regulatory environmental agency (The Minnesota Office of Environmental Assistance.)" From **Jim Evans**: "I want to thank Shelby for mailing me that embarrassing photograph from 28 years ago (how long do you guys archive such things?)." Well, Jim, it depends how embarrassing it is! Jim continues, "Just remember Shelby, you're not the only one with photographs... I am teaching field camp in the San Juan Mountains, and doing research in Pennsylvanian loessites and paleokarst, and working on dam removals in Ohio. I just finished my year as

chair of the faculty senate here at Bowling Green State University." **Will Maze** just finished a year and a half of studying the geology of Saudi Arabia. He says he found interesting contrasts in travel pre- and post-9/11. He also noted, "It was my first experience with 127°F and high humidity climates. Fun. Now it's on to a look at Qatar geology." Congratulations and best wishes to bride and groom **Barbara Rossing** and Lauren Johnson, who married last Feb. 10! Among the witnesses were **Leah Haworth '77** and **Dan Spencer '79**. Barbara and her husband plan to spend this coming school year on sabbatical in Wenatchee, Washington, in the Cascades, working on a book. **Bill Matlack** writes, "I was one of many who watched in horror and disbelief as the tragedy of September 11 unfolded before me. The breathtaking view of the World Trade Center towers from my home directly across the Hudson River is gone forever. My firm counted one among the dead; like so many others, he left behind a wife and young children. But I also know two people who, but not for fate, would have been above where the first plane hit. Otherwise, it has been a relatively uneventful year. Certainly, securities analysts, once the darlings of the media, have taken a huge tumble in stature. I can say from first hand experience that most of us are not nearly so corrupt and highly compensated as the media now portrays us."

1978. Lisa Doull Wright is "Busy with jobs and life - keeping up with three very energetic boys (ages 12, 9 and 6). Just feeding them is a full time job - much less chauffeuring, monitoring homework and figuring out which clothes they have outgrown today! At work I'm championing the cause of riparian zones." Lisa and her family are planning summer travel in Canada this year to meet relatives she has never met. **Craig Banister** continues to write user guides and other documentation for in-house yellow pages publishing software that his workgroup produces, and he maintains several intranet web sites. Craig writes that "two years ago, I became a volunteer for the Museo de las Americas, a Latin American museum here in Denver that has one of the largest collections in the West. I designed, created and maintain their bilingual web site at <http://www.museo.org>." Neat! **Barb Okamoto Bach** writes that her family is "thoroughly enjoying our second year of living in Japan. As I write this, Shelby and Jean Boardman are visiting Tokyo, and we've enjoyed catching up on Carleton and geology through the years (field trip and Bearpaw Mountains stories) and touring around with

them (imagine the contrast of Northfield vs Tokyo's population of 26 million!). Mark and I are working on the 25th reunion for our '78 class, and hope to see geology classmates next year (if not claim the prize for traveling the farthest to reunion!)." Got a note from **Meryl Haber** chewing us out, "Hey - I was in San Antonio in February - didn't see you guys. [well, we were there for a few days at least!] Did you get out to New Braunfels to see the caverns? [yes] How about that creative meander in the stream downtown? Which way did they say it flowed? Or does it? [We not only saw it, we boated on it! It flows which ever way they want it to at the moment!!]" Meryl owns a shop called Lakeside Bicycles in Lake Oswego, OR. **Dorothy Davis Morrow** is enjoying her two growing boys. Ben is now four and Chris is one year old. She adds, "Enjoy my job and life in Omaha; still a small big town life here. I take advantage of all the arts activities here - opera and symphony. I started a 'moms of mature years' group - all late bloomers in the parent dept. Older but wiser!" **Sue Campbell LaCroix** writes, "Lots has changed in the last couple of years. In Nov 1999 I was reconnected with an old friend from Carleton, Steve Erickson '76, courtesy of the Alumni Affairs Office alumni email listing. In Dec 2000, I moved from Northfield to Cedar Falls, Iowa, to join him. At the same time, I went back to school to get a nursing degree, something I'd started to do 15 years ago but hadn't followed through on. Being an older student is a lot of fun, but I don't enjoy being a poor student. I will graduate in May 2003 with a BSN and am looking forward to my new career and earning a regular paycheck again. Next project - MSN?" **Laurie Nadelhoffer** wrote last winter telling about two trips to the state of Washington last year. She happened to be there on business when the earthquake hit town. "By the time the flatlanders figured out what the shaking was all about, the Microsoft engineers were all outside..." Despite your Newsletter editor's opinions about software vendors and their business practices we will refrain from adding further comment. Laura was also in New York City on Sept. 11 and felt traumatized by the violence of that day even though she was several miles from the twin towers at the time of the attack. **1979. Karen Campbell** is busy up in the Twin Cities: "In addition to my day job at Hamline University, I moonlight as an adjunct instructor at the College of St. Catherine in web design and the Center for Global Environmental Education. I have been blessed in the past few years with reconnecting with the wonderful

community of Carleton geologists in the Twin Cities, even to a fun and unexpected meeting with **Connie Sansome '68** in Ely!" **Jerry McNeish** is plugging away on the Yucca Mountain safety analysis. The site recently was recommended for activation by President Bush and has now been approved by Congress. This summer they will proceed with an application for a license from the Nuclear Regulatory Commission. **Chris Neumann** proudly announces "We now have two Eagle Scouts in the family. Our younger son, Nick, finished his Eagle last fall. His brother Tristan made Eagle a year and a half earlier. Nick will be off to college this fall. He looked at Carleton, but evidently wasn't inspired as he's going elsewhere. Sorry Tim, no second-generation students for you yet..." Sigh. We were very pleased to have **Dan Spencer** on campus this spring to do our Pride Month service in April! Dan writes he's "Back at Drake this year after a wonderful sabbatical year 2000-2001 in Montana. Had a great time at **Barb Rossing's ('76)** wedding in February in Wenatchee, WA where **Leah Hayworth ('76)** also attended. We sang several songs (badly) from Barb's infamous Rock Opera. I preached on 'Gay and Gaia' at Carleton April 21st for Earth Day and LGBT Pride Month and had a nice visit with Jean and Tim Vick. I'm moving back to Montana this June to be with my partner, Pat Burke, who visited Carleton with his son Kyle in March. Greetings to all!"

1980. **Vicki Hansen** and **John Goodge** sent out press releases, which said in part, "I'm happy to write that [we] have accepted positions at the University of Minnesota in Duluth! The department there will be about a dozen, including us and another new hire, with several active emeritus faculty. UMD has a great group of people spanning all stages in their careers. They've made some good hires recently, established a new Large Lakes Observatory, and have strengthened ties to the Twin Cities campus, including facilities and integration of the graduate program. Plus, there's simply great geology there for teaching and potential research! It's going to be a positive change on many fronts. We're very excited about the people there and about getting our kids to a better setting than Dallas! The kids are as excited about the move as we are — Berit has already decided which color ice skates she wants and Casey is all fired up for snowboarding lessons, so I guess winter sports 'R' us! With luck we'll be moving in mid-summer and one way or the other will be in Duluth by August." Good work guys, we'll be looking forward to spotting you around

Minnesota here and there!

1981. A nice card from **Gail Peretsman Clement** relates that her family has moved from Florida to Arlington, Virginia, where Brad is a Program Manager in Ocean Sciences for the National Science Foundation. Gail is telecommuting to the Everglades and writes, "Our boys are thriving here, although they had to learn how to roll a snowball and ride a bike with gears. They were disappointed, however, that there were no snow days this year." **John Hankins** has also made a switch: "I've hung up my competitive running shoes for a year and joined Lance Armstrong in the world of road bike racing. I've discovered to my chagrin that a common means of emergency deceleration is the use of epidermal friction on asphalt." Ouch! **Mary Lucas McDonald** writes that she's still working part time as a geologist, doing a clean up of a gun club site. She adds, "I'm really enjoying being a mom and coordinating a school vision program to work with children who have binocular vision difficulties. We've helped a lot of kids over the last two years." **Bonnie Rohr** is now living with her family up in Osceola, Wisconsin, just northeast of the Twin Cities. She reports she's "busy with my three kids and all their activities and helping with my ill mother. We love being in the St. Croix River Valley. The floods of 2001 were spectacular to watch run through the Dalles - remember that field trip?" The Dalles are the spectacular section of the St. Croix River between Taylors Falls, MN and St. Croix Falls, Wisconsin.

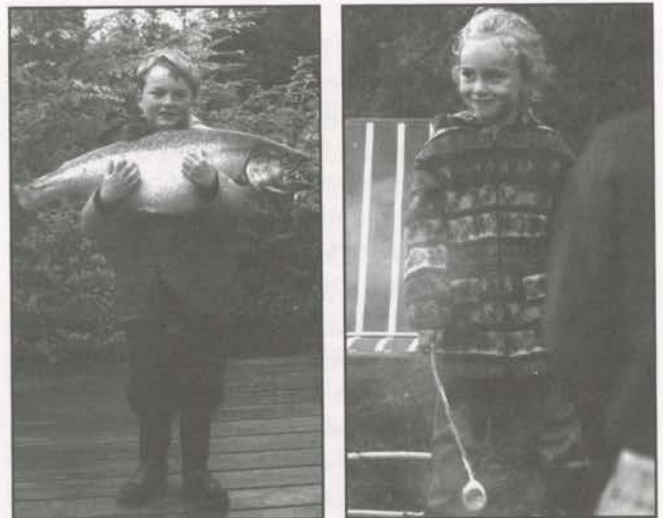
1982. **Peter Wiegand** decided after 12 years in Steamboat Springs to try something new so he took a new position as chief financial officer and controller of CBM Associates, an environmental consulting firm specializing in water resource management in the coal bed methane industry. "It has been a wild ride this past year," he says, "but we're hiring." So it can't be all bad. "Also, I just got back from a great week of diving in Honduras" (when he wrote in April). A nice note from **Heidi Bredenbeck Wells** reports a rough period for her business after Sept. 11. "That tragedy also hit too close for comfort as my brother in law lives two blocks from ground zero and witnessed the events unfolding from his roof. It made me appreciate our family and all that we are blessed with. The biz is now turning around and we feel good that we didn't have to do any layoffs. The kids (Dylan, 8, and Evan, 3) keep us crazy and sane all at once!" **Peter Whiting** says his kids are doing well too. "Zack (7 1/2) is busy with school, soccer, baseball and skating.

Emma (5) starts kindergarten next fall and is presently enjoying soccer, skating and gymnastics. Next year Dad will be an administrator/researcher rather than a teacher/researcher, but I still remain the driver. Mom continues 3/4 time pediatrician and full time mom."

1983. Christina Seeburger Szigeti is "finally (after 17 years) leaving the military for the civilian world. I will be staying in Tacoma, Washington, however as we enjoy the Pacific Northwest and have had enough changes this year! Our fourth child (and first daughter), India Juliette, was born Aug. 3, 2001." A note from **Kathleen Duffy Carmona** says she had great fun at work this year, "middle school kids are never boring. My own kids are getting big - 9 and 6 years old. Both are playing baseball, so we are busy almost every evening. KC coaches three sports so they're always going to some sporting event." **Jeff Pipes** reports a whirlwind year at his vineyard: "After opening a year ago April with a great party (including the Chinese Lion Dancers that successfully scared away all malevolent spirits), we sold completely out of wine in the fall and had to close until the next bottling, which is now done. We now have all new wines! Last April started off with a freeze. It was late enough and cold enough (24 degrees) to cut our vineyard crop by at least π ! [Jeff, is that pi?] Such is farming! The result, however painful, was to concentrate all the vines' energy into ripening a very beautiful, if small, crop of perfect fruit. The 2001 vintage wine will be outstanding! Other than the weather, the vineyard looks great. Our cover crop is growing well, supporting the soil and many beneficial species, including the good bugs and a dense crop of wild flowers blooming this month (April). We completed (well almost) our new winery addition. We made wine in our very small barn the first two years. The new space will allow us to bring our whole crop into the winery. We also added a great tall porch on the east side that reaches out right to the vineyards. With some tables (and shade) it is a perfect place to enjoy a picnic or just a glass of wine." Besides the vineyard and winery, Jeff and Florence's kids are growing too - Grace is now 6 and Gwen is 3. From **Chubas Tolson**, "Since my last Carleton contact years ago I can report two children, David (12) and Eric (5), as well as a steady job as researcher/professor at the Institute of Geology, UNAM." Chubas has a nice web page accessible from the Geology Dept web site alumni page. We usually refrain from printing information obtained second hand, but the note from **John**

Woodwell also had a paragraph about **Jane**, and since we haven't heard from the lady herself we're relying on John's familiarity with the situation and include his report: "Jane's doing great, too. Her two kids are fun and funny. David has an imagination about as big as Calvin of Calvin & Hobbs. And Katharine's really personable, and a budding geologist. She did a science fair project where she measured the pH of soils around the country, with samples supplied by her aunts, uncle, and grandparents. And David did a science fair project where he compared Play-doh with Ooblek, which is something green and gooey that Dr. Seuss invented." (David is a man after my own heart. The Ooblek story was always one of my favorites - Tim) **Liz Gronen** writes, "I have a wonderful life with my partner here in Estes Park, Colorado. I own my own yoga and martial arts center. We have over 100 great students. The healing arts, my animals (a Belgian horse, 2 dogs, 2 cats), and great friends are my passion. My greatest success to date: I am happy and well!" From Fairbanks, AK, **Tom Baring** sends word he's "Feeling great because spring has finally come to the Arctic. My family is burgeoning; the second child is due in July. Two-year-old Nathan has been whipping me into shape as a dad, so I may even be ready this time. We're all happy and healthy - couldn't ask for more."

1984. Elliot Bruhl continues to enjoy his medical practice in Sitka, Alaska. He says his "free time is spent mostly with Gus, 9, and Emma, 6. Wonderful steelhead fishing, bird watching, hunting, tidepooling. Got a bigger skiff this year, and am still in love with that Ole girl I met back in '82." **Mark Gordon** took a



Elliot Bruhl '84 spends his spare time with his children, Gus (at left) and Emma. Your alumni field sports editor can't be positive, but it may be that the monster fish Gus has caught is an Alaska steelhead, which according to the Alaska tourist web pages is a highly prized sea-roving rainbow trout.

couple of breaks from geophysics this year by working on a paper on the tectonic setting of giant oil fields and by going to a field conference in Guatemala. "I enjoyed seeing some geology. It was Cecilia's first trip to Central America and she loved seeing the tropical plants."

1985. When he wrote in April, **Brad Werrell** was getting ready to complete his internship and enter residency in family practice or radiology this summer, with the long term goal of opening a medical wellness service as soon as possible. Brad comments, "Ten (Tothwell), Sara, Harrison and Kenneth all doing well - life is fine. Reading The Decline And Fall Of The Roman Empire by Gibbon - excellent." **Laura Runkle** has entered the ranks of cancer survivors, having battled breast cancer this year. She writes that her chemotherapy is done and now she's in the middle of post-mastectomy radiation. "All the remote sensing is fascinating, but a core sample had to be taken to confirm my original suspicions. Do BSE! Get annual mammograms! Pass the word!" We're all pulling for (and with) you Laura! Good luck. **Kristin Grady Mitchell** writes that Dale is now telecommuting, working 5-6 weeks from home in Green Bay, WI, and a week or two in Boston. She says, "It's great having him home. The kids continue to grow. Ben, 6, is learning Spanish and German and loves to read. He is interested also in geography. Katie, 3, is a joy and a handful at the same time. She has the most wonderful expressions." For her own part, Kristin is volunteering at Ben's school and working on art projects. From **Jerry Carlson** in Virginia comes word that he's still employed with Ethyl Corporation—going on fifteen years now. "Sounds boring, but while my employment has been static, my assignments within Ethyl have been very dynamic. After a three-year stint in Detroit, my family and I were relocated back to Richmond, Virginia, last spring. (Our third move for the company!) My wife Terri & I are very glad to be back and quickly dropped into our old circles and activities. Our children (Jerry, 10 and Jennifer, 8) keep us busy with all the standard kid-style activities—dance class, sports, clubs, birthday parties, etc. A minivan, a mortgage, and a beagle named 'Taco'...pretty much familial bliss in suburbs! Regrettably, my involvement with geology these days is limited to the occasional stroll by the mineral exhibit at the kids' elementary school. However I still find myself looking at each road cut I drive through, and think back fondly to the **Charlie Hoskins/Tom Hoak** chili 'variations' on those geology field trips."

Maria Peterson visited Northfield recently and stopped in at a Sunday brunch at Dacie Moses House to saw off a few fiddle tunes. She reports she's "been with Cabot Microelectronics for a year now, and just got handed a new collection of people to manage, the applications engineering team. Now I'm Director of Global Applications and Technical Marketing for Cabot Microelectronics, a company that works with metals, metal oxides, particles, oxidation-reduction reactions ... sounds a little like geology, but the application is for the semiconductor industry. Generally, in any given month, I'm in Europe, Singapore, Japan, Korea or Taiwan, and CA where my home-office is, and Aurora, Illinois, the company headquarters. I get to see the world, or at least many of the conference rooms of the world's semiconductor manufacturers!" Maria, congratulations on your success! **Bill Dewey** announces the birth of a new member of their family, Liam Platt Dewey, born last Oct. 24. Welcome Liam! The family, now of four, moved into a new house in February, of which Bill comments, "Twice as much space but in suburbia - miss my old 'hood." Bill, let us help you arrange for a tour when Liam is ready to look at colleges.



Liam Platt Dewey, born last October 24.

1986. **Susan Grubb** wrote for herself and **Stu**, "All is going well at the 'Grubb chicken farm'. We had an unfortunate incident with weasels in February that wiped out the whole flock, but we have a new crop of adolescent birds that should be providing eggs by fall. Stu is working on his MBA, thanks to the Lofgren [Carleton alumni] Scholarship, and it is going very

well. In addition to work, I spend a lot of time chauffeuring the kids these days. Any free time I get is spent in the garden, taking the kids fishing, or at the dojang (where I'm working on my blue belt in taekwon do)." **Roger Huddleston** writes, "I'm still at CH2M Hill, managing projects and enjoying the work. At home we're enjoying watching our two kids, Aidan and Brendan, grow up. They are now 4 and 5, and actually turning into real people!" **John Woodwell** has been consulting for USAID Africa Bureau Office of Sustainable Development, "which is sometimes really interesting and sometimes just hard work, but it is flexible and I get to do pretty much what I think is the right thing to do, so it's good that way, too. Allison is in Peru right now, hiking the Inca trail with her sister, and I'm weeding the garden." One of John's passions is boats, which he has started to collect. "They're all small, but we've got five of them. A kayak, canoe, JY-15 (which is a little bigger than a Laser, but also has a jib), and two inflatables. The second of the inflatables Allison and I salvaged last fall in Woods Hole. It's a fiberglass-bottom boat with an outboard that had washed up on the rocks in a cove in the Elizabeth Islands and had apparently been there for weeks at least, maybe months, because the bottom was all badly chewed up. No registration numbers, and the Coast Guard had no report of it missing, so we've got a good project going on in the back yard. Otherwise, we've been doing a lot of swimming, sailing, made some nice bookshelves, planted tomatoes & basil, canoeing, biking, and so on.... **Jen Carey** came to our wedding, and it was great to see her. So did **Pete Fritzell** and **Susan Hankins-Fritzell**." A note from **Sean McKenna** said, "I'm still working in the Geohydrology Department at Sandia, mainly on projects related to environmental remediation and numerical modeling of groundwater flow for proposed nuclear waste repositories. Current projects in Japan, Taiwan and Sweden have made for some great trips the past few years. Karen and I are finding it harder and harder to keep up with our kids Libby (9) and Kyle (8), but enjoying the challenge. Two weeks ago, I finished my tenure as a committee member for **Mike Gaud '95** at the University of New Mexico; he did a great job on his thesis and at the defense." **Tom McCabe** sent around a note last November saying he had left his job with the National Park Service in Gustavus, Alaska and he was again a free agent.

1987. **Kim Sollenburger Allen** and her family moved back to Florida last summer so their children, Indigo,

2, and Sidney, 4, could get to know their grandparents. "With the support of family and Montessori school in the area, I went back to work part-time at the non-profit marine and estuarine research lab I spent several years at ten years ago. Life is good, but oh so busy - I just wish there were more hours in the day!"

1988. **Tudi Allen Kennedy** writes "My husband Dan '87 and I joyfully celebrated the birth of our son Liam in September 2001. Liam and his sister Erin (4 1/2 years old) make our lives full and wonderful in St. Paul. It's been 3 1/2 years since I worked as a consultant, and I don't miss it one bit. I'm looking forward to playing soccer with Dan and friends on our co-ed team later this spring (once the snow disappears)." Hopefully, Tudi, you have had a great soccer season by now! **Laura Sloan Ongaro** and her husband Todd announce a new daughter, Marina, born last November 8. Laura writes that Marina is very happy to be entertained by her big sister Zoe, who is 4. It was nice to see **Carolyn Carr** at a picnic on campus for a group of high school kids exploring the option of attending college this July. The group was a summer program being run by Mary Savina and admissions outreach coordinator Todd Olson. Carolyn left her old job at the end of last year. She wrote on her card, "I am starting a new business with a friend to do ecological restoration work. Took a couple of wonderful classes at the Northern Clay Center and now have all sorts of bowls to eat out of. I ran my first marathon (Grandma's) in Duluth this summer and loved it."

1989. I got an email from **Jeff Bartlett** last fall from North Carolina State University saying he "just got a new job working more or less as lackey-cum-research assistant for my graduate advisor Dale Russell, of dinosaur fame. We are making strides to get our institute off the ground, will be studying Cretaceous paleoenvironments [ya and big ugly dinos] in North Africa. **Sara Decherd '01** has settled in and now lives in an office across the hall from me. She is the diaper-bearer of us all, at merely 21 years; is of refreshing brightness and quiet bubbling enthusiasm; is partnered with another new kid from Maryland; comes with paleontology Barbie and dino-checkers. What more could we ask of any new recruit." **Ben Edwards** writes, "We're moving again! Kim, the girls, the hamster, the cat (hopefully), but not the guppies, are moving eastward yet again! This time to Carlisle, Pennsylvania, where I'll start this fall as Asst. Prof. at Dickinson College. I'm sending this from my new electronic address (edwardsb@dickinson.edu),

although we won't physically be in PA until mid-June. Kim and I are excited about being close to the East Coast and the 'older' parts of U.S. history. Gettysburg is only about 1/2 an hour south, and D.C. about 2 hours south. We'll welcome any visitors by mid-July or so. We've just bought a house - it's a bit 'new' by Carlisle standards (built as recently as 1890), but has got lots of interesting nooks and crannies for the cat and kids." **Sonja Wolter** has finished her year at the Wolf Ridge Environmental Learning Center in northern Minnesota and she's thinking about what she'll do next. She writes, "When I first started here, I figured I'd spend the year and then go back to a regular teaching job. Now I'm not so sure I'd like to go back to the normal classroom setting - seems kind of boring compared with having the outdoor classroom possibilities like we have here. At the same time, I don't particularly care for just having kids for a 3-hour class and then never interacting with them again. There's probably a happy medium somewhere." **Holly Ewing** is working at the Institute of Ecosystem Studies in Upstate New York. She writes, "Life as a post doc is pretty interesting. I am learning a lot about modern ecosystems and thinking about approaches to paleoecology. I am repeatedly grateful for my geology background—both in terms of content and in terms of the approach you folks in the Geo Department took in education. I am lucky enough to have some really good colleagues here, and I have found myself thinking a lot about the culture of institutions—what kinds of things encourage collaboration, and what not." We couldn't agree more Holly, we think about these things a lot ourselves. **Carol Ormand** is joining the geology faculty at Wittenberg University in Springfield, Ohio. Good luck in your new job, Carol!

1990. A nice note from **Rebecca Arenson** reported she's "Still in the D.C. area working part-time at NOAA while slogging through the end of my thesis. Got to see **Betsy Hunt '90** and her husband and baby last summer in Vermont soon after Calista was born." Rebecca said she's missing fieldwork (except for the ticks!) and tiring of office work, so a change may be lurking out in the future somewhere... **Drew Cromwell** writes that he got out of the Coast Guard in 2000 only to be recalled after September 11, so now he's leading a port security crew in the Los Angeles/Long Beach port. To top it off, he and Kate were expecting twins to be born in April or May! He says, "I enjoy life in LA, though it is amazing where rich fools build houses in this town." Thanks to **Sean**

McCauley for your address update - Tim. Congratulations and best wishes to **Andrea Earley** and her fincée **Matthew Coen**, who are getting married in Basalt, Colorado, Sept. 14! **Pig's Eye Landing**, **Andrea's** long-time musical companions, will provide tunes for the dancing.



The last time we had pictures of Tim Dooley, son of Butch and Brett, in 1996, he was shown in both prenatal (sonogram) and postnatal views. Here he is again, 6 years later, having gained considerable stature and a new set of carpentry tools.

1991. **Butch Dooley** has been doing more fieldwork this year, according to a letter from

Brett, and he loves it. Last summer Butch, Brett and Tim did field work together in the Carmel Church Quarry. Brett said, "It was Tim's first experience with extended time in the field. He found many sharks' teeth and even a whale vertebrae." **Derek Brooks**, now an attorney with Hinkle, Hensley, Shanor and Martin, L.L.P. in Roswell, NM, announces the birth of a daughter, Anna Catherine Brooks, last September. Congratulations to the proud parents, and welcome to Anna Catherine!

1992. **Jim Rowe** writes they "moved to Boulder last summer and love it! Expecting our first child at the end of May (2002)." We hope to report on the new family member next year! From **Sean Kempke**: "Well, they haven't thrown me out of med. school yet, and I just survived neurology. Considering the local ice cream shoppe opened this week for the summer, my future looks bright." Sean mentioned a thought that's probably occurring to a lot of folks right now, that they are looking forward to the ten-year class reunion in June. But, the reunion will be old news by the time this Newsletter hits the streets. **Jill Baum** has moved to Long Lake, New York, in the middle of the Adirondacks. She's working more than full time(!) for the Student Conservation Association as a staff member at one of their residential AmeriCorps programs. **Clifford Blizard** writes, "I'm headed back

to graduate school for another go at a Ph.D. I'll be starting this August at the State University of New York's College of Environmental Sciences and Forestry (SUNY/ESF) in Syracuse. I'm planning to seek a Ph.D. in Environmental Studies, with a dissertation focusing on landscape narratives and sense of place in the Finger Lakes Region." **Patty Weston** sent a nice New Year's letter saying she's had a good year. She and Aaron got a couple of interesting trips in, one to Hawaii and the other to the Alps. Patty added, "I'm still at Foster Wheeler Environmental, enjoying field work and writing, and feeling good about the results of various projects and the folks I'm working with. I just became a Registered Geologist with the state of Washington in December. I've also been making a bit of music this year, singing in a couple of choirs and doing some fluting as well."

1993. Thanks to **Ben Surpless** for your address update! **Joan Ramage** recently accepted an exciting new job at Creighton University on Omaha, Nebraska. She says, "I look forward to exploring the natural areas of Nebraska. I hope people will stop by if they're going through Omaha, it seems to be a great town. I'll be on the Juneau Icefield this summer doing remote sensing and field observations of snow." (Joan, I spent a couple of weeks in Omaha one time with the Army Reserve, and a huge tornado came through and devastated the downtown area. Duck and cover! Tim)

1994. **Brett Kessler Dooley** tried her hand at teaching high school this past year but in her letter at New Year's she figured she'd return to the elementary grades for next year. She said that last summer the whole family participated in the fossil dig at Carmel Church Quarry. Their son Tim did well as a paleontologist, and she added, "I had the find of my life, a horse skull with eight teeth." **Emily Darby** is finishing up her internship at the University of Washington med school. Thanks for taking a moment to write a card Emily! She "is surviving but certainly not at my most rested." Emily added she recently attended **Karen Purdy's '97** wedding in Santa Barbara. Colgate University Environmental Studies Research and Teaching Support Technician **Myongsun Kong** reported in April, "I'm okay. It's 5 weeks 'til the end of the term - so we've got a third of the term left and there has been a definite upswing in terms of all sorts of consumption - paper in the printers, appointment time with the tech (me) who might know a thing or two about GIS, a lot more food bits and coffee cups left in the computer lab. Stuff

like that." Ah yes, shades of Mudd. **Julia Daly** sent a picture postcard from the shoulders of Mt. Shasta saying she has been offered a faculty slot at the University of Maine - Farmington and she'll be splitting the position with her fiancée, Doug. "We're thrilled to be going to UMF - great students and a field oriented program!" Best wishes for a great year Julia, we hope it works out perfectly.

1995. **Ofori Pearson** and **Cindy Alm** are enjoying their year in the desert... Ofori is about to finish his Ph.D., and they'll be moving to Houston in the fall to start a job with BP Amoco. Cindy continues to enjoy teaching (most days!) but is looking forward to taking a break and starting some new challenges. Thanks to **Dan Fehler** for your address update - Tim. When he wrote this spring, **Ian Wallace** said he'd "decided that I needed to head west and get some skiing in so I packed my stuff and moved to Denver. Of course the ski season blew since there was no snow this year, but hey that's life. I've been thinking about Coldigioco lately since we are coming up on 10 years since the first group made its way through..."

1996. **Nina Molumby** has bought a house (!) in Seattle. In June when she wrote she had just decided to begin a masters in teaching for middle school math and science at University of Washington. Good luck on the teaching program Nina, and hope the house is fun too. Got a note from **Carrie Morrill** saying she had finished her degree at the University of Arizona and now is on a post-doc at the National Center for Atmospheric Research. She also announced she got married in August 2001 to Eric Small, whom she met in grad school at UC-Santa Cruz. Congratulations from the Geo Dept. on both counts, Carrie. And, **Cari Johnson** wrote last winter, "I've had an exciting couple of months. I defended in November and turned in my thesis soon after. The last 6 months of 2001 was a blur—I just remember too much work and not enough sleep. I've started a post doc here at Stanford, working on the San Joaquin basin of California. It's a whole different world from my previous project in Mongolia (now that's an understatement)—now I've got In and Out burgers instead of goatburgers for dinner. And...I just accepted a job at the University of Utah as an assistant professor starting next January. I can't wait to get back to one of my previous 'homes' and to the mountains. I'm leaving tomorrow for a few weeks of field work in Patagonia (you gotta love geology...)." **Andrea Stein** sent a nice holiday card saying, "This year I am finally teaching an earth science course at Garden

Grove High School. I have also been given the additional responsibility of working as a mentor teacher. The longer I teach the more I appreciate all that I learned during the four years I spent at Carleton."

1997. **Sarah Simmons** has spent the last three years working for the National Outdoor Leadership School in Wyoming, Utah, Idaho and Alaska, and road tripping in between courses. She's now adding a new career in massage therapy, taking courses at the Boulder College of Massage Therapy, which she will do in addition to continuing the NOLS courses. **Dave McGee** sent a card from Cambodia saying, "I'm teaching English at the public university in Phnom Penh, helping a bit at some local NGO's, living with a Cambodian family, and eating as many mangoes as I can. It's been a great, rich time so far - I've certainly got mixed feelings about heading home to Pittsburgh in August!" **Laura Veirs** has a new CD coming out soon. Check for updates and MP3's at www.lauraveirs.com (which of course you can access through the Geo Dept. web site alumni page). Laura we hope your new CD sells a million copies! Laura played a gig in the Cave last fall and it was fun to see and hear her. In other news, Laura reports that when she wrote in early April, "The lettuce starts just got blasted by a spring deluge of wind and horizontal rain, but other than that, things are great." **Kat Petersen Boulding** found herself, "in a moment of weakness, or insanity, or maybe smart, who knows," the new owner of a condo. She adds, "Finn (or Abram depending...) just finished his first year of his architecture masters at the U of M and I'm still here at The Bakken Museum."

1998. **Chris Jones** is just wrapping up his first year of an MFA degree at the University of Florida, where he also worked as a graduate instructor in English. **Frances Watson** sends word she's finishing up her first year of grad school in architecture at the University of Virginia. **Lindsay Lightner** writes, "I finally figured out what one does with a graduate degree in writing... You teach writing. I was very fortunate and landed a full-time lectureship at Penn State, where I'm having a ball teaching composition and rhetoric!" And Tim will make sure this paragraph is thoroughly proofread lest he be struck down by a bolt of Lightner... **Brian Klawiter**, Archaeological Technician for the US Forest Service in Duluth, writes, "Woke up with a bear next to my tent this morning. But it was the squirrel who shredded the food pack." Hmmm, there must be a moral in this somewhere. Be ready for bears, but watch out for the

squirrels maybe? **Deb Cussen** has "become part of the Carleton takeover" of an environmental chemistry lab in Seattle, with **Mizu Kinney '99**, chem major Toby Holsman '98 and **Liila Woods**. And Deb is playing a lot of ultimate (and kicking butt, we understand) out there with Mizu, **Liz Penny '00**, and soc/anthro major Sharon Goodwin. **Dave Bitner** and **Marin Byrne** are getting married in the Carleton chapel on August 3 - so congratulations and best wishes to both of you! In his note Dave said, "I'm still in Minneapolis and am working at the National Operational Hydrologic Remote Sensing Center of the National Weather Service, the office that maps snow nationwide for hydrologic applications, along with **Anders Nilsson**. I just got back from delivering a paper out in Colorado at the Western Snow Conference."

1999. **Mike Rhodes** wrote a note saying he's busy working on his classes for his first year of med school at the University of Minnesota. A card from **Kate Hofmann** says, "I've been in Nevada City, California (in the Sierra foothills) this year, helping to develop an environmental education program on salmon and the watershed for the South Yuba River Citizens League. This summer I'll be in Michigan, then in the fall on to grad school in Stevens Point, Wisconsin, for a masters in environmental education." **Bret Higman** says, "things have been going very well for me lately. After graduating I spent a couple years selling glass art stuff (no, not glass blowing, but everything else). When my fiancée Erin McKittrick graduated last year we took off to Alaska and spent a couple months trekking along the Alaska Peninsula. We covered 800 miles of remote (no trails) grizzly country, and the experience was one that I'd highly recommend to anyone with 60ish days on their hands. I'm not sure how to give a picture of what it was like in just a few lines... It had something to do with desperate paddles in a five foot long raft across huge braided rivers, walking through landscapes so saturated in volcanic ash that our shoes disintegrated, defending our desperately caught fish from marauding bears, seasickness in windblown grass, nice locals with steam baths and extra food, and the indescribable wonderful feeling of traveling... But now I'm in grad school along with no less than four of my Carleton classmates. **Heidi Guetschow**, **Noah Finnegan**, **Dave Schneider**, and **Alison Anders** are all here at UW Seattle, as well as **Karen Gran '96**. I also hang out with **Andrew Mattox**, **Chris Brown**, **Jen Melmed**, **Jason Stewart**, **Trevor Davine**, **David Coil**, and occa-

sionally **Sara Cabbage**, all of whom are Carleton '99 graduates. Really, I have made new friends since leaving college... Research is going inexplicably well. Tsunami sedimentation is proving a complex but somewhat tractable problem. I'm looking forward to going to Kamchatka this summer and collecting samples on which to test some of my ideas. A side project involves looking at boulder transport in tsunamis, and I'm heading to Turnagain Arm Alaska next week to put large rocks in front of the tidal bore there. Hopefully some of them will move..." **Alison Anders** finished her masters at the University of Washington last year and is now working on a Ph.D. at Washington along with [see the list above]. "So I'm enjoying 'Carleton West'. I'm headed for field work in Tibet soon and am also looking forward to visiting back in Minnesota this summer!" **Alison Jerris** is still working for Applied Science and Technology Inc., an environmental consultant, as a field geologist. She plans to marry in October - best wishes from the Geo Dept on that AJ! **Katy Werner** is a geologist for the Illinois State Geological Survey. She writes, "After earning my M.S. in Madison, Wisconsin, I traveled to Maui for six months to document the flora of montane bogs in rainforest openings. Now I am monitoring hydrology, soils, and vegetation in wetland restoration sites throughout Illinois."

2000. A nice note from **Liila Woods** this spring told how she had spent last summer doing fieldwork with **Sara Gran Mitchell '96**, and then spent the rest of the year working in the Geology Dept. at U.W. in Seattle. She planned to do field work on mountain streams this summer and then possibly head for grad school or who knows what. **Liz Penny** blew through here this spring just to make sure we were still on our toes and maybe to set us to rights if we weren't. She's been teaching a violence prevention program for high-risk teens at a YMCA in Seattle, and when she visited she was fascinated at the huge contrast between her classes at the Y and our classes here in Mudd. The main victims of violence in Mudd are ideas and concepts! Thanks for stopping in Liz, it was great to see you again. **Alden Boetsch** writes that she's getting to use some of her geology background in her new job at the Bureau of Land Management. "Who knew you could spend eight hours a day in the West while working at a desk in D.C.!" she says. **Joanna Reuter** plans to begin a graduate program at the University of Vermont under the supervision of Paul Bierman this fall. Her project will be a cosmogenic isotope project in the

Susquehanna basin. She says, "My copy of the 2001 Geology Newsletter got a lot of use during my grad school search! Work with the USGS is still going well - we managed to dodge the floods and have a productive field season during a very wet spring in Arkansas. I'll certainly miss working with **Robb Jacobson '79** when I leave." **Nina Berglund** should, by now, have finished her masters in urban planning at the University of Minnesota. She has accepted a position with Kandiyohi County, Minnesota, as the Assistant County Zoning Administrator. Kandiyohi County is a couple of hours west of the Twin Cities, its largest town is Willmar. **Anders Matney** spent the past year teaching environmental education at the Wolf Ridge Environmental Learning Center in Finland, Minnesota, near the north shore of Lake Superior. One of his colleagues there has been **Sonja Wolter '89**. Anders says he's "looking forward to moving on, but thankful to have spent a year in the Northwoods."

2001. **Kate Anders** writes that she and Andrew are getting married this August and still planning on doing the Peace Corps in about 1-1/2 years. She says, "I'm working for the city doing (primarily) inspections in the homes of lead-poisoned children. Generally having a lot of fun." She added that big sister **Alison '99** was headed for China this spring for fieldwork on her Ph.D. in geomorphology and climatology. **Anne Sawyer** sent a card last fall saying she was enjoying her job as an interpretive ranger at Bryce Canyon. She said she was giving geology talks just about every day. **Ani Kameenui** has spent the past year travelling, doing research at the University of Oregon in Eugene, and skiing and teaching in Montana. She says, "I'll be heading to Seattle to attend the University of Washington in Environmental Engineering this fall. 'Til then I'll be working and catchin' rays around the world this summer." **Jake Eaton** reports having a good time subbing (teaching) this past year in Madison, but he plans to start on a masters in geochemistry this fall at UW. **Carl Tape** has finished the first of his two years at Oxford. He says, "I'm getting a master's in seismology and planning on going to a Ph.D. program in the U.S. in 2003. I visited the Italy program in September 2001 and enjoyed the visitors who stopped by on their way back to Carleton."

ALUMS GROUPED BY LOCATION

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Ms. Emily Adams Pugh '86 3071 Erps-
KwerpsBEL
Mr. Stephen T. Sutton '83 4048
HafrsfjordNOR
Mr. William G. North '63 500 02 Hradez
KarloveCSR
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9DFENG
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4E2CAN
Ms. Ruth L. Werne '94 den Hoorn TexelNDL
Mr. Steven C. LeClerq '74 KathmanduNPL
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TipperaryIRL
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Mr. David McGee '97 Phnom PenhKHM
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H8Z 1W6CAN
Ms. Sarah H. Simmons '97 Pincher Creek
Alberta, TOK 1W0CAN
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Mr. Eric A. Holmes '90 RoseggAUT
Barbara Okamoto Bach '78 Tokyo 141-
0022JPN
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B0P 1V0CAN

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Mr. Timothy J. Williams '76 Pinehurst
Mr. Jeffrey A. Bartlett '89 Raleigh
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As you learned in the last section, the object's final position is

$$s_f = s_i + \text{area under the velocity curve } v_s \text{ between } t_i \text{ and } t_f \quad (2.20)$$

The shaded area in Figure 2.22b can be subdivided into a rectangle of area $v_{is} \Delta t$ and a triangle of area $\frac{1}{2}(a_s \Delta t)(\Delta t) = \frac{1}{2}a_s(\Delta t)^2$. Adding these gives

$$s_f = s_i + v_{is} \Delta t + \frac{1}{2}a_s(\Delta t)^2 \quad (2.21)$$

where $\Delta t = t_f - t_i$ is the elapsed time. The quadratic dependence on Δt causes the position-versus-time graph for constant-acceleration motion to have a parabolic shape, as shown in Model 2.2.

Equations 2.19 and 2.21 are two of the basic kinematic equations for motion with constant acceleration. They allow us to predict an object's position and velocity at a future instant of time. We need one more equation to complete our set, a direct relation between position and velocity. First use Equation 2.19 to write $\Delta t = (v_{fs} - v_{is})/a_s$. Substitute this into Equation 2.21, giving

$$s_f = s_i + v_{is} \left(\frac{v_{fs} - v_{is}}{a_s} \right) + \frac{1}{2}a_s \left(\frac{v_{fs} - v_{is}}{a_s} \right)^2 \quad (2.22)$$

With a bit of algebra, this is rearranged to read

$$v_{fs}^2 = v_{is}^2 + 2a_s \Delta s \quad (2.23)$$

where $\Delta s = s_f - s_i$ is the displacement (not the distance!). Equation 2.23 is the last of the three kinematic equations for motion with constant acceleration.

The Constant-Acceleration Model

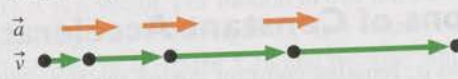
Few objects with changing velocity have a perfectly constant acceleration, but it is often reasonable to model their acceleration as being constant. We do so by utilizing the **constant-acceleration model**. Once again, a model is a set of words, pictures, graphs, and equations that allows us to explain and predict an object's motion.

MODEL 2.2

Constant acceleration

For motion with constant acceleration.

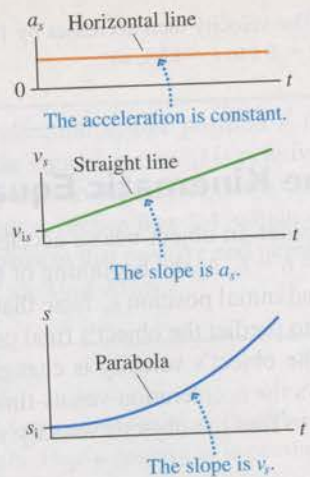
- Model the object as a particle moving in a straight line with constant acceleration.



- Mathematically:

- $v_{fs} = v_{is} + a_s \Delta t$
- $s_f = s_i + v_{is} \Delta t + \frac{1}{2}a_s(\Delta t)^2$
- $v_{fs}^2 = v_{is}^2 + 2a_s \Delta s$

- Limitations: Model fails if the particle's acceleration changes.



Exercise 16

In this text, we'll usually model runners, cars, planes, and rockets as having constant acceleration. Their actual acceleration is often more complicated (for example, a car's acceleration gradually decreases rather than remaining constant until full speed is reached), but the mathematical complexity of dealing with realistic accelerations would detract from the physics we're trying to learn.

The constant-acceleration model is the basis for a problem-solving strategy.

PROBLEM-SOLVING STRATEGY 2.1

MP

Kinematics with constant acceleration

MODEL Model the object as having constant acceleration.

VISUALIZE Use different representations of the information in the problem.

- Draw a *pictorial representation*. This helps you assess the information you are given and starts the process of translating the problem into symbols.
- Use a *graphical representation* if it is appropriate for the problem.
- Go back and forth between these two representations as needed.

SOLVE The mathematical representation is based on the three kinematic equations:

$$v_{fs} = v_{is} + a_s \Delta t$$

$$s_f = s_i + v_{is} \Delta t + \frac{1}{2} a_s (\Delta t)^2$$

$$v_{fs}^2 = v_{is}^2 + 2a_s \Delta s$$

- Use x or y , as appropriate to the problem, rather than the generic s .
- Replace i and f with numerical subscripts defined in the pictorial representation.

ASSESS Check that your result has the correct units and significant figures, is reasonable, and answers the question.

NOTE You are strongly encouraged to solve problems on the Dynamics Worksheets found at the back of the Student Workbook. These worksheets will help you use the Problem-Solving Strategy and develop good problem-solving skills.

EXAMPLE 2.10 The motion of a rocket sled

A rocket sled's engines fire for 5.0 s, boosting the sled to a speed of 250 m/s. The sled then deploys a braking parachute, slowing by 3.0 m/s per second until it stops. What is the total distance traveled?

MODEL We're not given the sled's initial acceleration, while the rockets are firing, but rocket sleds are aerodynamically shaped to minimize air resistance and so it seems reasonable to model the sled as a particle undergoing constant acceleration.

VISUALIZE FIGURE 2.23 shows the pictorial representation. We've made the reasonable assumptions that the sled starts from rest and that the braking parachute is deployed just as the rocket burn ends. There are three points of interest in this problem: the start, the change from propulsion to braking, and the stop. Each of these points has been assigned a position, velocity, and time. Notice that we've replaced the generic subscripts i and f of the kinematic equations with the numerical subscripts 0, 1, and 2. Accelerations are associated not with specific points in the motion but with the

intervals between the points, so acceleration a_{0x} is the acceleration between points 0 and 1 while acceleration a_{1x} is the acceleration between points 1 and 2. The acceleration vector \vec{a}_1 points to the left, so a_{1x} is negative. The sled stops at the end point, so $v_{2x} = 0$ m/s.

SOLVE We know how long the rocket burn lasts and the velocity at the end of the burn. Because we're modeling the sled as having uniform acceleration, we can use the first kinematic equation of Problem-Solving Strategy 2.1 to write

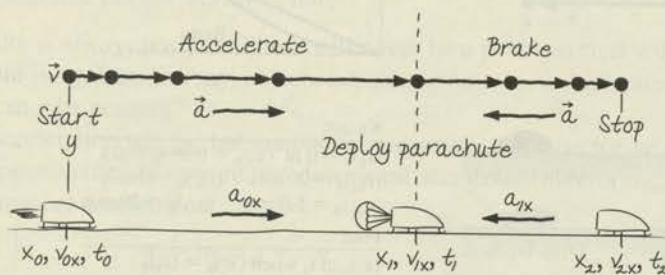
$$v_{1x} = v_{0x} + a_{0x}(t_1 - t_0) = a_{0x}t_1$$

We started with the complete equation, then simplified by noting which terms were zero. Solving for the boost-phase acceleration, we have

$$a_{0x} = \frac{v_{1x}}{t_1} = \frac{250 \text{ m/s}}{5.0 \text{ s}} = 50 \text{ m/s}^2$$

Notice that we worked algebraically until the last step—a hallmark of good problem-solving technique that minimizes the chances of

FIGURE 2.23 Pictorial representation of the rocket sled.



Known

$$x_0 = 0 \text{ m} \quad v_{0x} = 0 \text{ m/s} \quad t_0 = 0 \text{ s}$$

$$v_{1x} = 250 \text{ m/s} \quad t_1 = 5.0 \text{ s}$$

$$a_{1x} = -3.0 \text{ m/s}^2 \quad v_{2x} = 0 \text{ m/s}$$

Find

$$x_2$$

Continued