



Quaternary Geologist and Geomorphologist

NEWSLETTER OF THE QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION

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CHAIR'S MESSAGE - Geomorphologists interact with the larger scientific community

1997 is starting off as a year that demonstrates the importance of understanding geomorphological processes and Quaternary geology to living successfully on the landscape. Floods and landslides in the Pacific Northwest and Midwest have highlighted the difficulties of living in active geomorphological environments. I have had the pleasure of listening to National Public Radio interviews with a number of geomorphologists about these floods and landslides. Last spring, geomorphologists monitored controlled floods in the Colorado River as part of a project to restore beach habitats along the river. This year may provide another experiment on the effects of sediment-poor flood waters on those habitats. On the East Coast of North America, resource managers have realized that they might not be able to meet nutrient reduction goals set for the Chesapeake Bay and other watershed systems without understanding the movement of sediment in upstream fluvial systems. Stream restoration projects have become a big business in many areas; they are in demand because many people want a river that looks like a river and supports the organisms that they want in a river. We have to be able to provide information that can guide these restoration projects so they are the most successful that they can be at a minimum of expense or hydraulic failure.

In addition to these messages from the natural world, there have been some structural changes in scientific and resource management agencies that may provide some significant opportunities for our discipline. The Army Corps of Engineers has changed its review policies for construction in wetlands (Nationwide 26). This change means that information on small wetlands (many in riparian or other settings) may be required before construction. The National Biological Service has merged with U.S. Geological Survey. This union provides some new research opportunities for geomorphologists and Quaternary geologists. The Geological Society of America and the Ecological Society of America helped sponsor several workshops on the opportunities that this merger may present. Members of our division participated in these workshops. Many of us in academia and elsewhere also conduct interdisciplinary research with biologists and other scientists outside of the geological commu-

nity. I would like to think that this makes us more integral to the scientific study of the natural world rather than suspect individuals within our home discipline.

We would be naive at this point to think that the merger of the USGS and NBS has been met with consistent enthusiasm within the agencies and the scientific communities at large. The QG&G Division and other organizations with GSA have put together theme sessions and symposia to highlight interdisciplinary research at the upcoming GSA Annual Meeting. It is not clear, however, whether this interdisciplinary research will be well received at the meeting or viewed as peripheral to mainstream geological research. I think it is part of the geological mainstream and that we should find ways to encourage the presentation of interdisciplinary research and the presence of biologists and others at our meetings.

The leadership of GSA has asked the divisions to evaluate the role that they play within the Society. The divisions do a number of things: they provide a social structure, they help ensure that sessions and short courses will be held at meetings, and they give awards to their members and help students with monetary support for their research. Currently, I think the division is well structured to review nominations and grant applications in order to give out awards and research grants. I think we could improve our ability to generate and implement ideas for theme sessions, symposia, and short courses and to work with colleagues in other divisions (e.g. Engineering and Hydrogeology) to ensure that we have meetings that are worth attending for our members and perhaps for biologists and members of other scientific disciplines that work with us. To do this well, more people should become involved in working within the QG&G Division. The management board could not (and should not) be the organization that develops and promotes the scientific program. One of our jobs this year is to develop ways to facilitate the involvement of our members in the division and to make the division more responsive to its members.

- Karen Prestegard, QG&G Division Chair

1996 Quaternary Geology and Geomorphology Division Awards

The complete citation and acceptances for the Kirk Bryan Award, the Society Award bestowed by the QG&G Division, will be published in the March 1997 GSA Today. Only excerpts, edited for economy, are printed here. The Distinguished Career Award is solely a QG&G Award; its citation and response are not published elsewhere and are printed in full here. For photographs of the winners, visit the Division web site (<http://www.ocean.odu.edu/~grw100f/quat/index.html>).

DISTINGUISHED CAREER AWARD: Robert P. Sharp

Citation by Don Easterbrook and Alan Gillespie

Bob Sharp was born in Oxnard, California in 1911. In 1934, he graduated from Cal Tech with a B.S. degree, and completed a PhD at Harvard in 1938, where he studied with Kirk Bryan. He taught at the University of Illinois until 1943 and, after two years on the faculty at the University of Minnesota, returned to Cal Tech as Professor of Geology in 1947. In 1952, he was named chairman of the department, a post which he retained for 16 years. In 1979, Bob became Professor Emeritus, although a glance at his record quickly shows that he has never really retired.

The success of Bob's career was in the wind early, as is shown by the following excerpt from a letter written on June 22, 1947 by Francois E. Matthes (author of the classic Professional Paper 160, *Geologic History of the Yosemite Valley*). Matthes wrote to Barclay Kamb (then in high school) that Bob was going to Cal Tech to become Professor of Geomorphology. "They could not find a better man," he wrote, "nor a more inspiring teacher. Perhaps you have seen his recent paper on 'The Wolf Creek Glaciers.' He upsets many little apple carts in this paper, by reason of his careful observing and his logical deductions. And you can't get mad at Bob Sharp. He is so confoundedly right and you wonder why others did not see it long ago." While glaciology and Quaternary geology have been a big focus in Bob's work, other significant interests include arid geomorphology, with particular attention to dunes and pediments. His interest in arid regions goes back to his role in the Campbell-Maxson geological expedition through the Grand Canyon in 1937, during which he studied the Ep-Archean and Ep-Algonkian erosion surfaces and fossil soils.

Reading Bob's resume is like reading a composite resume of a half dozen or more geomorphologists. Over a career that now spans but a year shy of 60 years, he has published 132 papers, not including abstracts, on an incredible variety of topics. Perusing his bibliography, dating back to 1937, turned up published papers on the following subjects: alpine and continental glacial geology, sand dune movement, intradune flats, Pleistocene lake shorelines, glaciology, flow mechanics of ice, mass balance, debris entrainment, pediments, desert domes, periglacial features, tundra ice mounds, oxygen and hydrogen isotopes in snow and ice, geology of southern California, Tertiary fanglomerates, Basin and Range structure, desert varnish, buried peneplains, petrofabrics of fossiliferous schist, ventifacts, Cambrian fossils, surface forms and processes on Mars, terraces, Cambrian slide breccias, landslides, earthflows, wind ripples, soil structures, playa sliding stones, faulting, laymen's geologic field guides, alluvial stratigraphy.

Bob's career has been marked not only by the breadth of his interests, but also by continued recognition of the excellence of his work. He was named one of Ten Outstanding US College Teachers by Life Magazine in 1950, won the Quaternary Geology and Geomorphology Division's Kirk Bryan Award in 1964, and was awarded the NASA Exceptional Scientific Achievement Medal in 1971. He was named to the American Academy of Arts and Sciences in 1971 and to the National Academy of Sciences in

1973. He won the Geological Society of America Penrose Medal in 1977, the National Medal of Science in 1989, and the Charles Daly Medal of the American Geographical Society in 1991.

Over the course of his long career, Bob has contributed to a broad variety of subjects in earth and planetary science but the central focus of his scientific work is in geomorphology, Quaternary geology, and glaciology. Early in his career, he did field work in Alaska and the Yukon, culminating in his classic study of the Malaspina glacier. This study disproved the concept of extrusion flow, which was then popular among glaciologists, and it gave a strong observational impetus to the new theoretical principles of glacier mechanics that were being developed by John Nye at that time. Bob's paper "Glacier Flow: A Review" was a landmark in understanding how glaciers move, and stimulated much new work. Another important stimulus was the study that Bob initiated on Blue Glacier on Mt. Olympus, Washington. Bob and the group of colleagues that he led in the Blue Glacier project, most of whom became glaciologists in their own right, made many observations of the relations between flow and structure in the glacier, showing that there was still much to be learned about glacier flow from the study of small mountain glaciers by modern methods. In the course of the project Bob collaborated with Sam Epstein to do some of the very first, trail-blazing work in applying the oxygen isotope method to glacier ice. Bob's interest always included not only the behavior of living glaciers themselves but also the landforms and deposits made by them and by vanished, ice-age glaciers. This interest blossomed fully in his extensive study of the glacial deposits and glacial history of the eastern slope of the Sierra Nevada. The work led to recognition of the 750,000-year age of the Sherwin till, which was of far-reaching significance for Pleistocene chronologies of western North America. Bob's paper on the age of the Sherwin till and its relation to the Bishop tuff is a masterpiece.

Bob Sharp's lifetime perspective on glaciers and glaciation is summarized in his book *Living Glaciers*. In this book he reaches out not only to geologists but to the environmentally-interested public as well, using an approach that has endeared him to generations of field geology students and field trip participants. He is a dedicated exponent of the importance of field work in modern earth science, and in 1988 he laid out his perspective on this in an essay in *Annual Reviews of Earth and Planetary Science*. Bob's intimate familiarity with both glaciation and arid regions prepared him admirably to venture forth into the solar system with studies of Martian geomorphology, which he undertook as a member of the scientific team charged with making the first geologic interpretations of the images of Mars returned by the Mariner space craft (1965-1972).

In many ways, Bob's career has spanned and contributed in a major way to an important evolution of the fields of Quaternary Geology and Geomorphology. He is of a generation primarily trained in qualitative studies, yet he pioneered the application of rigorous analytical and quantitative techniques (both in terms of computation and physical measurement) to both fields. Like a

great artist, his career has gone through many stages, some building methodically on previous experience, others representing imaginative, innovative ventures into unknown but ultimately fertile ground. Unlike many in our field, he rarely treads over the same ground twice - his publication record is remarkable not only in its breadth but in the absence of substantial duplication. Bob is an advocate of topical research, a term used to describe targeted studies of very specific problems that often have broader consequences. He attacks big issues in small pieces. Thus, his bibliography does not include a career-summarizing tome that encompasses the first real publication of thirty years of effort. He prefers to work on and publish four topical papers of 20 pages each to one 80 page monograph. This has, in many ways, enriched the community for it provides essential views and data in refereed journals, while the work is still fresh and of interest. To study the nature of motion of sand dune fields, he established a test site in the Kelso dunes and repeatedly measured that site for 12 years. In the study of wind abrasion, he collected wind-borne sand samples and recorded the effects of abrasion on exposed materials for 16 years. Both studies are so rich in observations that they are still being mined by investigators developing analytical and numerical models that simulate these processes. The primary contribution of the former study is the recognition and demonstration that, in areas with limited sand supplies, dune field formation, location, and migration reflects a complex but understandable and quantifiable interplay of wind and surface conditions. The primary contributions of the latter are the understanding that abrasion rarely occurs as a uniformitarian process (but is rather the result of short duration, high energy events), and that particles within the saltating curtain are highly segregated, with different particle sizes following different frequency/height relationships (potentially the explanation for eolian sorting).

Another example of Bob's field approach is his study of wind ripples. This work revealed, by detailed field inspection and measurement and laboratory study including the impregnation and sectioning of ripples, the relative simplicity of the nature and movement of ripples. A profound result of this work, still ignored by some eolian geologists, is his refutation of Bagnold's idea that ripple dimension reflects a characteristic grain path length.

Sharp's primary contributions to the study of other planets come not only in a few, fundamental papers, but in the manner he helped guide other investigators in shaping their own works during the formative years of non-lunar, extraterrestrial geology. He most aided the embryonic science of extraterrestrial geology with his scientific analysis and in his thorough review and critique of data. Bob brought firm and uncompromising observational experience to a field often overpowered by speculation. Scientifically, our views of several unusual terrains on Mars remain today fundamentally unaltered from those he first expressed in three spectacular papers published in the *Journal of Geophysical Research*.

Bob's commitment to teaching is an important attribute of his career. He is not only a superb graduate educator (a list of his students is a veritable Who's Who of prominent geologists and geomorphologists), but he has an unswerving dedication to undergraduate and lay-public education. His two field guide contributions to Kendall-Hunt's series ("Southern California" and "Coastal Southern California") are "best sellers" in the market. His more technical discussions of glaciation in the Sierra Nevada are common knowledge to local residents to whom Bob's

prose style is easily readable.

In the 1970's, Bob was nearing the end of what most scientists would consider the productive portions of their careers. In his early 60's at the time, his technical efforts had encompassed many subfields in geomorphology. He had initiated and completed topical and decade-long studies in the Mojave Desert, addressing weathering and erosion of both bedrock and regolith materials, and wind transport of sand and its geomorphic effects. He had been the first geologist to study planets other than the Moon, and the first to concentrate on landforms other than craters. In acknowledgment of his contributions he received, among many other honors, the GSA's Kirk Bryan and G. K. Gilbert Medals, and was named a member of the National Academy. Yet, subsequently and indeed continuing considerably after his formal "retirement" from Cal Tech, he has ventured into studies of pyroclastic volcanic eruptions in Hawaii, Viking Lander images of the surface of Mars, microstratigraphy of alluvial surfaces in the Mojave Desert, and continued studies of glaciers and glaciation, desert processes, and extraterrestrial landforms and processes. He continued to be extremely active in student education, teaching his Geomorphology Field Class and Field Geology long after his "retirement," and leading "expeditions" of senior undergraduates to Hawaii to experience volcanism first-hand.

Bob is an educator's educator. His rational thoughts, concise presentations, and supportive pleasant nature allow him to be a role model for all of us in research and education. Bob has been formally retired for almost two decades and yet has remained more active in a variety of subdisciplines within geomorphology than many of us could ever hope to be. He has truly inspired so many over a long and illustrious career. He led the research faculty at Cal Tech as chairman for many years, while simultaneously providing enthusiastic education to students of all levels, and writing field guides and texts for lay people.

Bob often relies on low-tech, low-cost data collection. Depending more on his observation powers and common sense than on theoretical models and large budget projects, Bob has remained an inspiration for decades of students as he enthusiastically teaches so many to make detailed observations in the field and laboratory and to be thorough with their review of the literature. He has had fun doing what he does so well, and has allowed others to share in his enthusiasm while always demanding excellence of all around him.

Bob often critically evaluated published research, but was always gracious about supplying constructive criticism. As he approaches his 86th birthday, he can still be found sharing his knowledge, in the field from Yellowstone National Park to the deserts of California to the glaciers of Alaska, and publishing his ideas. His most recent publication, a response to work on skid boulders at Racetrack Playa in eastern California, appeared in a 1996 issue of GSA. He is truly one of the giants of geomorphology.

Response by ROBERT P. SHARP

Thank you Don and Alan. When you gentlemen arrive at the Pearly Gates, I hope only many, many, many years hence, and Saint Peter questions you about the veracity of your citations, just tell him that Bob Sharp loved every word of them, true or false.

A career usually evolves through successive stages. You start as a person and, perhaps, in due time become a personage at

which stage people start telling stories about you. These stories are usually based on and relatively true to facts. Eventually, you may attain the status of a character. People then accelerate their story telling, and, although the stories may still be related to facts and actual occurrences, they are so highly embroidered as to be at best amusing and at worst embarrassing. Finally, through some quirk of fate or longevity you may become a legend. In that state, unfortunately, many of the stories told about you may have no basis whatsoever in reality. I am happy that Don and Alan have refrained from classifying me, and I thank them for their kindness in composing such complimentary citations. I deeply and truly appreciate the Distinguished Career Award of the Division of Quaternary Geology and Geomorphology.

I believe that geologists enjoy their professional work to a greater degree than most other scientists. Doing geology can be a lot of fun, and Quaternary Geology and Geomorphology are especially enjoyable because we deal with what I call "Today's Geology," meaning events that have transpired recently or, better still, are currently in progress. We have an unusual opportunity to look on and make notes while Mother Nature performs an experiment; it's a privilege. Some other earth scientists do too, for example, volcanologists, but we are blessed with an unusually broad spectrum of opportunities. As Quaternary geologists we can measure things in the field as they occur, such as a moving glacier or a shifting sand dune. In this age of shrinking research funds, this can be a real advantage because field work can be relatively inexpensive. As an example all one needs to record the development and disappearance of beach cusps is a goodly number of short sections of rebar steel, a hammer, tape measure, a camera and, of course, a suitable beach; there are many.

At this point I beg permission to depart from the normal practice of recounting personal history. You have given me a podium, I would like to exercise it briefly by offering some gratuitous musings about the functions of our Division. Mention has been made of our focus on young geology. It seems reasonable that we should also strive to keep young of spirit as we grow steadily older. We need the vigor, enthusiasm, motivation, drive and willingness to adapt and change displayed by young people. It has been my experience that one of the best ways of keeping young of heart is through association with young people. I still teach a traveling field course at Caltech during which we communicate best around countless campfires in the boondocks. For many years I have conducted an annual field excursion to the Big Island of Hawaii for all students finishing up and leaving Caltech in that academic year. This is a serious intellectual exercise featuring hot-spot volcanism, not a vacation on a subtropical isle. The kids get to swim just once. Thanks to generous annual grants from the H. Dudley Wright Foundation of Switzerland, the students pay only their food costs. Aloha shirts, if any, are on them. These activities help keep me on my toes. How can our Division cultivate young people? Could we provide a seat or two for young people on our board or among our officers? I have a faint recollection that in its earliest days the Kirk Bryan Award had a tilt toward youth. I liked that, and wonder if we could perhaps steepen that tilt by tradition without tying it up with some hard and fast rules. The American Geophysical Union encourages young researchers by publishing brief biographical sketches of those selected as giving unusually good papers at AGU meetings. The GSA already salutes young people, most notably by the Donath

Medal and by citations from several of the divisions. Could we perhaps reach out even farther by awarding each year a Certificate of Promise to several young Quaternary geologists and geomorphologists for published papers, theses, or even unusual term papers as submitted by a sponsor and evaluated by a small QGG committee? Let us look ahead not back. The Nobel Prize, so often given for work done decades ago, is a classic example of looking back. We should look forward by saluting promise as well as accomplishment with the hope of stimulating young gifted people to scale greater heights.

Finally, may I be so bold as to leave a thought for consideration by the board and officers of our Division? Some of you, perhaps many, may be familiar with the brief presentation at about 8 a.m. each day of the week over National Public Radio of the "Star Dust" program that originates from the McDonald Observatory of the University of Texas at Austin. It lasts only 1 1/2 to 2 minutes, is well written and superbly narrated. The program deals with facets of astronomy, astrophysics and our Universe. Why shouldn't our section urge the council and officers of the GSA to take the lead in rallying major earth science organizations such as the American Geophysical Union, the American Association of Petroleum Geologists, the American Geological Institute and others to band together in doing something similar for the earth sciences? The menu we have to offer is even broader and richer than that of the astronomers and certainly more applicable to the concerns of the general population. A snappy title for such a presentation might be "Down To Earth." Such an endeavor would cost money, but support could probably be won from commercial and foundation sources. The aim would be to increase public awareness of the earth sciences and to stimulate the interest of young people in earth science careers. The operation could be handled through the American Geological Institute. The first step would be a study and analysis of the Star Dust operation. A gifted writer and a skilled narrator would be required.

I learned long ago that the art of good public speaking is to know when to quit. Leave your audience wishing you had talked a little longer rather than a whole lot less. So I bid you adieu, wish you well and thank you for your presence and attention.

KIRK BRYAN AWARD: Roger T. Saucier

Citation by Lawson Smith

The Kirk Bryan Award of the Geological Society of America for 1996 is presented to Dr. Roger Thomas Saucier for his treatise *Geomorphology and Quaternary Geologic History of the Lower Mississippi Valley*. Published in December 1994 by the Mississippi River Commission (MRC) of the U.S. Army Corps of Engineers, this work represents the revision of the monumental work of Harold Norman Fisk (*Geological Investigation of the Alluvial Valley of the Lower Mississippi River*), published MRC in 1944. In the spring of 1992, senior engineers of the MRC decided that the time had come to begin the huge task of revising the almost sacrosanct epistle of H.N. Fisk. The latest report and its impressive folio of 28 color plates is testimony to Roger's ability to gather and analyze a broad spectrum of information to unravel a complex story as well as his well known tenacity to produce a first rate product in an extremely timely manner.

The report begins with a succinct background of the history of geologic investigation in the Lower Mississippi Valley and dis-

discussion of the sources of data used in the investigation, emphasizing the wealth of relevant information developed over the last 50 years. True to Roger's practice of providing a careful and thoughtful introductory explanation, he outlines the purpose and style of the manuscript as a foundation for multi-disciplinary application. A comprehensive introduction of the major geographic and physiographic settings of the Lower Mississippi Valley follows, setting the stage for a detailed treatment of geologic processes and controls. Saucier outlines the relevant histories of North American glaciation, climate, sea level, tectonics and diapirism, and subsidence in terms of their influence on the geomorphic development of the LMRV.

Landscapes, landforms, and formational geomorphic processes of the LMRV are next presented in a manner that clearly defines a rationale for categorizing and describing the many features of a large alluvial valley and progradational deltaic plain. Roger uses aerial photographs and diagrams to lead the reader through the many depositional environments and landforms of the LMRV, including fluvial, lacustrine, eolian, deltaic, deltaic-marine, and unusual environments such as pimple mounds and sand blows. Of considerable value and interest to sedimentologists, stratigraphers, and geotechnical engineers is the formidable discussion of the lithology, soils, and geotechnical properties of the depositional environments of the LMRV.

Perhaps the most interesting and provocative section of the report describes the Quaternary stratigraphy and chronology of the LMRV, arguably the topic of Fisk's treatise most in need of revision. Roger's comprehensive synthesis of information gleaned from his lifetime of careful study of LMRV chronology and the results of others provides a framework for integration of LMRV Quaternary interpretations with the Quaternary history of both the midcontinent and the Gulf of Mexico. The criticality of understanding the complex Quaternary response of the Lower Mississippi River to upstream glacial advance and retreat and sea level fluctuation in the Gulf of Mexico is a central theme of this discussion and Roger carefully weaves the connections.

Of particular importance to the timely topic of earthquake preparedness in the LMRV is the discussion of tectonics and neotectonism in the LMRV. The many geomorphic features of the LMRV which owe their origin to neotectonism are described with implications to the profound natural hazards which they indicate. Saucier closes the technical part of the report with a discussion of special engineering considerations, the constant challenges of ground water resources management, river bank caving, landsliding, and river engineering in the LMRV.

The ribbon that ties this remarkable package together is the impressive folio of color plates (Volume Two). Contained in Volume Two are a series of 14 1:250,000 scale maps of the Quaternary deposits of the LMRV, a hypsometric map of the sub-alluvial surface, 1:250,000 structure-contour maps of the suballuvial surface, and a sequence of 13 paleogeographic reconstructions of key periods in the development of the LMRV from approximately 2.5 million to about 1000 ybp.

Response by ROGER T. SAUCIER

Receiving the Kirk Bryan Award is truly an exceptional honor. I am deeply humbled to join the ranks of such prestigious award winners! I especially want to thank Lawson Smith not just

for his many kind remarks, but for providing management of the project that led to the manuscript, giving me a lot of counsel and moral support, and nominating me for this award.

When I first announced—now about four years ago—that I would be delaying my retirement to develop a 50-year update of Harold Fisk's 1944 classic on the Lower Mississippi Valley, two types of reactions were prevalent. Some said that this would be the chance of a lifetime. In hindsight, I heartily agree. Others said this would be a terrific way to end my career. I now believe those in the latter category were some of my more competitive colleagues that were only hoping this would be true. As Lawson said, however, I have found out that there is a life beyond the Federal bureaucracy—indeed a lucrative and most enjoyable life. While others relax or fish or hunt, I am thrilled to be able to devote 40 to 50 hours per week to field work, interpreting boring logs, studying aerial photos, writing reports, and presenting papers. But you'd better believe I still have time for grandkids!

Lawson has covered in detail what is contained in my monograph and its significance, but let me express my view of what I believe is its most important message. In large measure, I accepted the challenge to write it to fulfill a moral obligation and to practice some self-discipline. As many of you know, I have been an outspoken, harsh critic of Fisk's 1944 geological summary. I readily admit that I have gone to considerable length to demonstrate that his chronology is basically incorrect and some of his concepts are fundamentally wrong. But I have really been most outspoken, not of him or what he wrote, but how his work has been received and used. It is no overstatement to say that his 1944 report was a panacea to archaeologists struggling to devise cultural chronologies and has been held virtually in reverence ever since. It first proved difficult for me to see outdated concepts and information being accepted and used over and over again without question. It was even more frustrating to see sound archaeological evidence repeatedly being dismissed because it was inconsistent with what had become an obsolete geological model. Certainly, archaeologists could not be blamed. They were struggling to keep abreast of rapidly expanding knowledge in their own discipline. They could not monitor developments in other fields, especially when they were not widely published and readily accessible.

Early in my life, I was taught that criticism should be constructive and ideally it should be done only when you can offer a better alternative. I realized that there was no acceptable alternative to Fisk's 1944 monograph, so I felt that I had an obligation to try to provide one. But what I needed next was self-discipline and a mandate. All my life, I have been the type of person constantly wanting to move on to new projects and new problems. I even surprised myself recently when I reviewed my rÇsumÇ and found that I have conducted geomorphological studies of no less than 89 topics, areas, or sites in the Mississippi Valley area. It was time for me to pause to look back, to summarize and synthesize, and to make a holistic assessment of not just these project results, but a vastly expanded literature representing major advances in knowledge offered by hundreds of individuals.

In addition to providing a wealth of data, much of it unpublished, on multiple aspects of the Quaternary of the Mississippi Valley, my monograph is a statement of my philosophy. It demonstrates how geomorphic processes, landscape evolution,

landform development, and paleoenvironmental changes in a dynamic setting can only be understood through the most broadly interdisciplinary approach possible. It also demonstrates how a similar approach is essential to understand human adaptation to a dynamic environment, both in prehistoric times and today.

To me, just being a Quaternary scientist is a reward in itself. I thank all of you for this exceptional honor.

NOMINATIONS: 1997 DISTINGUISHED CAREER AWARD

The Distinguished Career Award was established in 1985 to recognize Quaternary geologists and geomorphologists who have demonstrated excellence in their contributions to science. The recipient need not be a member of the Geological Society of America or the QG&G Division. Nominations will be accepted at any time during the year, but the deadline is April 1, 1997. Nominations should be sent to the Division Secretary, Steve Kite, and require: (1) a supporting letter of nomination documenting the contributions of the nominee, (2) three letters or signatures of additional members supporting the nomination, (3) a rÇsumÇ of the candidate (such as a photocopy from American Men and Women of Science), along with a bibliography of the nominee's most significant papers. The Division Chair will appoint a committee to oversee the collection and completion of award nominations. The names of unsuccessful candidates proposed for the award will remain open without renomination for the following three years. Further consideration after this period will require renomination.

Recipients of the Distinguished Service Award

Year	Recipient	Citationist(s)
1986	Richard P. Goldthwait	D.M. Mickelson
1987	Aleksis Dreimanis	S.R. Hickock, P.F.Karrow
1988	A. Lincoln Washington	S.C. Porter
1989	Clyde Wahrhaftig	R. Janda
1990	John T. Hack	M.G. Wolman
1991	Luna Leopold	M.G. Wolman
1992	Herbert E. Wright, Jr.	A.F. Schneider
1993	Victor K. Prest	D.A. St. Onge
1994	William C. Bradley	J. Andrews, P. Birkeland, N. Caine, J. Pitlick
1995	David M. Hopkins	J. Brigham Grette
1996	Robert P. Sharp	A. Gillespie D. Easterbrook

NOMINATIONS: 1997 KIRK BRYAN AWARD

Nominations for the Kirk Bryan Award for 1998 **will be accepted until December 1, 1997**. The Kirk Bryan Award is given for a paper or book published within the past five years. The work may be single or multi-authored. Nominations are made by writing a letter that identifies the work and provides a statement about its significance. Send nominations to the Division Secretary: J. Steven Kite, Department of Geology & Geography, P.O. Box 6300, West Virginia University, Morgantown, WV 26506-6300. Recent recipients include these authors:

1992 **R. Dale Guthrie** (University of Alaska), Frozen fauna of the Mammoth Steppe: The Story of Blue Babe: Chicago, University of Chicago Press, 323 p., 1990.

1993 **William B. Bull** (University of Arizona), Geomorphic responses to climate change, Oxford Univ. Press, 326 p., 1991.

1994 **Arthur N. Palmer** (State University of New York, Oneonta) Origin and morphology of limestone caves, Geological Society of America Bulletin, v. 103, p. 1-21, 1991.

1995 **James E. O'Connor** (U.S. Geological Survey) Hydrology, hydraulics and geomorphology of the Bonneville Flood, Geological Society of America Special Paper 274, 90 pg, 1993.

Financial Activity Summaries for the year ended 12/31/95

Quaternary Geology and Geomorphology Division Fund

Balance 12/31/94	\$1,061.23
1994 Iceland Field Seminar Contribution	250.00
Co-sponsor - Continuing Education Program	28.00
1995 Division Dues Income	4,788.00
Total Division Resources	\$6,127.23

Division Expenses:

Newsletters - GSA Expenses	\$ 261.5
Newsletters - Invoice 000311	1,046.34
Newsletters - Invoice 000410	1,186.03
Annual Meeting - Invoice 000535	1,347.59
Distinguished Career Award	279.80
Intl. Assoc. of Geomorphol. Mmb Fees	700.00
Other reimbursements (5)	351.56
Total Division Expenses	\$ 5,172.86
Division Fund Balance 12/31/95	\$ 954.37
Year End Transfer to J. Hoover Mackin Fund	-477.18
Division Fund Balance 12/31/95	\$ 477.19

J. Hoover Mackin Fund

Mackin Fund Balance 12/31/94	\$ 20,582.55
Contributions	1,461.70
Interest	882.69
Investment Gain	941.96
Transfer from QGG Division	477.18
Total Income	\$ 3,763.53
Fund Dispersement	1,400.00
Service Charges	77.11
Total Expenses	-1,477.11
Fund Balance 12/31/95	\$ 22,868.9

Arthur D. Howard Fund

Howard Fund Balance 12/31/94	\$ 31,776.59
Contributions	148.88
Interest	1,413.90
Investment Gain	1,485.48
Total Income	\$ 3,048.26
Fund Dispersement	500.00
Service Charges	119.34
Total Expenses	- 619.34
Fund Balance 12/31/95	\$ 34,205.51

QG&G MANAGEMENT BOARD MEETING DENVER, COLORADO - 28 OCTOBER 1996

Chaired by Will Graf, Division Chair. Minutes compiled by Steve Kite, Division Secretary.

Attending: Chairman W. Graf; 2nd Vice Chairman L. McFadden; Past Presidents S. Colman, P. Calkin, J. Costa; Secretary S. Kite; Newsletter Editor R. Whittecar; 1996 Panelists P. Clark, E. Cowan, L. Ely, M. Machette, D. Merritts; 1997 2nd Vice Chairman A. Hansel, 1997-98 Panelists S. Burns, J. Ritter, E. Wohl, Long-Range Planning Committee Members V. Baker, R. Madole; AAG Geomorphology Specialty Group Representatives A. James, A. Marcus; 1997 Short-Course Instructor J. Ellis

Chairman Graf convened the meeting at 7:45 a.m.

I. Secretary's Report (Kite)

Minutes of the 1995 Management Board meeting were approved via E-mail. The 1996 Annual Report to GSA, which was based on these minutes, was distributed.

The Awards Program handout includes no photos of the winners again this year.

The Kirk Bryan Award is given to the author or authors of a published paper of distinction advancing the science of Quaternary geology, geomorphology, or a related field. The 1996 recipient: Roger Saucier, Waterways Experiment Station, Retired; Lawson Smith, citationist. There will be 3 carry-over nominations for 1997.

The 1997 Distinguished Career Award recipient is Robert P. Sharp, Cal Tech; Don Easterbrook & Alan Gillespie, citationists. There will be 2 carry-over DCA nominations for 1997.

The Board decided that the \$500 DCA stipend is an automatic award to be given every year.

The deadline for DCA nominations is 1 April and the deadline for decision is 15 April.

Election results: (See also September Newsletter)

Only 938 ballots were mailed, but almost 29% were returned (vs. 17% in 1994; ca. 20% in 1995).

Winners were as follows:

Karen Prestegaard (uncontested)	Chair
Les McFadden (uncontested)	First-Vice Chair
Ardith Hansel	2nd Vice Chair
Steve Kite (uncontested)	Secretary (2 yr)
Scott Burns, John Ritter, Ellen Wohl	New Panel Members
Peter Clark, Lisa Ely, Dorothy Merritts	Returning P. Members
Mike Machette, Ellen Cowan, and Robert Anderson	Retiring P. Members

Membership is up 63 to 1241, and may rise a few more % by year's end; dues income is up over 1995. Over the period from 1990-96 the QG&G Division has done better than any other large GSA division. [Editor: We're still 3rd largest section. 188 behind structure & tectonics, 89 fewer than Hydrogeology]

The 1995 and 1996 year-to-date financial summary sheets were distributed for the Division Fund, the Mackin Fund and the

Howard Fund. All funds are doing well in response to excellent investment returns. The Mackin account has received some wonderful contributions totalling over \$15,000. The 1996 financial report to date is not very meaningful because the September newsletter and annual meetings costs are not reflected. The 1995 financial summaries of all 3 accounts should be reproduced in the next newsletter. The final 1996 financial summary should be printed in the September 1997 newsletter.

International Association of Geomorphologists dues have been \$350/yr for the last 2 years.

The J. Hoover Mackin Fund (Ph.D.) funded one \$1500 winner (v. two \$700 winners in 1995). Half of the QG&G account goes into this fund at end of year. The Arthur D. Howard Fund (M.S.) funded one \$1200.00 winner (v. one \$500 winner in 1995).

The board policy of allowing Mackin and Howard Awards to increase during times of investment fund growth was restated. Principal must be allowed to grow to insure long-term viability of these funds. Award amounts should be maintained at values significantly above GSA student research grants.

1996 Necrology: George Dury

The secretary was instructed to explore the possibility of getting a list of E-mail addresses of non-renewing members from GSA. II. 2nd Vice Chairman's report (McFadden)

The Quaternary Geology & Geomorphology Division Panel has selected the following Award winners: Ph.D. 1996 Mackin Grant of \$1500: Brenda L. Hall, University of Maine, Geological assessment of abrupt climate change and ice-sheet stability hypotheses from an Antarctic perspective. Masters 1996 Howard Grant of \$1200.00: David P. Bouchard, Utah State University, Quaternary Bear River - Bonneville Basin paleohydrogeography reconstructed from the 87Sr/86Sr composition of lacustrine fossils. Most proposals were of extremely high quality, and it was suggested that the Division give honorable mention citations for excellent proposals not receiving funding.

Plans for the 1998 meeting in Toronto are being formulated. Possible field trips: glacial geology of the Toronto area (may be led by Nick Eyles, Univ. Toronto or Steve Hicock, U. W. Ontario), Holocene landscape evolution of New England (led by Paul Bierman, U. Vermont). Possible theme session: Fluvial geomorph, something about "environmental restoration" of rivers, organized by Karen Prestegaard. Possible symposium: Holocene climatic changes (definition, timing, etc.) and geomorphic impacts (soils, ecology, surficial processes), organized by Les McFadden. McFadden (E-Mail: LMCFADNM@UNM.EDU) is seeking advice on exciting field trips and theme sessions.

III. 1st Vice Chairman's report (presented by Graf for K. Prestegaard)

Plans for the 1997 meeting in Salt Lake City are being finalized. Symposia/theme session ideas include (1) connections between geomorphology and biology, (2) geomorphology and tectonics, (3) watershed and river restoration, and (4) geomorphology in environmental education.

Several thoughts on new Division structures were discussed, including a Distinguished Lecture Series and ad hoc committees

on selected topics co-ordinated with annual meeting agendas.

Jim Ellis presented a proposal to teach a short course, entitled "Practical remote sensing for geology". The Management Board unanimously approved this short course for the 1997 Toronto meeting. Several Management Board members suggested co-ordination with the University of Utah to insure maximum availability of hardware platforms at minimum cost. A second short course will be offered by Paul Bierman and Alan Gillespie. It will focus on Applications of Cosmogenic Isotopes.

IV. Chairman's report (Graf)

Tuesday's business meeting was discussed briefly.

Newsletter Editor Whittecar was cited for an excellent product produced in a timely manner. An ad hoc committee on electronic newsletter publication was established. Members Costa, Machette, Whittecar and Kite will report progress at the 1997 meeting.

In order to reduce conflicts with poster and paper sessions, the 1997 Management Board Meeting will be moved to 7:00 to 10:00 p.m Sunday, as approved by a majority vote of the board. Food and refreshments will be provided by the Division.

The JTTC process has been modified over recent years, and will continue to be streamlined in the near future. In the last year or so, abstract rejection has occurred only when the abstract was not scientifically constructed or when legal or patent issues were identified. (Secretary's note: at least the abstracts in our Division generally followed GSA format!)

The concern over declining memberships for nearly all divisions has prompted discussion of several possible changes in our relationship with GSA. These proposals include abolition of divisions and required membership in divisions. Abolition of divisions was summarily rejected as an absurd idea; most of those present feel stronger allegiance to QG&G than to GSA. Required division membership overlooks the fact that many members belong to two or more divisions, and that the affiliated societies serve the role of divisions in some disciplines.

Chairman Graf suggested that the recent decline in division memberships has created a climate wherein GSA may be receptive to greater flexibility in program development and other ideas on how to develop divisions. Our Division needs to be proactive and help steer change in the Society, rather than be reactive to "top-down" initiatives from GSA administration.

A. James and A. Marcus sought guidance on how the Association of American Geographers' Geomorphology Specialty Group (AAG GSG) will interact to represent the United States in the International Association of Geomorphologists (IAG). R. Madole's consultation with QG&G guidelines resulted in a plan in which the officers of our Division will select a list of 3 potential representatives. This list will be submitted by 1 March 1997. AAG GSG officers will select the one and only U.S. representative from that list. The roles of the two divisions will be alternated for the next IAG meeting.

A \$500 payment to IAG was approved. This amount is half of the U.S. annual dues for 1996, the rest being born by AAG

GSG. The QGG contribution is an increase from \$350 paid for 1994 and 1995. The lesser amount was based on an assumption that the American Geophysical Union's Hydrology Division would also participate in IAG representation. However, it appears that an AGU contribution is not possible under the existing AGU structure.

Some concern was expressed over how IAG funds were used. V. Baker reported that IAG funds have been increasingly devoted to the organization of Geomorphology societies in underdeveloped countries and to assist scientists from underdeveloped countries to attend IAG meetings. Several Board members voiced clear preference of these activities over subsidizing the travel costs of administrators from developed countries.

Publications, specifically the AEG Bulletin, were discussed by J. Costa. Issues of concern include an over abundance of QG&G related outlets, excessive turn-around time for GSA publications, and GSA staff-author interaction. Graf recommended that GSA Council conduct a systematic survey on publications.

The meeting was adjourned at 11:05 a.m.

QG&G DIVISION COMMITTEES FOR 1996-1997

- ✓ **Division officers:** Karen L. Prestegaard (Chair); Leslie McFadden (First Vice Chair); Ardith Hansel (Second Vice Chair); J. Steven Kite (Secretary).
- ✓ **Division Panel:** Michael N. Machette, Ellen A. Cowan, Robert S. Anderson (1995-1997); Peter U. Clark, Lisa L. Ely, Dorothy J. Merritts (1996-1998).
- ✓ **The Committee on Long-Range Planning** is chaired by Steve Wells (909) 787-4367. Other committee members are Rich Madole and Vic Baker.
- ✓ **The Committee on Education** is chaired by Brian Tormey.
- ✓ **The Committee on Environment** members are Jack Schmidt (chair) and Richard Kessel.
- ✓ **The 1997 Nominations Committee** consisted of Ellen Wohl (chair), Ardith Hansel, and David Furbish. They have produced a slate of candidates for this year's elections and are thanked for this work.

Send information for the Newsletter to Rich Whittecar, Editor, Geological Sciences, Old Dominion University, Norfolk VA 23529; grw100f@giraffe.tech.odu.edu.

MEMORIAL

George H. Dury passed away in England on October 4, 1996. At 80 years of age George was still reviewing manuscripts and participating in other professional activities. George's contributions to Geography, Geology, and Geomorphology are numerous. He was a key contributor to the introduction of quantitative, process-oriented methodology in the U.K. While George published on a wide range of topics, his work on "underfit streams" and "duricrust" stand out. His research on underfit streams, showing that paleostream morphologies record the effects of past climate changes, represented pioneering quantitative paleohydrologic investigations. George's research on duricrust weathering profiles began while he was at the University of Sydney and continued at the University of Wisconsin. George was a prestigious scholar and teacher of international repute. - *Jim Knox*

OPPORTUNITIES FOR DIVISION MEMBERS

SPECIAL JOURNAL SUBSCRIPTION RATES

QG&G Division Members

GEOMORPHOLOGY Elsevier offers the journal *Geomorphology* to QG&G members at a special rate of \$88 for 1996. Contact Customer Services at (212)633-3750. Send your manuscripts to the Journal Editor, Jack Vitek, Dept. Geography, Oklahoma State University, Stillwater OK 74078.

QUATERNARY GEOCHRONOLOGY/

QUATERNARY SCIENCE REVIEWS Members of the QG&G Division also qualify to get both *Quaternary Science Reviews* AND *Quaternary Geochronology* for the special group rate of \$99/year (ten issues total). This offer is for personal subscriptions only. Subscription orders with payment (and/or Free Sample Copy) can be sent directly to: Agnes Impellitiere, Elsevier Science Inc., 660 White Plains Road, Tarrytown NY 10591. Please identify yourself as a QG&G Division member of GSA. Bill Farrand, Regional Editor for QSR, is soliciting manuscripts. Prospective authors should write him at Exhibit Museum, University of Michigan, Ann Arbor, MI 48109-1079. Send manuscripts for QC to Rainer Grun, Quaternary Dating Research Centre, RSPacS, ANU, Canberra ACT 0200, Australia, Tel: + 61 6 249 3122, fax: + 61 6 249 0315.

GEOARCHEOLOGY QG&G Division members can get *Geoarcheology* for the group rate of \$75/year. The rate for Division members outside North America is \$105. The offer is for personal subscriptions only (subscription orders must include GSA membership number). Payment can be sent directly to: Subscription Department, John Wiley & Sons, Inc, P.O. Box 7247-8491, Philadelphia, PA 19170-8491. U.S. members should include appropriate state sales tax and Canadian members should add 7% GST, which Wiley is obliged to collect.

RESEARCH GRANTS FOR ISOTOPIC ANALYSES Geochron Laboratories

Geochron Laboratories, a division of Krueger Enterprises, Inc., annually awards a series of research grants to graduate students requiring interesting or new applications of isotopic analyses. The awards consist of analytical services to be performed free of charge to the winner in each category. For the past several years awards have been offered in K-Ar dating, C-14 dating, and stable isotope ratio analyses (SIRA), SIRA in dietary studies, and SIRA of fluid inclusions in minerals. The awards are offered by Geochron Labs to encourage the application of isotopic analytical techniques to solve original and significant problems. The deadline for applications is May 1, 1997. Early application is suggested to assist with prompt evaluation and notification of winners. For Research Award Program Guidelines and official rules, call 617-876-3691, fax 617-661-0148 or write 711 Concord Ave, Cambridge, MA 02138.

The Jan De Ploey Prize

The Jan De Ploey Prize is awarded every two years to a young scientist (under the age of 35) who has made a significant contribution to research in the field of geomorphological processes. The Prize will be awarded at the IAG Conference in Bologna in August 1997. The recipient will be expected to deliver a memorial lecture at the Laboratory for Experimental Geomorphology, K.U.Leuven, Belgium. The Prize will pay the expenses of the visit to Leuven and the residual sum may be used to support attendance at an appropriate international conference. Nominations should consist of a brief statement and any supporting materials (C.V., list of publications) including a copy of at least one critical published paper. Please send your nominations before March 31, 1997 to the Jan De Ploey Prize Selection Committee, Laboratory for Experimental Geomorphology, K.U.Leuven, Redingenstraat 16, B-3000 Leuven, Belgium.

Special Issue of Geomorphology - Call for Manuscripts Cosmogenic Isotopes in Geomorphology

A special issue of *Geomorphology* is being developed to highlight the applications of cosmogenic isotopes to geomorphology. Papers are wanted that illustrate the diverse uses of cosmogenic isotopes and ways in which the technique is allowing us to answer both traditional and new questions. The manuscript deadline is April 15, 1997. Guidelines for manuscript preparation can be found in recent issues of *Geomorphology*. Manuscripts should be sent to the special issue editor (NOT the regular journal editors): Jon Harbor, Department of Earth and Atmospheric Sciences, Purdue University, West Lafayette, Indiana 47907-1397 USA (email: jharbor@uval.geo.purdue.edu)

Atlas of Saskatchewan - In Preparation

The Department of Geography at the University of Saskatchewan is producing the second edition of the *Atlas of Saskatchewan* in collaboration with a wide variety of public and private sector partners. Special research funds have been made available to support graduate students working on the Atlas as part of their graduate research. Information about the Atlas project may be obtained from Lawrence Martz (martz@usask.sask.ca) and Ka Iu Fung (fungkai@duke.usask.ca).

Centennial History of the U.S. Soil Survey

The centennial of the U.S. Soil Survey will occur in 1999. Douglas Helms will be compiling a history of the Soil Survey during the upcoming year. The volume, to be published by the Iowa State University Press, will include invited chapters by soil scientists and historians. If anyone knows of scholars currently working on any aspects of the history of the Survey, but most particularly on the history of the Soil Survey's uses, interpretations and influences, contact Douglas Helms, Historian, Natural Resources Conservation Service (formerly the Soil Conservation Service), PO Box 2890, Washington, D.C. 20013-2890 (douglas.helms@usda.gov).

GSA and AAG Cooperate on the International Front

The QG&G Division of the GSA is cooperating with the Geomorphology Specialty Group of the Association of American Geographers to provide representation for the United States in the International Association of Geomorphologists. Unlike other countries, the geomorphological community resides in two disciplines in the United States. After a series of negotiations between the two groups, the following arrangement has been worked out. The GSA division and the AAG specialty group will contribute equally to the national dues for the international organization. In each four-year period, one of the American organizations will put forward a slate of three candidates from its own membership. The other organization will pick one of the three to represent all American geomorphologists in IAG affairs, including voting. This time around, in preparation for the meetings next year in Italy, the QG&G Division will put forward the suggested names, and the specialty group of the AAG will pick one representative from the list. According to our division guidelines, the Division Chair, Karen Prestegaard, will assemble the slate. These arrangements are a little entangled, but they do assure that most American geomorphologists are truly represented, and by alternating the proposed slates between the geologists and geographers we insure that the cordial relations between the two groups continues.

DATA SETS AND RECENT PUBLICATIONS

The Variability of Large Alluvial Rivers, edited by S.A. Schumm and B.R. Winkley. 1994. American Society of Civil Engineers Press, 467 pg. The Amazon, Niger, Nile, Mississippi, Yellow, Indus, and Murray rivers are among nineteen rivers examined by engineers and earth scientists to explain the complex nature, diversity of dominant controls, and engineering implications of large alluvial-river variability.

Subsurface Geologic Investigations of New York Finger Lakes: Implications for Late Quaternary Deglaciation and Environmental Change by H.T. Mullins and N. Eyles. 1996. Special Publication 311, Geological Society of America, Boulder. 96 pg. See catalog at <http://www.geosociety.org>. These analyses are based on high-resolution seismic reflection surveys tied to a 120-m-long drill core. The results have implications for stability of the lakes during deglaciation and Holocene climate changes.

Fluid Physics in Geology by David J. Furbish. 1996. Oxford University Press, New York. fax:(212)726-6450. This is a fluid mechanics text for geologists that provides an introductory treatment of the physical and dynamical behaviors of fluid. It is aimed at students who need to understand fluid behavior and motion in the context of a wide variety of geological problems.

Ice Sheets by T. J. Hughes. 1997. Oxford University Press, New York, 304 pg. phone:1-800-451-7556. This text focuses on modeling the advance and retreat of ice sheets in response to and contributing to climatic forcing.

Karren Landforms edited by J.J. Fornos and A. Gines. 1996. Universitat de les Illes Balears, 450 pgs. Order from: Servei de Publicacions, Campus Universitari, Cra. Valldemossa, km 7.5, 07071 Palma de Mallorca, Spain. This is a symposium volume that presents regional reviews and detailed discussions on problems associated with the description and formation of karren.

Sea-Level Changes: The Last 20,000 Years by P.A. Pirazzoli. 1996. A new volume in the Wiley series "Coastal Morphology and Research" edited by E.C.F. Bird. Contact customer@wiley.co.uk.

Field trip guides for Ireland are available from the Irish Association for Quaternary Studies. The latest IQUA Field Guide (No. 20) is **Central Kerry**, edited by Cathy Delaney and Pete Coxon. Contact P. Glanville at GLANVILL@ollamh.ucd.ie.

Water On Mars by M. H. Carr. 1996. Oxford University Press, New York. A summary of what is known about water on Mars, based upon analyses of Viking photographs. A critical review of the evidence for fluvial, lacustrine, glacial, and periglacial processes.

The Late Quaternary Construction of Cape Cod, Massachusetts: A Reconsideration of the W.M. Davis Model by E. Uchupi, G.S. Giese, D.G. Aubrey, and D.-J. Kim. 1996. Special Publication 309, Geological Society of America, 76 pg. See catalog at <http://www.geosociety.org>. Geological and geophysical studies were used to reconstruct the geologic history of the area and compare it to the construction proposed by W.M. Davis.

Surficial Materials of Canada, Geological Survey of Canada Map 1880A. This map is available in digital format (.DXF, .MIF, or .E00) at <http://sts.gsc.NRCan.gc.ca/page1/sgm/maps.htm>. Compiled at 1:5 000 000, it portrays alluvial, lacustrine, marine, and glacial materials and bedrock. It is also available on CD-ROM; contact gc_bookstore@gsc.NRCan.gc.ca.

Plutonium and the Rio Grande: Environmental Change and Contamination in the Nuclear Age by W.L. Graf. 1994. Oxford University Press, New York, 356 pg. This book examines the environmental consequences of construction atomic bombs at Los Alamos and dumping the waste into canyons leading to the Rio Grande.

Radiocarbon Date List VIII: Eastern Canadian Arctic, Labrador, Northern Quebec, East Greenland Shelf, Iceland Shelf, and Antarctica from the Institute for Arctic and Alpine Research. Contains 420 radiocarbon dates from marine, terrestrial, and lacustrine settings. Contact Kathleen Salzberg, INSTAAR, University of Colorado, Campus Box 450, Boulder CO 80309.

Till: A Symposium- Jane Forsyth has several copies of this classic volume (out of print) which she would like to offer to anyone interested for \$15. Checks should be made to the "Goldthwait Fund." Contact Jane at Department of Geology, Bowling Green State University, Bowling Green, Ohio 43403.

MEETINGS

Feb 27-March 2, 1997: Arctic Workshop. University of Ottawa. Paper and poster sessions covering all aspects of the arctic environment, past and present. Contact: A. Lewkosicz, Dept. Geography, Univ. of Ottawa, Ottawa, Ontario, K1N 6N5 Canada; **email:** geolan@aix1.uottawa.ca

March 29-April 1, 1997: Paleoclimate Colloquium. INQUA Working Group on Milankovitch and Plio-Pleistocene vegetation succession from 2.6 to 0.9 Ma. Ankara, Turkey. Contact: Suzanne A.G. Leroy, Queens University Belfast, Belfast BT7 INN, N. Ireland **email:** s.leroy@qub.ac.uk.

April 1-5, 1997: Association of American Geographers. Fort Worth, Texas. Sessions being planned include historical channel and hillslope erosion and sedimentation, sediment transport in fluvial systems, soils in cultural contexts, cosmogenic nuclides, and drylands. For meeting information, contact: AAG, 1710 Sixteenth St. NW, Washington DC 20009; (202)234-1450.

April 20-25, 1997: European Geophysical Society. Vienna. Special sessions include "Flow and sediment transport modelling in hydrology and geomorphology using numerical methods." Contact: Stuart Lane (**email:** SNL10@cam.ac.uk)

April 21-22, 1997: Uplift, Erosion and Stability: Geological and Geomorphological Perspectives on Landscape Evolution. Geological Society of London and BGRG. London. Contact: W. Brian Whalley (**email:** b.whalley@qub.ac.uk)

April 26-30, 1997: Carbon Cycle and Karst Processes Symposium, Lipu, China. IGCP Project 379. Contact: Yuan Daoxian, Inst. Karst Geol., Qixing Rd.40, Guilin 541004, China

May 4-6, 1997: 6th Midwest Glaciology Meeting, Madison, Wisconsin. Overlaps with North Central GSA and includes a symposium and field trip on paleoglaciology. Contact: Dave Mickelson (mickelson@geology.wisc.edu) or Ardith Hansel (hansel@geoserv.isgs.uiuc.edu).

May 4-14, 1997: International Symposium on Soil, Human, and Environment Interactions. Nanjing, China. Sponsored by International Soil Science Society and Chinese Academy of Sciences. Themes include soil resource conservation and sustainable development; soil degradation; land use and environment changes; and soil restoration. Contact: Yongguan Zhu (zhaoqg@njnet.ihep.ihep.ac.cn)

May 19-21, 1997: Geological Association of Canada Annual Meeting. Ottawa

May 20-22, 1997: Management of Landscapes Disturbed by Channel Incision: Stabilization, Rehabilitation, Restoration. Oxford, Mississippi. USDA National Sedimentation Laboratory, US Army Corps of Engineers, University of Mississippi. Contact: Sam S.Y. Wang or Janice Mills, (601) 232-7788.

May 22-24, 1997: Canada Quaternary Association Biennial Meeting. Montreal, Quebec. Special sessions include Integrating Worlds: Archeology, Environment, and Native Knowledge; Remote Sensing applied to Paleogeomorphology; Dating the Last Million Years; Deglaciation of the Appalachians and the St. Lawrence Lowlands; Timing of North American Glaciations. Contact: Michel Bouchard, Universite Montreal email:bouchami@ere.umontreal.ca

June 3-5, 1997: Wind Erosion. Manhattan, Kansas. An international symposium/workshop commemorating the 50th anniversary of the USDA's Wind Erosion Research at Kansas State University. Contact: John Tatarko (**email:** sym@weru.ksu.edu). Also see

<http://www.weru.ksu.edu>.

June 9-13, 1997: Changing Water Regimes in Drylands. Lake Tahoe, California. Desert Research Institute. System of Nevada. Focus on the hydrologic, biologic, and human responses to climate changes. Contact: Nicholas Lancaster (nick@maxey.dri.edu) or visit DRI Web www.dri.edu.

June 10-12, 1997: International Symposium on Physics, Chemistry and Ecology of Seasonally Frozen Soils. Fairbanks, Alaska. Co-sponsored by the USDA-Agricultural Research Service, University of Alaska, and Cold Regions Research and Engineering Laboratory. Contact: Brenton Sharratt (bsharrett@mail.mrsars.usda.gov (612)589-3411) or Pieter Groenevelt, Dept. Land Resource Science, Univ. Guelph, Guelph, Ontario CANADA N1G 2W1

June 18-19, 1997: Late Quaternary Coastal Tectonics, Geological Society of London, Burlington House, London, UK. Convenors: Ian Stewart (ian.stewart@brunel.ac.uk) & Claudio Vita-Finzi (ucfbcvf@ucl.ac.uk). Conference volume is planned.

June 22-27, 1997: Micromorphology of Glacigenic Sediments. Brock University. A technical workshop to examine the making, description, and interpretation of thin sections of glacigenic sediments. Contact: John Menzies, Brock Univ., St. Catharines, Ontario L2S 3A1 Canada; **email:** jmenzies@spartan.ac.brocku.ca.

July 1-2, 1997: Symposium on Glaciers of the Southern Hemisphere. Melbourne, Australia. Abstract deadline: 2 December 1996. The International Snow and Ice Commission. Contact: IAMAS/IAPSO Secretariat (mscarlett@peg.apc.org); Web site: www.dar.csiro.au/pub/events/assemblies.

Aug 28-Sept 3, 1997: 4th International Conference on Geomorphology. Bologna, Italy. Second announcement will be sent to those who requested information before Sept 30, 1996. Contact: I.C.G., Planning Congress s.r.l., Via Crociali 2, I-40138 Bologna, Italy e-mail: forti@geomin.unibo.it. 28th Binghamton Geomorphology Symposium, "Engineering Geomorphology," will be held at the 4th ICG in Bologna. Contact: Rick Giardino.

Sept 7-12, 1997: Glacial Geology at the Baltic Sea Coast in Northern Germany. Field Conference by the Peribaltic Group of INQUA Commission on Glaciation. Kiel, Germany. Contact: Dr. habil. Jan A. Piotrowski (**email:** noe57@rz.uni-kiel.d400.de)

Sept 22-26, 1997: Conference on Fluvial Sedimentology, Cape Town, South Africa. Contact: Deborah McTeer, University of Cape Town; **email:** DEBORAH@medicine.uct.ac.za.

Oct 13-16, 1997: Workshop about "Experiences with Soil Erosion Models", Prague, Czech Republic. Contact: Andreas Klik, Universitaet fuer Bodenkultur Wien, Vienna, Austria; **email:** klik@mail.boku.ac.at

June 23-27, 1998: 7th International Conference on Permafrost, Yellowknife, NWT, Canada. Contact: J.A. Heginbottom, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, Canada K1A 0E8. Circular: www.nrca.gc.ca/gsc/permaf_e.html

Sept 10-10, 1998: Rapid Coastal Changes in the Late Quaternary. Corinth and Samos, Greece. IGCP Project 367 final meeting. Contact: Stathis Stiros (email: stiros@prometheus.hol.gr)

Aug 3-11, 1999: INQUA Congress. Durban, South Africa. "The Environmental Background to Hominid Evolution in Africa." Contact: Conference Africa, P.O.Box 1722, Parklands, 2121, Johannesburg, South Africa (**email:** cafrica@iafrica.com)

FRIENDS OF THE PLEISTOCENE FIELD TRIPS

Pacific Cell: A group from Humboldt State University will lead the next trip. Contact Doug La Farge (doug@wcinet.net) or Bud Burke (rmb2@axe.humboldt.edu). Guidebooks for the 1996 trip to Lahontan Basin are available from Ken Adams, Center of Neotectonic Studies, MS 169, University of Nevada, Reno NV 89557; kadam@seismo.unr.edu. The price is \$20 and checks should be made to "Board of Regents".

Pacific Northwest Cell: Cosmogenic isotope chronology of glaciation in the southern Northern Cascade Range will be the focus of the 1997 trip in early June. Contact Steve Porter (sporter@u.washington.edu) or Terry Swanson, University of Washington.

Northeast Cell: Pliocene and Quaternary geology of northern New Jersey, May 30 - June 1, 1997. Information: Scott Stanford, New Jersey Geological Survey, CN427, Trenton, NJ 08625; 609-292-2576; fax: 633-1004; scotts@njgs.dep.state.nj.us

North Central Cell: No trip is scheduled. Contact Kenneth Harris harri015@maroon.tc.umn.edu if you have a proposal.

Rocky Mountain Cell: Glacial erosional topography, mass movements, slope failures, and Quaternary stratigraphy are on the agenda of the 1997 trip in the mountains of central Colorado. Jim McCalpin (GEO-HAZ), Bob Kirkham, and Jim Soule (both Colorado Geological Survey). Contact James P. McCalpin, GEO-HAZ Consulting, Inc., PO Box 1377, Estes Park, CO 80517; 970-586-3217; fax 577-0041; mccalpin@geohaz.com.

Southcentral Cell: Sedimentary Processes, Geologic Framework, and Geoarchaeology of the Chenier Plain in SW Louisiana, April 11-13, 1997; will examine the geology and cultural history of the chenier plains of southwestern Louisiana. For more information contact Chip McGimsey, Department of Sociology and Anthropology University of Southwestern Louisiana, Lafayette, LA 70504; 318-482-5198; McGimsey@USL.EDU.

Southeastern Cell: Karst features, cave passage morphology and sedimentology, and fluvial landscape evolution will be highlighted on the tenth SE FOP trip, held in the Cheat Canyon, Northern West Virginia on April 18-20, 1997. Led by Greg Springer (James Madison U.) and Steve Kite and others from West Virginia U. Contact Steve Kite; Kite@wvugeo.wvnet.edu and on the 1997 SEFOP www page: vax2.jmu.edu/~springgs/index.html.

BIOGRAPHIES OF THE CANDIDATES

QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION

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1997 ANNUAL MEETING

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