A Celebration of the Life and Work of:

Lincoln Hollister

When not investigating the outcrops of a distant field area, Lincoln Hollister returned to his office on the fourth floor of Guyot Hall at Princeton University. Visitors to his office usually arrived breathless after climbing the memorably long set of stairs.
Photo by Jesse Chadwick '08

Front Cover-Center: Lincoln Hollister in the Coast Mountains of British Columbia, 1972.
Photo by Glenn Woodsworth *74

Front Cover-Bottom: One of the many hats worn by Lincoln on his field trips and his prized 'white' garnet. It is a pure pyrope (magnesium) garnet from the Dora Maira massif, in the Piedmont region of northern Italy. This garnet contains inclusions of coesite, a high-pressure polymorph of quartz found typically in meteorite impact craters. Study of this mineral assemblage provided a key link in unravelling the process of mountain building in the Alps. Photo by Jesse Chadwick '08

Margin graphic is a detail of a kyanite-containing migmatite, a metamorphic rock that has been partially melted. This particular rock began as sediments deposited on the floor of the Tethys Ocean, which once existed between India and Asia. The sediments were subducted, heated, and partially melted during the collision of the two continents and now form the Higher Himalayan Crystalline sequence in the Bhutan Himalayas. Photo courtesy of Lincoln Hollister

A Publication of Princeton Univerisity:
In the Nation's Service and in the Service of All Nations

In thirty-some years, I have learned many things from Lincoln. *Examples:* what a fluid inclusion is, where to find graphite next time I make a pencil, how to get my driveway plowed (we are neighbors), the coefficient of absurdity in marine regulations in British Columbia, and why the Princeton Township zoning board stays up past midnight coping with Lincoln. As nobody needs to be told, Lincoln is an eclectic, ready, and wide-ranging talker. Brown-bag lunches, Cafe Bonini, 404A: Lincoln talks basketball, talks lacrosse, talks zinc-mine minerals, talks vanished museum collections, vanished museums, tokensauruses, university lawyers (strike the s), and Nisga'a ceremonials in the Nass River valley. His brown bag, woven of bamboo, is a Bhutanese Bangchu (with lid). Lincoln's rooms are down the hall but the hall is one of Lincoln's rooms. The hall is metamorphic terrain — stacked rock trays full of schneisses in the hall. The stairway landing is meta-morphic terrain. More schneiss. Lincoln may be of a certain age, but he ignores the elevator and climbs four flights of stairs, scouting all the way, thinking ahead, preparing to expand his metamorphic terrain down to and including the basement.

— John McPhee '53
Ferris Professor of Journalism

Table of Contents

Testimonials in alphabetical order:

Special thanks to Cam Davidson and Glenn Woodsworth for all their help with decisive photographs and their corresponding captions. Kudos to Jesse Chadwick for her expertise in photographing Lincoln's artifacts, her knowledge of Hollister folklore, and for pinning Lincoln down to clarify a few rock and artifact descriptions.

Note: Some testimonials were edited due to the amount received; however, presented to Lincoln in their entity.

The Agenda

12:00 – 1:00 **Buffet Lunch** – Guyot Great Hall

1:00 – 1:15 **Welcome** – Guyot 10
Jason Morgan

1:15 – 1:45 **British Columbia/Alaska**
Leaders: Glenn Woodsworth and Christopher Andronicos
Panelists: Harvey Cohen, Cameron Davidson, John Hampson, Mary Lou Hill, Harvey Kelsey, Christopher Kenah, Kurt Leinenweber, David Newman, Virginia Sisson, and Harold Stowell

1:45– 2:15 **The Moon Rocks**
Leader: Robert Dymek
Panelists: Elaine Harkins, Glenn MacPherson, Robert Phinney, and Walter Trzcienski

2:15 – 2:45 **Bhutan**
Leader: Djordje Grujic
Panelists: Rainer Kuendig, Nadine McQuarrie, Kate Miller, Roger Moseley, Terry Pavlis, Stefan Schmidt, Susan Swapp, and Tobgay

2:45 – 3:15 **Break** – Guyot Great Hall

3:15 – 3:45 **Fluid Inclusions**
Leader: Robert Burruss
Panelists: Bernardo Cesare, Naomi Levine, Barbara Murck, Jane Selverstone, Dirk van Reenen, and Barbara Jo Wanamaker

3:45 – 4:15 Informal Science Education/Outreach
Leaders: Robin McKinney Martin and Peter Freeman
Panelists: Geoffrey Feiss, Alan Goodheart, Geraldine Toland Regan, and Nancy West

4:15 – 4:45 **Teaching Geology in New Mexico**
Leaders: Katherine Barnhart and Robin McKinney Martin
Panelists: Christopher Andronicos, Sarah Brownlee, Jesse Chadwick, Benjamin Phillips, Maia Schweizer, Pamela Walsh, and Yinan Wang

4:45 – 5:00 **Closing Remarks**
5:30 – 6:00 **Cocktails, Prospect House**
6:00 – 9:00 **Dinner, Prospect House**

For my friend Lincoln...

When I was considering graduate schools in 1969-70, I knew that I wanted to work on metamorphic rocks in the Coast Mountains of British Columbia. To help me decide where to go, I consulted a few of my UBC profs. One of them, Hugh Greenwood *60, said that I could either study with an established master in the field (he named a few) or I could go with a young, up-and-coming person at a good school. He suggested Lincoln Hollister, who had just arrived at Princeton and who, he said, had already published a few really good papers on the Coast Mountains. I also asked my Geological Survey of Canada (GSC) mentors, Bill (Hutch) Hutchison, and Jim Roddick for their opinions. Both were very enthusiastic about Linc. As it happened, Linc attended a conference in Vancouver early in 1970, and Hutch introduced us. Linc liked that I had heard of his thesis area, Kwoiek Needle, but I think he was more impressed that I knew how to pronounce "Kwoiek." So that fall, Joy, myself, and our two small children headed to Princeton.

I found Linc to be an excellent advisor. He gave me plenty of freedom to follow my ideas but was ready to reel me back to shore when it looked as if I was following some screwball path off the deep end. His office door was always open and he always took time to stop what he was doing and talk. He cared deeply about his students, probably more than most of us appreciated at the time.

Everyone knows that Linc, a California kid (with time at Harvard), began his geological career in British Columbia, but most people don't know how that happened. For his Ph.D. work, Linc had done one summer field work in western California (his home turf) only to arrive back at CalTech and find that his proposed thesis work had essentially been published by another person working on much the same problems, unknown to Linc or his advisor, Arden Albee.

Uppermost figure of a talking stick, commissioned by Lincoln Hollister in honor of the ACCRETE project. Adapted from traditional myths of the moon's formation, the raven holds a globe in his beak, symbolic of the scientific insights about the earth gained through the ACCRETE study. This talking stick was carved from a single piece of cedarwood by master First Nations carver, Ken McNeil.

Photo by Jesse Chadwick '08

Lincoln plucking ducks in the Kwoiek area, British Columbia, in 1963. Photo by Dave Hewitt

Linc headed to the library to search the literature for another area, preferably one without turf wars and "Keep Out" signs. Buried in an obscure GSC report he found mention of the sort of rocks he was looking for. He wrote to the author, Ken McTaggart, then on the faculty at UBC, who strongly encouraged him, "Come on up, there's a lot to be done. There are no turf wars and no 'Go Away' signs." So Linc spent three summers in a remote, mountainous area about 140 km northeast of Vancouver, near Kwoiek Needle. His method of travel was old-fashioned backpacking, and he and his assistant supplemented what food they could carry with game they shot with Linc's rifle. Along the way, he became friends with Jim Gillen of the railway hamlet of Keefers, who greatly helped him learn the ways of Coast Mountains bush living. In one of those odd coincidences that we all encounter from time to time, it turned out that Jim's wife and my mother were classmates at nursing school many years earlier.

That might have been the end of Linc's British Columbia story but for a chance meeting at a 1966 GSA meeting in San Francisco. After Linc's talk, he was approached by Bill Hutchison (the two had never met before). Hutch had recently finished a reconnaissance mapping project—the first ever—in the Prince Rupert area of the Coast Mountains. (I was fortunate to have worked on this project in 1965, and even as a lowly junior field assistant I knew that the area was fascinating.) Hutch showed Linc a rock and said, "Would you be interested in coming up to Prince Rupert and working on this stuff?" Linc looked at the rock and recognized it as something very special: a sample from "the bottom of the batholith." In 1969, he took a field trip to the Prince Rupert-Skeena River area with Hutch and Jim Roddick. What he found was world-class (an overworked term, but true in this case) geology, superb outcrops, and not a single geologist working there (Jim and Hutch were working elsewhere by then). Linc was hooked. In 1971, Linc began serious work in the Prince Rupert-Skeena area and I began my thesis work much farther south in the Coast Mountains. The Hollister Coast Mountains saga had begun.

After I finished my thesis, I joined the GSC, taking over Hutch's Coast Mountains position when he climbed down the ladder to a senior management position. In the 1970s and 1980s, the GSC was well funded and I was fortunate in being able to divert field money to many of Linc's British Columbia students. Much of that was in helicopter support delivered by our mutual friend and superb pilot, Dave Newman.

Linc and I kept in touch, and we've collaborated on a few projects. He's always stayed with Joy and me whenever he passed through Vancouver. On many occasions I was in the field when Linc arrived, and he always treated Joy to a nice dinner out. On occasion, he'd phone her from some motel in Prince Rupert and chat for an hour or so, just to keep in touch.

For close to 40 years, Joy and I have stayed friends with Linc and Sarah. What more could anyone want in a thesis advisor?

Thanks for everything, Linc, and one of these days you and I will have to make a trip to the Kwoiek area.

*—Glenn Woodsworth *74*
Geological Survey of Canada (Emeritus)

Lincoln's duck-taped shoes.
Photo by Naomi Levine '03, courtesy of W. Jason Mogan

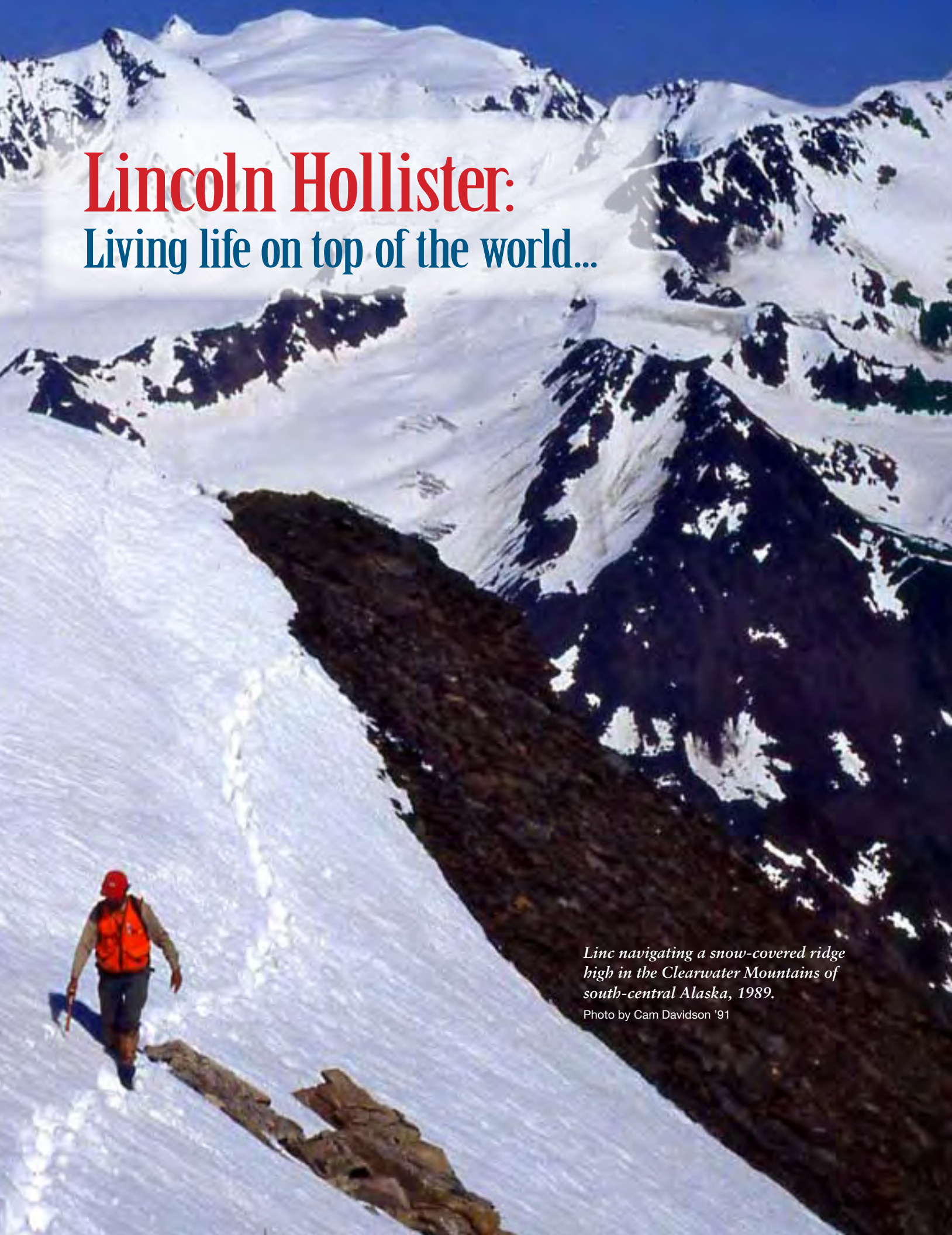
These boots were made for walking…

During the fall 314 trip to New Mexico in 2000, Linc's hiking boots were so old that he had to duct tape the soles on. Apparently they were the boots he'd used for years which had been all around the world and up the Himalayans several time. It seemed appropriate to document their existence before they met their end in a dumpster in New Mexico.

Linc is an amazing scientist and a fabulous teacher. His energy and enthusiasm for geology is contagious, and his devotion to teaching the next generation of Earth Scientists is unrivaled. In addition to working closely with Linc for my junior papers, I was fortunate to have participated in numerous field trips with him. These trips rank among my favorite Princeton memories. Included in lessons of New Mexico or British Columbia petrology were always priceless Hollister theorems: one of my favorites is "Some of it plus the rest of it equals all of it." Linc, best of luck on 'the rest of it'!

—best, Naomi Levine '03

Lincoln Hollister:
Living life on top of the world...



Linc navigating a snow-covered ridge high in the Clearwater Mountains of south-central Alaska, 1989.

Photo by Cam Davidson '91

...literally

Lincoln Hollister retires July 1, 2011, after 43 years at Princeton.

Throughout his career, Lincoln studied the largest metamorphic complex in the world, the Coast Mountains of western British Columbia, Canada and of southeast Alaska. His work here laid the foundation of his search for a unified theory for the formation of continental crust. For 45 years, Hollister and his students shared the tremendous, ice carved rock exposure of mid-to lower-crustal rocks in the Coast Mountains with wolves, wolverines, bears, eagles, ravens, mountain goats, and with very few other geologists. He and his colleagues and students determined thermal and structural implications of accretion of crustal fragments to the North American continent.

With a Trapper Nelson pack on his back, this is Lincoln in 1963 (pre helicopter). He descends downhill toward a deer. Lincoln writes: "Our mode of operation was to take the last traverse from a camp to where we hoped to make a new camp, then shoot a deer, dress it out and hang it in a tree to ripen, while we took our rocks out of the mts from the previous camp and prepared for the next camp. When we returned, about a week later, we had our food supply in a tree, at our new camp site, ready to eat. Unless a grizzly got to it in the meantime, but that's another story...."

Photo by Dave Hewitt

Lincoln grew up as a free-range adolescent on a vast cattle ranch. There he learned to survive and thrive in the out-of-doors; and his uncle Joe Hollister, who had published the first geologic map of southern California, introduced him to geology. When Lincoln encountered civilization in Harvard Yard in 1956[1], he took aim at a squirrel with his .38 revolver, during freshman orientation week. The authorities did not appreciate this, especially since the offense took place on a Sunday. Lincoln concluded then and there that the best career for him would be one that would take him out of the city and into the mountains[2].

Lincoln's .38 revolver. Photo by Jesse Chadwick '08

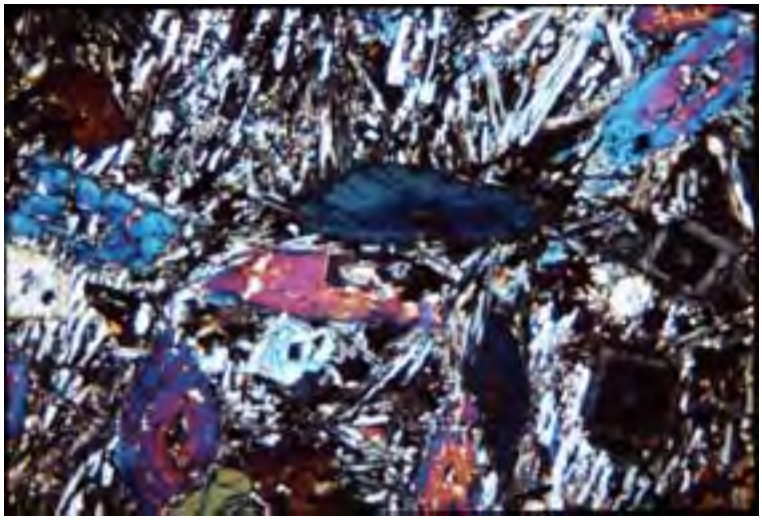
Lincoln's skills with guns and survival in the mountains were necessary to do the fieldwork for his Ph.D. thesis (Caltech, 1963-64). This involved backpacking into the Coast Mountains of British Columbia where he had no contact with the outside world for weeks at a time. He extended his time in the mountains by taking game for food,

Lincoln's early field gear—a rifle.

Photo by Dave Hewitt

1. His great uncle, Stanley Hollister, who had arrived at Harvard in 1897 from the same ranch, was also detained for discharging firearms in Harvard Yard; his name is engraved on the list, in the Freshman Union, of Harvard students who were killed in the Spanish American war.

2. His career in geology was a natural consequence of having an aptitude for science, a love of the out-of-doors, and the skills to survive in adverse conditions.



Photomicrograph of a thin section of lunar basalt, collected by the Apollo 12 mission. This texture of sector-zoned pigeonite clinopyroxene phenocrysts and swallowtail plagioclase is produced by rapid cooling of the source magma at the surface of the Moon. Photo courtesy of Lincoln Hollister

which included mountain goat, deer, bear ("*yes, he ate two*"), ptarmigan, grouse, duck, ("*he shot five with three rifle bullets!*") trout, porcupine ("*actually, quite good*"), and marmot.

At the beginning of his career, the overwhelming consensus amongst petrologists was that most metamorphic minerals were homogeneous, a necessary condition for thermodynamic equilibrium. Minerals were assumed to be homogeneous because metamorphic rocks are held at high temperatures for long periods of time. However, using one of the first electron microprobes available to geologists, Lincoln showed that many metamorphic minerals are compositionally zoned. The zoning in garnet, for example, followed the laws of Rayleigh depletion, first published by Lord Rayleigh in 1902 for the distillation of alcohol.

Lincoln again challenged conventional application of the principles of chemical equilibrium by showing that two or more compositions of the same mineral can grow at the same pressure-temperature conditions. This was because the compositions of minerals are in part controlled by the atomic arrangements on the surfaces of the growing crystal faces, and, because the atomic arrangements on crystallographically different faces differ, the compositions behind the growing faces can differ. If the mineral grows too rapidly for these differences to adjust by re-equilibration, then the mineral can have several compositions that formed at the same temperature-pressure conditions. He called this phenomenon sector zoning.

Lincoln and the moon rocks arrived together at Princeton. His major paper on the discovery and causes of sector zoning was not yet in print. This meant that, although he knew sector zoning when he saw it in the pyroxene phenocrysts in the lunar lavas, the other scientists studying the moon rocks did not know yet what they were looking at. Based on this understanding, he showed that the pyroxene phenocrysts in the mare basalts had grown rapidly after the lavas had poured out onto the surface of the moon. This result was contrary to the then consensus opinion that the pyroxene phenocrysts had grown at high pressures, within the lunar interior. Hollister had it right.

When helicopters with lightweight jet powered engines became available after 1966 to carry heavy loads high onto remote mountain ridges, Hollister's fieldwork was transformed. He was able to set out camps with enough food to feed two or three people for two to six weeks at a time. The taking of game was no longer necessary. Even so, communication with the outside was limited to occasional brief contact by radio. One time the camp was blown away in a storm, but an alert colleague, who had been monitoring the weather from Vancouver, sent in helicopters for the rescue.

Metamorphism occurs as minerals in rocks change in response to increase of temperature and pressure. Hollister recognized that the rocks in the Eocene core of the Coast Mountains had reached the highest temperatures of metamorphism (called the granulite facies), which was previously thought to have occurred only in Precambrian rocks. He then set out to learn why and how such high temperatures had been reached within the crust. One theory prevalent at the time was that the apparent high temperatures were due to dehydration by flooding of CO_2 into lower crustal rocks from the mantle; this theory was based on occurrences of liquid CO_2 fluid inclusions in granulite facies rocks that had been described by a group in Nancy, France. To study the role of CO_2 in metamorphism, Hollister took samples to Nancy for his 1972-1973 sabbatical.

After several years of study of fluid inclusions, Hollister and colleagues concluded that CO_2 flooding was not the cause of the apparent high temperatures of metamorphism. Rather, the liquid

CO_2 fluid inclusions were the result of metamorphic processes hitherto unrecognized. Two insights from the study of fluid inclusions helped toward an understanding of processes of continental crust formation. Reaching these insights was a consequence of Hollister's learning the basics of high temperature deformation processes during a 1987-88 sabbatical to Zurich. The first insight was that dynamic recrystallization, during ductile deformation, produced pure CO_2 fluids by removing the H_2O component from mixed

Lincoln being dropped by helicopter, Alaska, 1987. Photo courtesy of Cam Davidson '91

CO_2–H_2O fluids. Thus, the properties of the CO_2 inclusions reflected P-T conditions during the recrystallization, and not for the formation of the metamorphic minerals. The second insight was the discovery that two immiscible fluids, one CO_2-rich and the other H_2O-rich, were likely to be present during medium grades of metamorphism. The physical properties of the two fluids could be used to determine the P-T conditions for when the fluids were immiscible. By correlating fluid inclusion properties with rock texture, Hollister and colleagues showed that metamorphic rocks, while they were still hot, were commonly brought close to the surface.

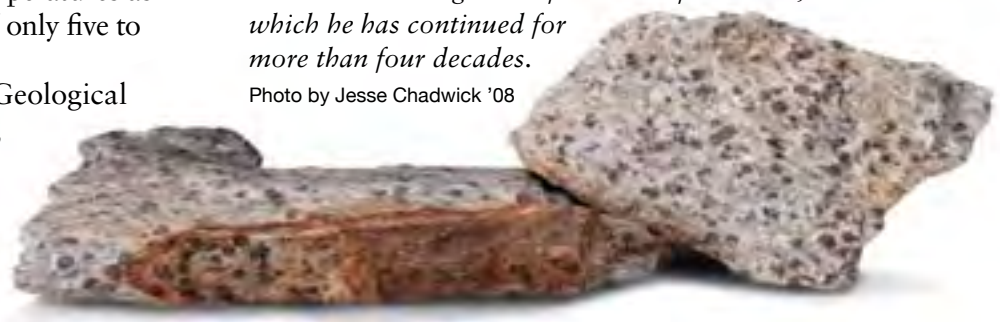
The story read from the fluid inclusions, combined with the story preserved in the metamorphic mineral assemblages, led to the general observation (1993) that most crystalline belts are brought to the surface sufficiently fast that temperatures as high as 400 °C can occur at depths of only five to ten kilometers.

While participating with a U.S. Geological Survey team (1985-1987) in Alaska, Hollister realized the possibilities for gaining new insights into earth processes by applying a multidisciplinary approach to a single geographic area. The USGS project, called the Trans Alaska Crustal Transect (TACT), succeeded in making a three dimensional geologic image across Alaska, from the surface down more than 50 km to the underlying subducting plate. Lincoln's experience with this project strongly influenced the style of his research for the rest of his career.

In the fall of 1987, when looking down on the inland fjord that is Lake Como, Italy, the idea struck him that one could take a seismic ship up the fjords of British Columbia; these cut across the Coast Mountains. The seismic profiles had just been completed across Alaska (TACT), and another seismic profile had crossed the Alps near Lake Como. These profiles were intriguing but only hinted at how much more could be learned if one could improve on the seismic imaging techniques. This could be accomplished in British Columbia by using airguns towed behind a ship that could fire thousands of pulses at known location and time, with the pulses being recorded by hundreds of closely spaced portable seismometers placed along the shores of the fjords and into the continental interior.

Thus was born the multidisciplinary project ACCRETE in 1993, arguably the biggest scientific accomplishment of Hollister's career. The flagship experiment of ACCRETE was a combined offshore/onshore seismic study that provided an unprecedented image of the top 50 kilometers of the earth's crust and mantle for a 500- by-300-km area straddling the Alaska-British Columbia border. A surprising result was the rich array of shear wave data, as well as compressional wave data; this allowed identification of rocks in the otherwise inaccessible lower crust, down to the Moho at about 30 km. The combined seismic and geologic work of ACCRETE showed that this belt was formed by thickening

A sillimanite-garnet rock from the base of the Coast Mountains Batholith, British Columbia. A sample collected from the same locality initated Lincoln Hollister's investigation of batholith formation, work which he has continued for more than four decades.
Photo by Jesse Chadwick '08



Lake Como, Italy in 1987. Photo courtesy of Lincoln Hollister

of the crust 85 to 60 million years ago during oblique convergence of plates; the thickened crust collapsed and thinned when the stress regime changed to extension 60-50 million years ago. By 2006, Lincoln, working with his former student Chris Andronicos, brought the final results together in a paper written at the Rockefeller Foundation at Bellagio, on Lake Como, where the idea for ACCRETE had been conceived. This paper proposes a unified theory for the formation of continental crust.

In starting ACCRETE, Hollister gained the support of local residents who had at first worried that the project might be environmentally threatening: the use of airguns in inland waterways where fishing is the basis of the local economy. He found, however, that the local residents were very receptive to learning what was to be done and how and why. Understanding led to reduced fear, and ACCRETE gained the permissions to proceed from government agencies, community groups, and native tribes. After the seismic phase of the study was finished, it was clear no whales or fish had been hurt[3]. The lengthy negotiations with leaders of several tribal councils to carry on research on their lands led to subsequent cooperative educational outreach projects with the tribes and with other community groups and schools in the region. Later, at a Nisga'a tribal council meeting, Lincoln presented the Nisga'a Nation a Princeton University NCAA trophy basketball, signed by the coaches of back-to-back Ivy League championship teams.

In 1987 Hollister and his wife, Sarah, joined a six-week expedition organized by his late brother, Charlie, which traversed on foot along and across the Himalayas of Bhutan. That marked the beginning of a research program based in Bhutan that continues to the present. Following this first expedition, Lincoln organized and led several additional expeditions across the Bhutan Himalaya. These followed the model of TACT and ACCRETE: bringing together a range of disciplines in pursuit of one goal, at one time, in one place. The expeditions led to the discovery and definition of ductile extrusive flow (channel flow hypothesis), the process by which hot rock is rapidly expelled from between rigid, converging plates. This marked a major step toward his goal of formulating a unified theory of how continents form.

The R/V Maurice Ewing in Bristish Columbia towing airguns that fire incrementally recording a seismic image profile.

Photo by Glenn Woodsworth *74

3. Following the scientific successes of ACCRETE, a second coordinated seismic and geologic project, led by Chris Andronicos, was conceived to make an even more comprehensive three-dimensional image of a mountain belt. However, the intentional propagation of misinformation by environmental groups led to the marine seismic component of the project being scuttled. It was a triumph of hearsay over the scientific method. The environmental groups claimed they were saving marine life from the scientists, in spite of overwhelming evidence that the airguns, as were used without adverse effects by ACCRETE, would not damage marine life.

A critical insight leading to the channel flow hypothesis, and what may be an underlying principle for continental crust formation, was the recognition that where rocks began to melt with rising temperature, their strength dropped. Great thrust faults are initiated within this weak zone. The weakening occurs with only one or two percent melt. This observation was (and still is) challenged by rock deformation theorists and experimentalists who claim that about 30 percent of the rock needs to melt before it is weakened enough to localize deformation.

The Baja British Columbia hypothesis underlies all geological work in Alaska and British Columbia. This hypothesis holds that large chunks of western Canada and Alaska had travelled 1000's of km northward to their present locations from latitudes corresponding to Baja California. The basis of the hypothesis is that remanent paleomagnetic inclinations imply that the rocks had crystallized several thousand km to the south of where they now occur. However some interpreted the discordant inclination directions to be due to tilting of blocks of continental fragments that accreted in a direction essentially perpendicular to the Pacific coast. The late Robert Hargraves set Hollister on the track to resolve this conflict. Hargraves had long advocated the importance of exsolution in the Fe-Ti oxides for recording paleomagnetic directions, which he called lamellar magnetization. Hargraves observed that the remanent magnetization directions of the pluton used in support of the tilt hypothesis, the Ecstall pluton, appeared to have the characteristics of lamellar magnetization. Hargraves, Hollister, and two others showed that this was the case; the Ecstall pluton had not been tilted at its present latitude but rather had been transported several thousand kilometers northward and then, without tilting, was reheated at the present latitude by the adjacent hot core of the Coast Mountains.

Lincoln thoroughly enjoyed teaching about rocks and minerals. He built his courses around natural occurrences, and he expanded the range of field experiences for his students to include many areas of the west; he also took classes to British Columbia and to Brittany, France. His favorite area for field trips was northern New Mexico, which is rich in occurrences of spectacular metamorphic and igneous rocks. The students collected samples to bring back to Princeton to use as a basis for class projects, and they learned mineralogy and petrology as they worked on the samples they had collected.

Lincoln and Sarah in Bhutan, 1987.
Photo courtesy of Lincoln Hollister

Never abandoning his rock hammer, but no longer needing his rifle, his tools of research continuously evolved: Hollister was one of the first to apply the electron microprobe to the study of chemical zoning in rock-forming minerals, was one of the first to use jet-powered helicopters to reach previously inaccessible regions of mountain belts, introduced the study of fluid inclusions in metamorphic rocks to petrologists in north America, and was the first to use a seismic ship for studying metamorphic geology. He also greatly benefited from the Apollo rockets that carried his "field assistants" to the moon to bring back rocks formed during the first quarter of the history of the solar system.

Lincoln enjoying a meal with colleagues on a 1993 expedition to Bhutan. Lincoln writes: "Going around the table from my right is Stefan Schmidt, Terry Pavlis, Raphael Schmidt, Rainer Koendig, and Djordje Grujic. The photo on the wall is the late King Jigme Singye Wangchuck. Roger Moseley, who is taking the photo, thought I looked like him. Note that the king is 'late?' We are having dinner in Mongar. The person opening the beer is a waiter or a guide." Photo by Roger Moseley

Lincoln Hollister in Bhutan with his brother, Charlie, 1987.

Photo by Sarah Hollister

In his youth, Hollister carved notches on the butt of his 30/30 carbine for every deer he shot. Now he "notches" the number of different journals in which his reviewed papers have been published: 31 at last count. The wide range of disciplines covered by these journals represents the multidisciplinary range of Hollister's research.

Notches on Lincoln's 30/30 carbine rifle.

Photo by Jesse Chadwick '08

What next? Hollister is working on an article that is based on the cumulative contributions of his undergraduate class exercises in New Mexico; it provides new insights into the Proterozoic metamorphic history of the southwest. He continues on a multidisciplinary quest to find a natural occurrence of a mineral containing forbidden 5-fold symmetry; it is called a quasicrystal and one was reported to have been found in eastern Siberia. He also continues working on a project that contrasts Phanerozoic crust-forming processes with those of the early Archaean. He expects to complete a geologic guide to the Coast Mountains of British Columbia, which is an effort at informal science education. He is compiling his extensive notes and documents in order to write on how environmental non-government organizations abuse the scienctific method in order to sustain their flow of donations. In the Department of Geosciences, he keeps an eye on the reassembling of the long-neglected mineral collection, for display, teaching, and research; and he continues to be involved in the teaching of petrology and mineralogy.

Hollister is grateful to the atmosphere of scholarly support at Princeton that provided a steady stream of brilliant students. Most of Hollister's contributions were in collaboration with these students, and many are co-authors in his bibliography. However, many of his Ph.D. students published their theses under their names alone: Tim Loomis, Walter Maresch, Glenn Woodsworth, Jeff Grambling, Bruce Douglas, Jinny Sisson, Mary Lou Hill, Bob Burruss, Harold Stowell, and Lew Ashwal.

NSF provided most of Hollister's financial support, beginning in 1963 and continuing until he retired. Along the way, he also received financial support from UCLA, NASA, NATO, the US Geological Survey, ERDA, Princeton University, and the National Geographic Society. The Geological Survey of Canada (GSC) provided very large amounts of essential logistic support to Lincoln and to his students who did theses (Ph.D. and Bachelors) in Canada. The GSC also provided summer

Lincoln's current field gear. Instead of a rifle, he now carries a camera.

Photo by Sarah Hollister

financial support to Lincoln's Canadian students.

Geographic areas of fieldwork by Lincoln, his colleagues, and his students:

- Glaucophane schists of California
- Tidal marshes of Massachusetts and California
- Kwoiek River area, British Columbia
- Ronda Massif, Spain
- Mt Raleigh, British Columbia
- The Moon
- Skeena River area, British Columbia
- Eastern Alaska Range
- Western Idaho
- Chugash Mts., Alaska
- Thelon Tectonic Zone, Northwest Territories
- Kingdom of Bhutan
- South central Maine
- Northern New Mexico
- Truchas Mts., New Mexico
- Tracy Arm, southeast Alaska

Lincoln Hollister with undergraduate students on a petrology field trip, studying the Bandelier tuff at the Tsankawi site, near Bandelier National Monument, New Mexico. Photo by Jesse Chadwick '08

- Limpopo Belt, South Africa
- Sardinia, Italy
- Eastern Alps, Italy
- Argentera region, western Alps, Italy

Linc pointing at the Valdez Creek shear zone, Clearwater Mountains, south-central Alaska, 1987.

Photo by Cam Davidson '91

It's summer, 1987. Linc, Cam, and William (Linc's son) make their way through the grocery store in Anchorage. "Aha," Linc exclaims as he spots something odd in the 'meat' section of the cooler, "I'm going to make you the best meal you'll ever have when working in the field: Salt Pork." William and Cam exchange interested and perhaps somewhat worried looks. Later that week, it's raining, cold, and Linc decides it's time for salt pork. The raw beans (from a bag) go into a pot along with the mystery meat and water. The lid goes on, and the pot is placed on our whisperlite stove. Some spices are thrown in for good measure, but in the end this makes little difference. We wait. "So how long does this take?" we ask. "Well", Linc answers, "I can't really recall, but it should boil for awhile so the beans soften-up and soak up all the good stuff from the salt pork." Cam rubs his heart and William looks out the door of the cook tent. We wait. The rain falls harder and it's definitely dark. "Do you mind if I lift the cover and check the beans?" Cam asks. "No, you'll let out the steam, just be patient…" The beer tastes good, and William looks for the whiskey. Finally, Linc states emphatically that we are ready to eat, but "it doesn't quite taste how I remember it". The bowls come out and the Salt Pork goes in…. William takes a bite and nearly looses a tooth; Cam eyes the cabbage salad to see how much is left. Linc waxes nostalgic, "this used to be one of my favorite meals after the fresh Elk ran out, perhaps we need to let it soak overnight…" The next day, the sun is out, we all eat more breakfast than usual, and William and Cam make a pact that we do the cooking from now on.

Tribute: Linc, I can't thank you enough for all that you have done for my career and for me personally. The dedication and time you put into your profession and your students is something to be admired. I often channel your wisdom when discussing science or giving advice to my students at Carleton: "Some of it, plus the rest of it, equals all of it" or, one of my favorites, "If it does happen, then it can happen." I also give reassurance after handing back a writing assignment filled with red ink by telling students that I didn't learn to write until I got to graduate school: "You should have seen all the red on the first piece of writing I got back from my Ph.D. advisor…" Again, thank you for taking the time to help make me a careful scientist and a better writer. I truly cherish the time I had at Princeton.

With deep gratitude and affection,
Cam Davidson '91

Published Papers

Hollister, L. S., 1966, Garnet zoning: an interpretation based on the Rayleigh fractionation model. Science, v. 154, 1647-1651.

Hollister, L. S. and A. E. Bence, 1967, Staurolite: sectoral composition variations. Science, v. 158, 1053-1056.

Hollister, L. S., 1969, Metastable paragenetic sequence of andalusite, kyanite, and sillimanite, Kwoiek area, British Columbia: American J. Science, v. 267, 352-370.

Hollister, L. S., 1969, Contact metamorphism in the Kwoiek area of British Columbia: an end member of the metamorhpic process. Bulletin Geological Society America, v. 80, 2465-2494.

Dollase, W. A. and **L. S. Hollister**, 1969, X-ray evidence of ordering differences between sectors of a single staurolite crystal. Geolical Society of America discussion paper, Abstracts with Programs for 1969, part 7, 268-270.

Hollister, L. S., 1970, Origin, mechanism, and consequences of compositional sector zoning in staurolite. American Mineralogist, v. 55, 742-766.

Hargraves, R. B., **L. S. Hollister**, and G. Otalora, 1970, Compositional zoning and its significance in pyroxenes from three coarse-grained lunar samples. Science, v. 167, 631-633.

Hollister, L. S. and R. B. Hargraves, 1970, Compositional zoning and its significance in pyroxenes from two coarse-grained Apollo 11 samples. Geochimica. Cosmochimica. Acta, Supplement 1, Proceedings of the Apollo 11 Lunar Science Conference, v. 1, 541-550.

Hollister, L. S. and A. Gancarz, 1971, Compositional sector-zoning in clinopyroxene from the Narce Area, Italy. American Mineralogist, v. 56, 959-979.

Hollister, L. S., W. E. Trzcienski, Jr., R. B. Hargraves, and C. G. Kulick, 1971, Petrogenetic significance of pyroxenes in two Apollo 12 samples. Proceedings of the Second Lunar Science Conference, v. 1, 529-557.

Hollister, L. S., 1971, Metamorphism in the Canadian Cordillera. Geotimes, v. 16, no. 5, 25-26.

Hess, H. H., J. L. Maxwell, **L. S. Hollister**, and E. Moores, 1971, Peridotites and related ultramafic rocks. In: Upper Mantle Project, final report, NAS-NRC, 202-203.

Hollister, L. S., W. E. Trzcienski, Jr., R. B. Hargraves, and C. G. Kulick, 1972, Crystallization histories of two Apollo 12 basalts. In: Hess Memorial Volume (editor R. Shagam), Geological Society of America Memoir 132, 641-650.

Hollister, L. S. and C. G. Kulick, 1972, Lunar 16 sample G36: Another Crystalline Product of an Extremely Mafic Magma. Earth and Planetary Science Letters, v. 13, 312-315.

Hollister, L. S., 1972, Implications of the relative concentrations of Al, Ti and Cr in lunar pyroxenes. In: Lunar Science III. (ed. L. Watkins) Lunar Science Institute Contribution, v. 88, 389-391.

Hollister, L. S., W. E. Trzcienski, Jr., R. Dymek, C. G. Kulick, P. W. Weigand and R. B. Hargraves, 1972, Igneous fragment 14310, 21 and the origin of the mare basalts. In: Lunar Science III. (ed. L. Watkins) Lunar Science Institute Contribution, v.88, 386-388.

Weigand, P. W. and **L. S. Hollister**, 1972, Pyroxenes from breccia 14303. Geochimica Cosmochimica Acta, Supplement 3, v. 1, 471-480.

Hargraves, R. B. and **L. S. Hollister**, 1972, Mineralogic and petrologic study of lunar anorthosite slide 15415, 18. Science, v. 175, 430-432.

Weigand, P. W. and **L. S. Hollister**, 1973, Basaltic vitrophyre 15597: An undifferentiated melt sample: Earth Planetary Science Letters, v. 19, 61-74.

Hollister, L. S., 1973, Sample 67955: A description and a problem. Proceedings Fourth Lunar Science Conference, Supplement 4, Geochimica Cosmochimica Acta, v. 1, 633-641.

Dalton, J., **L. S. Hollister**, C. G. Kulick and R. B. Hargraves, 1974, The nature of the chromite to ulvospinel transition in mare basalt 15555. Lunar Science V, Lunar Science Institute, 160-162.

Crawford, M. L. and **L. S. Hollister**, 1974, Feldspathic basalt 14310, a lunar mantle derived magma. Lunar Science V, Lunar Science Institute, 145-147.

Dalton, J. and **L. S. Hollister**, 1974, Spinel-Silicate Co-crystallization relations in sample 15555. Proceedings Fifth Lunar Science Conference, Supplement 5, Geochimica Cosmochimica Acta, v. 1, 421-429.

Crawford, M. L. and **L. S. Hollister**, 1974, KREEP basalt; a possible partial melt from the lunar interior. Proceedings Fifth Lunar Science Conference, Supplement 5, Geochimica Cosmochimica Acta, v. 1, 399-419.

Burruss, R. C. and **L. S. Hollister**, 1974, Self-consistent P, T data relevant to "freezing" studies of CO_2-rich fluid inclusions. Fluid Inclusion Research, v. 7, 30-31.

Hollister, L. S., 1975, Memorial of David Robert Waldbaum. American Mineralogist, v. 60, 514-517.

Hollister, L. S., 1975, Outline of a model for lunar evolution. Lunar Science VI, Lunar Science Institute, 381-383.

Schaeffer, J. and **L. S. Hollister**, 1975, The petrology of two coarse-grained clasts in breccia sample 60255. Lunar Science VI, Lunar Science Institute, 705-706.

Hollister, L. S., 1975, Evolution of the moon between 4.6 and 3.3 AE. Proceedings Sixth Lunar Science Conference, Supplement 6, Geochimica Cosmochimica Acta, v. 1, 1159-1178.

Hollister, L. S., 1975, Granulite facies metamorphism in the Coast Range crystalline belt. Canadian Journal Earth Science, v. 12, 1953-1955.

Hollister, L. S., and R. C. Burruss, 1976, Phase equilibria in fluid inclusions from the Khtada Lake Metamorphic Complex. Geochimica Cosmochimica Acta, v. 40, 163-175.

Harkins, E., and **L. S. Hollister**, 1977, Sector zoning of clinopyroxene from a weakly metamorphosed diabase. American Mineralogist, v. 62, 390-394.

Hollister, L. S., 1977, The reaction forming cordierite from garnet, the Khtada Lake Metamorphic Complex, British Columbia. Canadian Mineralogist, v. 15, 217-229.

Hollister, L. S., and M. L. Crawford, 1977, Evidence for a direct genetic connection between Apollo 15 KREEP and Apollo 12 and 15 basalts. Lunar Science VIII, Lunar Science Institute, 452-454.

Hollister, L. S., 1977, Lunar Crust. Geotimes, v. 22, no. 5, 22-23.

Hollister, L. S., and M. L. Crawford, 1977, Melt immiscibility in Apollo 15 KREEP: origin of Fe-rich mare basalts. Proceedings Eighth Lunar Science Conference, Geochimica Cosmochimica Acta, v. 2, p. 2419-2432.

Crawford, M. L., and **L. S. Hollister**, 1977, Evolution of KREEP: further petrologic evidence. Proceedings Eighth Lunar Science Conference, Geochimica Cosmochimica Acta, v. 2, 2403-2418.

Murck, B. W., R. C. Burruss, and **L. S. Hollister**, 1978, Phase equilibria in fluid inclusions in ultramafic xenoliths. American Mineralogist, v. 63, 40-46.

Hollister, L. S., 1978, The reaction forming cordierite from garnet. Reply: Canadian Mineralogist, v. 16, 277-279.

Hollister, L. S., R. C. Burruss, D. L. Henry and E. M. Hendel, 1979, Physical conditions during uplift of metamorphic terranes as recorded by fluid inclusions. Bulletin Societe France, Mineralogie Crystallographie, v. 102, 555-561.

Crawford, M. L., D. W. Kraus and **L. S. Hollister**, 1979, Petrologic and fluid inclusion study of calc-silicate rocks, Prince Rupert, British Columbia. American Journal Science, v. 279, 1135-1159.

Burruss, R. C., and **L. S. Hollister**, 1979, Evidence from fluid inclusions for a paleogeothermal gradient at the geothermal test well sites, Los Alamos, New Mexico. Journal Volcanology and Geothermal Research, v. 5, 163-177.

Hollister, L. S., 1979, Metamorphism and crustal displacements: new insights. Episodes, v. 1979, 3-8.

Lappin, A. R., and **L. S. Hollister**, 1980, Partial melting in the Central Gneiss Complex near Prince Rupert, British Columbia. American Journal Science, v. 280, 518-545.

Selverstone, J., and **L. S. Hollister**, 1980, Cordierite-bearing granulites from the Coast Ranges, British Columbia. P-T conditions of metamorphism. Canadian Mineralogist, v. 18, 119-129.

Hendel, E. M., and **L. S. Hollister**, 1981, An empirical solvus for CO_2–H_2O - 2.6 wt. % salt. Geochimica Cosmochimica Acta, v. 45, 225-228.

Hollister, L. S., and M. L. Crawford, Editors, 1981, Fluid Inclusions: Applications to Petrology. Mineralogic Association of Canada, Ontario, Short Course Handbook, v. 6, 304 pp.

Hollister, L.S., 1981, Information intrinsically available from fluid inclusions. In: ibid, 1-12.

Hollister, L. S., 1981, Techniques for analyzing fluid inclusions. In: ibid, 272-277.

Hollister, L. S., M.L. Crawford, E, Roedder, R.C. Burruss, E.T.C. Spooner, and J. Touret, 1981, Practical aspects of microthermometry. In: ibid, 278-304.

Hollister, L. S., 1982, Review of Rocks and Minerals, by R.V. Dietrich and B.J. Skinner. American Journal Science, v. 282, 94-95.

Crawford, M.L., and **L. S. Hollister**, 1982, Contrast of metamorphic and structural histories across the Work Channel Lineament, Coast Plutonic Complex, British Columbia. Journal Geophysical Research, v. 87, 3849-3860.

Hollister, L. S., 1982, Metamorphic evidence for rapid (2mm/yr) uplift of a portion of the Central Gneiss Complex, Coast Mountains, British Columbia. Canadian Mineralogist, v. 20, 319-332.

Kenah, C. and **L. S. Hollister**, 1983, Anatexis in the Central Gneiss Complex, British Columbia. In: Migmatites, Melting and Metamorphism (Atherton and Gribble, eds.), Proceedings of the Geochemical Group of the Mineralogical Society, Shiva Geology Series, 142-162.

Woodsworth, G. J., M. L. Crawford, and **L. S. Hollister**, 1983, Metamorphism and structure of the Coast Plutonic Complex and adjacent belts, Prince Rupert and Terrace areas, British Columbia. Geological Association Canada Field Trip Guidebook 14, Victoria, B.C.

Crawford, M.L., and **L. S. Hollister**, 1983, Correction to "Contrast of metamorphic and structural histories across the Work Channel lineament, Coast Plutonic Complex, British Columbia". Journal Geophysical Research, v. 88, 10645-10646.

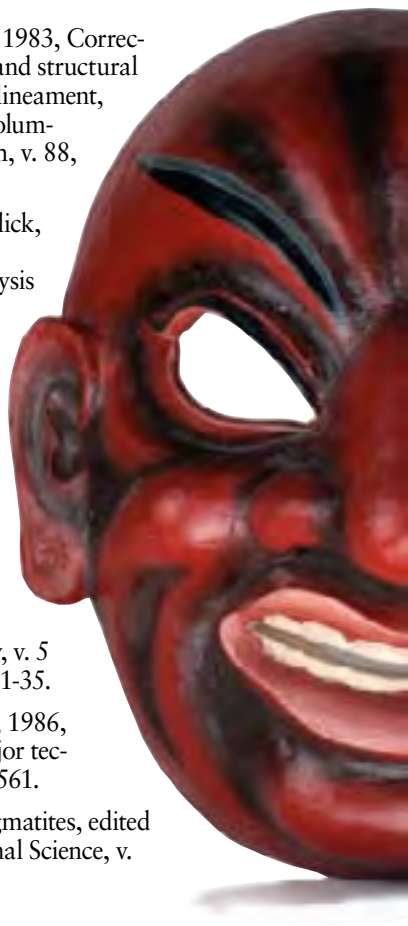
Hollister, L. S., J. A. Crisp, C. G. Kulick, W. Maze, and V. B. Sisson, 1984, Quantitative energy dispersive analysis of rock-forming silicates. In: Microbeam Analysis - 1984 (Romig and Goldstein, eds.), 143-144, San Francisco Press.

Hollister, L. S., 1985, Review of Fluid Inclusions by E. Roedder. Canadian Mineralogist, v. 23, 682.

Crawford, M. L., and **L. S. Hollister**, 1985, Metamorphic fluids: The evidence from fluid inclusions. Advances in Physical Geochemistry, v. 5 (J.V. Walther and B.J. Wood, eds.), 1-35.

Hollister, L. S., and M .L. Crawford, 1986, Melt-enhanced deformation - a major tectonic process. Geology, v. 14, 558-561.

Hollister, L. S., 1986, Review of Migmatites, edited by J.R. Ashworth. American Journal Science, v. 286, 733-735.



Hollister, L. S., 1986, Review of A Practical Guide to Fluid Inclusion Studies, by T. Shepherd, A.H. Rankin, and P.A.M. Alderton. American Mineralogist, v. 71, 1284.

Hollister, L. S., G. C. Grissom, E .K. Peters, H. H. Stowell, and V. B. Sisson, 1987, Confirmation of the empirical correlation of aluminum in hornblende with pressure of solidification of calcalkaline plutons. American Mineralogist, v. 72, 231-239.

Crawford, M. L., **L. S. Hollister**, G. J. Woodsworth, 1987, Crustal deformation and regional metamorphism across a terrane boundary: Coast Plutonic Complex, British Columbia. Tectonics, v. 6, 343-361.

Van Reenen, D. D., and **L. S. Hollister**, 1988, Fluid inclusions in hydrated granulite facies rocks, southern marginal zone of the Limpopo Belt, South Africa. Geochemica Cosmochemica Act., v. 52, 1057-1064.

Hollister, L. S., 1988, On the origin of CO_2-rich fluid inclusions in migmatites. Journal Metamorphic Geology, v. 6, 467-474.

Sisson, V. B. and **L. S. Hollister**, 1988, Low-pressure facies series metamorphism in an accretionary sedimentary prism, southern Alaska. Geology, 16, 358-361.

Hollister, L. S., 1988, CO_2-rich fluid inclusions in greenschists, migamatites, granulites, and hydrated granulites. In: The Deep Continental Crust of South India: Lunar Planetary Sciences Institute, Technical Report 88-06, 70-71.

James, T.S., **L. S. Hollister**, and W.J. Morgan, 1989, Thermal modeling of the Chugach Metamorphic Complex. Journal Geophysical Research, v. 94, 4411-4423.

Hollister, L. S., 1989, Loosening NSF's purse strings. Geotimes, v. 34, 8.

Sisson, V. B., **L. S. Hollister**, and T. C. Onstott, 1989, Petrologic and age constraints on the origin of a low pressure/high temperature metamorphic complex, southern Alaska. Journal Geophysical Research, v. 94, 4392-4410.

Sisson, V. B. and **L. S. Hollister**, 1990, A fluid inclusion study of metamorphosed pelitic and carbonate rocks, south-central Maine. American Mineralogist, v. 75, 59-70.

Hollister, L. S., 1990, Enrichment of CO_2 in fluid inclusions in quartz by removal of H_2O during crystal plastic deformation. Journal Structural Geology, v. 12, 895-901.

Hollister, L. S., and M. L. Crawford, 1990, Crustal formation at depth during continental collision. In: Exposed Cross-Sections of the Continental Crust (M. Salisbury and D. Fountain, eds.), Kluwar Academic Publishers, 215-225.

ACCRETE Workshop Steering Committee (**L. S. Hollister**, chm), 1991, ACCRETE: A study of continental growth. EOS, Transactions, American Geophysical Union, v. 72, 297-301.

Wood, D. J., H. H.Stowell, T. C. Onstott, and **L. S. Hollister**, 1991, 40Ar/39/Ar constraints on the emplacement, uplift, and cooling of the Coast Plutonic Complex sill, southeast Alaska. Bulletin Geological Society America, v. 103, 849-860.

Swapp, S., and **L. S. Hollister**, 1991, Inverted metamorphism within the Tibetan slab of Bhutan. Canadian Mineralogist, v. 29, 1019-1041.

Hollister, L. S., 1992, Fluid flow during deep crustal metamorphism, an introduction to new data from the Southern Marginal Zone of the Limpopo Belt, South Africa. Precambrian Research, v. 25, 321-326.

Davidson, C., **L. S. Hollister**, and S. Schmid, 1992, The role of melt in the formation of a deep-crustal shear zone: The Maclaren Glacier metamorphic belt, south-central Alaska. Tectonics, v. 11, 348-359

Hollister, L. S., M. L. Crawford, and S. McGeary, 1992, ACCRETE: a proposed plan to study the deep crust under the accreted terranes of southeast Alaska. LITHOPROBE report no. 24, p.61-75.

Hollister, L. S., 1993, The role of melt in the uplift and exhumation of orogenic belts. Chemical Geology, v. 108, 31-48.

Davidson, C., S.M. Schmid, and **L. S. Hollister**, 1994, Role of Melt during deformation in the deep crust. Terra Nova, v. 6, 133-142.

Winslow, D. M., P. K. Zeitler, C. P. Chamberlain, and **L. S. Hollister**, 1994, Direct evidence for a steep geotherm under conditions of rapid denudation, western Himalaya, Pakistan. Geology, v. 22, 1075-1078.

Hollister, L. S., 1994, The crystal chemistry of staurolite: discussion. Canadian Mineralogist, v. 32, 713-714.

Johnson, E. L., and **L. S. Hollister**, 1995, Syndeformational fluid trapping in quartz: determining the pressure-temperature conditions of deformation from fluid inclusions and the formation of pure CO_2 fluid inclusions during grain-boundary migration. Journal of Metamorphic Geology, v. 13, 239 -249.

Cesare, B., and **L. S. Hollister**, 1995, Andalusite-bearing veins at Vedrette di Ries (eastern Alps, Italy): fluid phase composition based on fluid inclusions. Journal of Metamorphic Geology, v. 13, 687-700.

Hollister, L. S., 1995, Talking to the public - an example. GSA Today, v. 5, no. 2, 36

Grujic, D., M. Casey, C. Davidson, **L. S. Hollister**, R. Kundig, T. Pavlis, and S. Schmid, 1996, Ductile extrusion of the Higher Himalayan Crystalline in Bhutan: evidence from quartz microfabrics. Tectonophysics, v. 260, 21-43.

Hollister, L.S., 1997, ACCRETE discussion paper. Catalyst, v. 40, no.2, 13-16.

Davidson, C., D. Grujic, **L. S. Hollister**, and S. Schmid, 1997, Metamorphic reactions related to decompression and synkinematic intrusion of leucogranite, High Himalayan Crystallines, Bhutan. Journal Metamorphic Geology , v. 15, 593-612.

Hollister, L. S., and C.L.Andronicos, 1997, A candidate for the Baja British Columbia fault system in the Coast Plutonic Complex. GSA Today, v. 7, no.11, 1-7.

Hollister, L. S., 1998, Learning lessons from science experiments. EOS, v. 79, 31.

Hollister, L. S., and K. Klepeis, 1998, The Coast shear zone (southeastern Alaska and British Columbia), a fundamental crustal feature. Structural Geology and Tectonics Division Newsletter, http://www-personal.umich.edu/~vdpluijm/accrete.htm v. 17, no.1.

Morozov, I. B., S. B. Smithson, **L. S. Hollister**, and J. B. Diebold, 1998, Wide-Angle Seismic Imaging across Accreted Terranes, Southeastern Alaska and Western British Columbia. Tectonophysics, v. 299, 281-296.

Andronicos, C. L., **L. S. Hollister**, C. Davidson, D. Chardon, 1999, Kinematics and tectonic significance of transpressive structures within the Coast Plutonic Complex, British Columbia. Journal Structural Geology, v. 21, 229-243.

Chardon, D., C. L. Andronicos, and **L. S. Hollister**, 1999, Large-scale transpressive shear zone patterns and displacements within magmatic arcs: The Coast Plutonic Complex, British Columbia. Tectonics, v. 18, 278-292.

Hollister, L. S., and C. L. Andronicos, 2000, The Central Gneiss Complex, Coast Mountains, British Columbia. Geological Society of America, Special Paper 343, 45-59.

Bonini, W. E., **L. S. Hollister**, and W. J. Morgan, 2000, Memorial to Sheldon Judson. Geological Society of America Memorials, v. 31, 51-54.

Morozov, I. B., S. B. Smithson, J. Chen, and **L. S. Hollister**, 2001, Generation of new continental crust and terrane accretion in southeastern Alaska and western British Columbia: constraints from P- and S- wave wide-angle data (ACCRETE). Tectonophysics, v. 341, 49-67.

Grujic, D., **L. S. Hollister**, and R. R. Parrish, 2002, Himalayan metamorphic sequence as an orogenic channel: insight from Bhutan. Earth and Planetary Science Letters, v. 198, 171-191.

Morozov, I.B., N. L. Christensen, S. B. Smithson, and **L. S. Hollister**, 2003, Seismic and laboratory constraints on crustal formation in a former continental arc (ACCRETE, southeastern Alaska and western British Columbia). Journal Geophysical Research, 108(B1), 2, doi:10.1029/2001JB001740. 9pp.

Andronicos, C. L., D. H. Chardon, **L. S. Hollister**, G. E. Gehrels, and G. J. Woodsworth, 2003, Strain partitioning in an obliquely convergent orogen, plutonism, and synorogenic collapse: The Coast Mountains batholith, British Columbia, Canada. Tectonics, 22(2), 1012, doi:10.1029/2001TC00312, 24pp.

Daniel, C. G., **L. S. Hollister**, R. R. Parrish, and D. Grujic, 2003, Extrusion of the Main Central Thrust zone from lower crustal depths, eastern Bhutan Himalaya. Journal Metamorphic Geology, v. 21, 317-334.

Hollister, L. S., R. B. Hargraves, T. S. James, and P. R. Renne, 2004, The paleomagnetic effects of reheating the Ecstall pluton, British Columbia. Earth and Planetary Science Letters 221, 397-407.

Hollister, L.S., C.L. Andronicos, 2006, The formation of new continental crust in western British Columbia during transpression and transtension. Earth and Planetary Science Letters 249, 29-38.

Hollister, L.S., D. Grujic, 2006, Pulsed channel flow in Bhutan. From: Law, R. D., Searle, M. P., & Godin, L. (eds) Channel Flow, Ductile Extrusion and Exhumation in Continental Collision Zones. Geological Society, London, Special Publications, 268, 415-423.

Vermylen, J., **L. S. Hollister**, 2006, Sourcing carbonate 'pointed stones' from the barrier beach of Mantoloking, New Jersey, U.S.A. Geoarchaeology 21, No. 8, 823-842.

Velasco, A.A., V.L. Gee, C. Rowe, D. Grujic, **L. S. Hollister**, D. Hernandez, K.C.Miller, T. Tobgay, M. Fort, and S. Harder, 2007, Using small, temportary seismic networks for investigating tectonic deformation: brittle deformation and for strike-slip faulting in Bhutan. Seismological Research Letters 78, No. 4, 446-453.

Hollister, L. S., Diebold, J., Das, T., 2008, Whole crustal response to late Tertiary extension near Prince Rupert, British Columbia. Geosphere v.4, no. 2, 360-374. doi: 10.1130/GES000144.1

Gehrels, G., Rusmore, M., Woodsworth, G., Crawford, M., Andronicos, L., **Hollister, L.**, Patchett, J., Ducea, M., Butler, R., Klepeis, K., Davidson, C., Haggert, J., Mahoney, B., Crawford, W., Pearson, D., and Girardi, J., 2009, U-Th-Pb geochronology of the Coast Mountains batholith in north-coastal British Columbia: Constraints on age and tectonic evolution, Geological Society of America Bulletin 2009; 121; 1341-1361. Doi:10.1130/B26404.1

Depine, G., Andronicos, C.L., and **Hollister, L.S.**, 2011, Response of continental magmatic arcs to regional tectonic changes recorded by synorogenic plutons in the middle crust: an example from the Coast Mountains of British Columbia." Journal of Structural Geology, in press.

Photo inlay: Mask worn by the joker at traditional Bhutanese festivals. These festivals bring together people from villages isolated by the steep landscape of the Himalayas. Purchased by Lincoln Hollister in Thimphu, the capital city of Bhutan.

Photo by Jesse Chadwick '08

Top three things I learned from Linc:
"...always bring a loupe, respect local knowledge, and fried rattlesnake is for tourists."
—*Yinan Wang '05*

More testimonials: in no particular order...

Lincoln was always conscious of the need to use the local geology as a hook for teaching science in local schools. We arrived in Bhutan in autumn 1993: seven of us, five geologists hand-picked by Lincoln Hollister, formed formally the first geological expedition to the Kingdom; the previous western geologists came in incognito as tourists, royal guests or pilgrims. Excitement was high and while we were talking about the geology and how to copy the "top secret" topographic maps smuggled by Lincoln's "friend" to our hotel room in exchange for a bow and arrows, Lincoln was already talking about visiting a high school. What for? I wondered, we have no time. But there was time to visit a local high school and talk about the geology of the Himalaya. Autumn 1996: a second visit to Bhutan. First thing we did upon arrival was to visit the Secretary of Education of the Kingdom to present the results of our first trip and to arrange a visit to a high school in Thimphu to give lectures to the high school teachers. Ten days later, we were on the trail for almost a week and came to a village with a school. We were tired and were looking for a hot meal in the guest house in the evening, but no rush, Lincoln said, let's stop and tell the kids where their school is located: right on the Main Central Thrust (MCT), one of the largest intracontinental shear zones on earth. Autumn 1999: the third visit. After a backbreaking drive to easternmost Bhutan we arrived at the village, Kanglung, which hosted the only college in Bhutan, Sherubtse College. The next morning we paid a visit to the Principal, came back the next day, and the day after. While two of us young geologists were impatiently working on the outcrops, Lincoln took a busload of students on a drive to show the students the outcrops and explain about their school's location on the MCT. Ten years later, an M 6.1 earthquake struck not far from the MCT-schools; we hope the students and teachers understood what was happening.

—Djordje Grujic

Linc was an incredible mentor for me in my education and career path. He had a passion for sharing science education with the public, while asking critical questions about how to do it well. As someone who was entering into science education as my career, this matched my interests perfectly. I remember reading the booklet we were given to help us decide on Senior Thesis topics; it contained possible topics from all members of the faculty. When I read Linc's description of investigating science education, I couldn't believe that I would be able to meld my interests in geology and education for my senior thesis. I knew Linc was the perfect advisor for me when we first met and he told me that I was exactly the type of student he'd been hoping to find when he wrote that description. He was genuinely interested in the expertise that I could contribute. I don't know of many professors who take on advisees with such an openness and intent to learn as well as teach.

My life was indelibly marked by the kindness, questioning mind, and adventurous spirit of Lincoln Hollister. I will forever be grateful for all that he taught and gave to me.

—Sarah Bertucci '98

"Got any good gossip?" Those were the words that always greeted me whenever I ventured into Lincoln's office, way up on the fourth floor of Guyot Hall.

So, as I settled down to fix whatever was wrong with his computer, I'd try to remember all of the little bits and pieces of office politics that I thought might entertain him. After I was done, he'd usually smile broadly, make a couple of pithy comments, and then launch into one of his patented Shaggy Linc Stories.

As I tried desperately to follow him down the dark alleyways and overgrown woodland trails of his story, he'd touch on such disparate things as whales in Canada, how the city of Hollister, California, started out as his family ranch, and his latest pitched battles with university administration. And all along, he'd be smiling, nodding, promising that the end of the tale, when he finally got there, would be well worth the trip. Of course it always was.

Lincoln is the consummate firebrand, the ultimate rabblerouser, the perennial gadfly, an incredible friend and a character of epic proportions. And, although I know that Geosciences will survive when he's gone, I can't imagine that it will be anywhere near as interesting a place.

—Laurie Wanat

Thoughts on the occasion of Linc Hollister's retirement:

Linc was my undergraduate thesis advisor in 1975-76. It has been a continuing source of pride that we were able to publish the work that came out of that project in American Mineralogist. I worked in the lab after graduation, until the summer of 1977. After two and a half years in the Peace Corps, I returned to the U.S. in 1980 and—not knowing what else to do—called Linc to ask if I could come back to the lab. He saved my bacon by saying "yes." He couldn't have known how much this would mean to me. A few months after coming back to the lab, I saw a talk by Ed Spooner from the University of Toronto. We chatted, he suggested that I apply for graduate school, and more than 25 years later I am still associated with this great university.

Back in the early days, Linc gave all of us in the lab a really hard time—we all used to roll our eyes and complain. But at the same time, we knew that Linc was pushing us to do our best. In particular, he always consciously and thoughtfully advocated for the cause of women in geology. Linc was one of our best and most dedicated champions, and I, as well as great geologists like Jinny Sisson, Jane Selverstone, and others, have benefited from his advocacy and support over the years.

Linc, thank you!
—Barbara Murck, '76
Senior Lecturer, Department of Geography
University of Toronto

May 2001, Kate and Tobgay on their NSF-funded trip to Bhutan. Photo courtesy of Kate Miller

Linc and I first connected in 1980 when he taught my undergraduate mineralogy class. But a much stronger connection develop later when he became engaged in seismology as a tool to investigate the crust and I had landed as a professor at a university with Bhutanese architecture. The University of Texas at El Paso (UTEP). After a chance meeting at a restaurant at the Seattle GSA Meeting in 1994, where I first learned of Linc's early adventures in Bhutan, I sent him a post card with one of UTEP's dzong-look-a-like buildings on the front. This set the stage for a series of conversation in about 2000, when he forwarded me paperwork from a Bhutanese student, Dowchu Drukpa, who had applied to graduate school at Princeton, and who Linc had determined that I should bring to UTEP. Somewhere in that process, I jokingly said to Linc—"we should set up a seismic network in Bhutan." And because Linc was engaged, it happened. Dowchu came to UTEP and got a masters degree studying historical earthquakes in Bhutan. Linc and I got NSF funding to visit Bhutan to plan a pilot network in May 2001. On that visit we met Tobgay, who, in the end, was the person who made everything happen for us. Less than a year later we were in the field installing five seismograph stations with Tobgay, having garnered DoD funding and having surmounted a number of obstacles related to post-9/11 travel restrictions. Tobgay took care of the network for 15 months and we had the first publicly available local earthquake data from Bhutan! A year or two later, Tobgay came to UTEP and did his masters in geomorphology on Bhutan, before eventually moving on to Princeton. This web of personal connections and science, that has had a such major influence on my life and many others would never have come to be without Linc's deep interest and, yes, persistence.

—Kate Miller '82

Many memories pop up when I think of the contributions of Linc to my education as well as skills as a field geologist. Some of them are very practical such as to drink lots of tea when you first arrive at a fly camp. This is so you can mark your territory. After many years, I finally had proof that this worked when a wolverine came sniffing by and wouldn't come close to our camp because of this invisible boundary. When working in southern Alaska, we both also got to experience the adrenaline rush of danger and hurled rocks at a bear. We both picked up stones many times heavier than either one of us could normally pick up. We both thought a bear wouldn't be traveling on a barren glacier moraine. We both learned a lesson on how bears behave and how fast they can run both towards and away from you. Another skill that is now out-of-date involved careful placement of radio antennas which could mean the difference between helicopter pick ups or not. Finally that anything yellow has an extra special beauty.

*—Jinnie Sisson, *85*

This chopper cap was given to Lincoln by the pilot who flew him to the ledge in British Columbia where appearing rocks were collected (details on pg. 7). The original Trapper Nelson pack can be seen on Lincoln's back on page 5. Photo by Jesse Chadwick '08

My time at Princeton University as a graduate student was the most positive and exciting learning experience that I encountered as a student. The interaction of students and faculty was frequent and enlightening. As my major professor, you were the biggest part of this interaction. I cannot say you were always diplomatic, but it is true it was always worth listening to what you had to say, whether it was about a metamorphic reaction, Baldy's Law, or other general advice. Thank you for your guidance.

You should know that I use Baldy's Law on a weekly basis to confirm that I am considering the entire problem.

Thank You Linc,
*—Chris Kenah *79*

August 1990: Lincoln at Rieserferner (eastern Alps, Italy), collecting from andalusite-bearing veins.

Photo by Bernardo Cesare

The first time I met Lincoln we were at an international Summer School at Siena (Italy). He was a lecturer and was called "Linc the flinc" by Volkmar Trommsdorff, one of the School leaders. I was a young graduate student, eager to learn and to understand what was going on in science outside my small world. We ended up meeting each other at three of these events in a row in the period 1988-1990. Linc was quite popular among students for his friendly character, his laughter, and for the way he said "Faaaaantastic!", an expression he was asked to repeat many times a day.

At one of the Summer Schools Linc was recovering from a surgical operation, so he didn't miss a single possibility to enter the crystal-clear sea of Sardinia to stretch and slowly move his arms in the water. He named this habit "therapy," and the word became our way of meaning relax in a beautiful, peaceful place.

Along with letting me and my wife have a glimpse of life in the US, and making me know and love a kid called Calvin and his stuffed tiger, the stay in Princeton helped me know Linc a bit deeper: he can be very meticulous at work (you have to, if you work with fluid inclusions), he is extremely proud of his Californian background (I fully realized it when I put my feet on an old chair from his ranch…), he loves Italy (in particular espresso and Alfa Romeo convertibles). And for any kind of problem he ends up saying "I have a friend…", meaning that he (unlike others) knows special people for special circumstances. Including some very important people in Bhutan.

I was fortunate to meet you in 1988, Linc. Now that your academic duties have finished, you'll have more time for therapy: I look forward to joining you here in Italy!

Padova, March 19, 2011
—Bernardo Cesare

I traveled to British Columbia with Linc in the summer of 1971 in the capacity of field assistant to the venerable Dr. Hollister. We departed Princeton on June 22, 1971, only three weeks after I graduated from Princeton with an undergraduate degree in Geology. I worked with Linc for almost two months, from June 22 to August 18.

My memories (and my journal) for those two months focus on five themes, or "life-slices"—themes in which Linc figured prominently, and I was literally and figuratively along for the ride.

The first theme was *getting there*: it is testimony to Linc—the young impulsive adventurer—that he would voluntarily drive across the country in a VW bus owned by a 22-year-old, long haired, wire-rim bespeckled young man who had much on his mind beyond geologizing. Because I had just lost my educational deferment from the draft upon graduating, I was sorting through alternatives to being drafted into the Viet Nam war—primary options were a move to Canada (after all, that was where I was heading…) or becoming a conscientious objector.

Our cross country drive took us to Prince Rupert, British Columbia via Seattle, and Vancouver, B. C. En route, Linc introduced the concept that, at the end of a day of driving, just find the nearest unoccupied barn or field and lay out your sleeping bag and go to sleep. This worked surprisingly well all across the country, except for the early morning that we were rousted out of a barn somewhere in the mid-west by a none-too-pleased farmer who owned the barn.

The second theme involves the *friends of Linc's* we met on the way, friends that ranged from well-pedigreed Ph.D. geologists to outback recluses. The most memorable characters lived in North Bend, an isolated railroad town within the narrow confines of the Fraser River canyon in central B. C., the closest civilization to Linc's Ph.D. thesis area. These characters included Jim Gillan, a 60-ish guy who chose to live in the outback of British Columbia, where Linc met him, after getting a Masters in social work and working for a while in the Vancouver area. The other memorable meeting was with the Washtock family, similarly living in the rural area of North Bend. Ray Washtock was a cattle and hay farmer, which was quite a feat given that the country was all hilly up-and-down country in the narrow valley of the Fraser River.

The third theme was *Prince Rupert* and environs—a place that was seemingly in the 1950's while the world at large was careening toward the mid 70's. A mixture of commercial fishing port (halibut) and tourism (terminus of the Alaskan and Canadian ferry systems), it was a town of extremes—hard-core fisher people, well-dressed tourists, and impoverished natives always on the periphery. Equally extreme was the pollution from the pulp mill south of town. The sulfuric acid in the discharge lagoon (a former bay) was so noxious that it actually etched clean garnets out of groundmass in metamorphic rocks we observed along the lagoon edge.

Continued on page 20

Linc Hollister

…in sculpture and verse

Linc was in Cornelius Hurlbut's mineralogy class at Harvard when I met him, on track for the long career we are celebrating now. When he came to Princeton and moved just down the street from me, we reconnected. Over the years, Linc and Sarah have become part of our (my wife Carol's, Lucy the Dog's, and my) inner circle.

About 45 years after we first met, Linc asked me if I'd like to work together on a project for Quark Park, a temporary garden featuring collaborative installations by scientists and artists. Linc wanted to make something that exploited the physical beauty of the rocks that have been the focus of his academic life; I wanted to make something with stainless steel. The result was Subduction and Orogeny.

Every time I look at it, I think of Linc…

but a poem I came across by chance, written by that minerology professor, Hurlbut, shows even better the passion for truth and beauty, beauty and truth that I see in my friend.

A Gemstone is a lovely Thing

"It gleams and sparkles in a ring
And makes a wondrous sight
By playing magic with the light

It makes one proud to wear
A flashing diamond solitaire
Or garnet with subtle hue
Or emerald green or sapphire blue

But would it not mean more to you
To learn why it is green or blue
And make you very pleased to know
The reason why it sparkles so?

I think it would mean even more
To know its history and lore
And was it part of natures plan
Or from a furnace, made by man"

Today, S&O can be visited just behind my studio at 255 South Harrison Street. Linc brings his students; you are welcome too. I feel fortunate to know Linc and to have this constant reminder of our lasting connection.

Lincoln and Alan Goodheart

Photo by E. J. Greenblat

Alan Goodheart
ASLA Landscape Architect

Layout and Design by Alan Goodheart

Continued from page 18

The fourth life-slice was *Khtada Lake*, the site of our field work. My journal in most instances is too embarrassingly written by a 22-yr-old to be worthy of quoting, but a section on Khtada Lake describes our life style well. And truth can be stranger than fiction: "We got permission to use the cabin at Khtada Lake from one of the partners, Cecil Morrison, who tends bar at the Canadian Legion in Prince Rupert.

We flew to Khtada Lake in twenty minutes, after taking off from Prince Rupert. After landing the float plane, we had to inflate our rubber boat in order to get ourselves and the equipment ashore to the cabin.

The cabin (called "Centennial Cabin") is an A-frame structure, approximately 30 feet by 25 feet, that was built in 1967 to celebrate the centennial of the union of the Canadian provinces. The cabin was equipped with a propane stove and refrigerator, and a coal stove for heating. We unhooked the refrigerator and used only three-quarters of a twenty-five pound canister of propane in three weeks.

Our working hours were casual. We got up on the average at 8:30-9:00, and we were at work by 10:15-11:00. We took time off to go fishing after lunch and normally got home around 6:00. The fishing in the lake proved excellent, as all reports from the locals in Prince Rupert indicated. Small rainbow trout, between 6 and 10 inches, were numerous. Larger fish (11-14 inches) were infrequent but not entirely unknown.

Our field work consisted of exploring the rock exposures along the shore while sitting or kneeling in the Canova boat (rubber raft with engine) and climbing 100 to 200 feet up the steep drainage gullies to get to larger rock exposures on cliff faces. On a cost-benefit basis, it did not make much sense to climb to the ridges and we only did it once. We found the scale of these mountains quite deceiving and slopes were always much steeper than they appeared when we commenced to climb towards them.

On the whole, Khtada Lake was a rather idyllic place to do field work and it approached being a three week vacation. However, by the end of three weeks, I was itching to fly out of there. Now (Nov. 21, 1971), of course, I would love to go back." ….(end of journal excerpt).

Finally, the fifth life-slice was taking a helicopter to visit Glenn Woodsworth in his Ph.D. thesis field area atop a remote ridge in the Coast Ranges of B. C. near Mt. Raleigh. Imagine a helicopter flight through mostly clouded-over, socked-in Coast Ranges with brief but fantastic views of valley glaciers, medial moraines, arêtes, jagged peaks… Then, wham! the mist clears for a moment and you see two tiny figures camped on a remote ridge, waving to our helicopter. We negotiate an exciting landing on a narrow snow-covered ridge and all of a sudden here is Glenn talking geology with Linc while the two field assistants pass the time. My journal reads:

"The helicopter ride from Whistler to Mount Raleigh is a ride that I doubt I will ever forget. We passed tall, rugged glaciated mountains with glacial-powdered rivers and lakes, tall moraines and immense evergreen forests, in addition to seeing broad glacier fields with deep and wide crevasses. The country clearly took somebody closely related to a mountain goat in order to move around in it, and I saw quickly why Glenn needed a field assistant proficient in technical climbing." ….(end of journal excerpt). The flight back was equally spectacular but with clearer weather.

The day after the helicopter flight I drove Linc to the airport in Vancouver for the first of his flights back to Princeton. I subsequently took off in my VW bus for a long, meandering journey that finally returned me to the east coast months later (where Linc was patiently waiting for all his field equipment...). I had a new appreciation for geologic field work in the wilds of B. C. And I had a newly granted lease on life. In late September I learned that, although the military draft had started again, the highest draft number to be called that year was to be two lower than my draft number.

Thank you, Linc, for the good times and the memories.

—Harvey Kelsey '71

Lincoln writes on a SUV with a dry marker to draw a map for his students on a New Mexico fieldtrip.

Photo by Jesse Chadwick '08

Linc arrived on time, not quite as we expected, good value. Would recommend.

These are the four most important things Linc taught us (in no particular order):

(1) If it happens it can happen

(2) Eat the elephant one bite at a time

(3) State the obvious clearly

(4) Some of it plus the rest of it equals all of it

We are grateful that we were able to have Linc as our mentor before he retired. We look forward to continuing to learn from him and "his shaggy Lincoln stories".

—Katy Barnhart '08 and Jesse Chadwick '08

Linc looking at the Skeena River valley, British Columbia, Canada in 1977.

Photo by Glenn Woodsworth *74

In the summer of 1974, Linc took Al Lappin and me to the coast range of British Columbia as his graduate and undergraduate field assistants.

I think back on that summer and it is all still there: Linc helping me buy a hard-rock hammer in Prince Rupert (I still have it); stocking up on Cuban cigars to keep the black flies at bay; a helicopter to drop us off on an isolated ridge in the Coast Range; trusting the pilot to come back at an appointed time weeks later; tromping through the heather and the crystalline mountain air; Cuban cigars not keeping the black flies at bay; Al's gourmet camp cooking skills; rocks that should have been plutonic but were clearly metamorphic sediments; the ride back to civilization; finding out that Nixon had resigned while we were gone (on August 9, my birthday!); racing around Morse Basin with Linc in a Zodiac to collect samples for my Senior Thesis. I owe so many wonderful memories to Linc.

Oddly, most of the trip out to BC from Princeton that summer is a blur—with one exception—and that is the first thing I remember Linc teaching me. We were approaching Prince Rupert in a big old Geology Department Suburban. We stopped for gas, getting ready to head down a long winding mountain highway, and Linc suggested I drive. Nothing treacherous, just your typical federal highway. I was not too keen about it, but willing to give it a try; after all, I grew up in Pittsburgh. Off we went, with me trying to be careful, but not too careful. Pretty soon, Linc turned and said with alarm: "You've never driven mountains like this have you? Listen, you NEVER brake inside a curve! Brake before you enter the curve, then accelerate out of it." I was only slightly humiliated, which helped the lesson stick, and by the time I got to the bottom of the hill, he had taught me a life-long safe-driving skill. In fact, five years later I found myself driving up Haleakala volcano carrying a carload of geologists, trying to make it to the top before sunrise—roaring along in the dark, braking safely into each curve, zooming out of it as soon as I could see clear road ahead, reaching the top with
10 minutes to spare—there was general applause. Thanks Linc! To this day I think of you when I drive a windy road.

In addition to his triumph as my driving coach, Linc was also my Senior Thesis advisor. There came a point late in the Fall semester when I went to meet with Linc and review my progress. He looked it over and said, "This is pretty good work; but I have the feeling you have always had it too easy—you never really had to give everything you've got." Well, I was incensed, though I tried not to show it. What did he know about my life? I went off so determined to show him what I could do that, somehow, I worked harder than I ever had, and I realized he was right. Later that spring the work paid off with an intellectual breakthrough that neatly bracketed the metamorphic conditions in Morse Basin. Along with an Honors thesis, it gave me the confidence to breeze through my oral exams; and, more than that, I emerged from Princeton with a whole new sense of what was possible. Without Linc's challenge, it would not have happened. Thanks Linc!

Footnote: My Senior Thesis was cited in several of Linc's and Al's later publications, so I felt like I at least gave back a tiny bit for all I got. It was: Petrographic Examination of Metamorphic Rocks from the Morse Basin Area, Prince Rupert-Skeena Map Area, British Columbia. I do think I could have used a little help with that title.

With admiration,
—John C. "Jack" Hampson, '75

Photo by Sander Hunter.

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