



Quaternary Geologist and Geomorphologist

NEWSLETTER OF THE QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION

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MANAGEMENT BOARD MEETING CINCINNATI, OCTOBER 1992

The Management Board of the QG&G Division met on Monday, October 26, 1992, during the Annual Meeting of the Geological Society of America in Cincinnati. Attending were: D. Mickelson, S. Wells, P. Calkin, S. Colman, R. Madole, D. Harden, K. Pierce, A. Hansel, W. Wayne, P.T. Davis, J. Vitek, L. McFadden, F. Donath, V. Baker, T. Gardner, T. Lowell.

The meeting included the following items:

- (1) Approval of minutes of 1991 meeting;
- (2) Results of 1992 elections: 2nd vice chair: Steve Colman; 1993-95 panel members: Alan Gillespie, Ardith Hansel, Thomas Lowell;
- (3) Division membership 1992 was 1,309, down from 1,402 in 1991 (QG&G remains the third-largest GSA Division);
- (4) For the Boston Annual Meeting the Board:
 - (a) voted to support a Division half-day symposium proposed by T. Gardner and P. Patton "Neogene and Quaternary sea level changes and coastal-Plain evolution—eastern USA";
 - (b) voted to support P. Thompson Davis's Environmental Forum, supported by GSA's Environmental Institute, on coastal erosion;
 - (c) voted to support QGGD-NAGT theme session titled "Quaternary Geology—new advances and implications for geoscience education", organized by Brian Tormey;
 - (d) was encouraged by Fred Donath to get involved in preparation of books and pamphlets for the general public on important environmental issues and explanation of common misunderstandings;
- (5) Parker Calkin announced the 1992 Mackin Grants winners:
 - M.S. award to Matthew Goss, Rutgers Univ., Dept. of Geology, "High-resolution seismics and ice-marginal sedimentation on Block Island Sound and adjacent Rhode Island" (supervisor, Gail Ashley);
 - Ph.D. award to Judith Jay Haschenburger, Univ. of British Columbia, Dept. of Geography, "Scour and fill in gravel-bed rivers" (Supervisor, Michael Church).Outside evaluators for the 1992 award were Nicholas Coch, Athol Abrahams, Darrell Kauffman, and Dorothy Merritts. A brief discussion of the scoring procedure pointed out the unequal weight of voters who use the entire possible point spread versus those ranking applicant near the norm. Future panel will be encouraged to use full point spread in their rankings.
- (6) Victor Baker and Ken Pierce reported on activities of the QG&G "scientific health" committee. The idea of a "white paper" prepared for the NRC, and perhaps channeled through INQUA, is still alive. The paper, which will provide an initiative for a program uniting various aspects of landscape studies, will be titled (approximately) "a global, spatial, and temporal perspective on drainage basins." Monitoring programs such as the Long-term Ecosystems Research Network or a vigil network will create high visibility for the program. The Management Board again encouraged the committee to prepare an article highlighting the "Scientific Health" issue for GSA Today. Steve Wells will investigate the possibility of a booth and will investigate the possibility of GSA helping to defray the costs. The Board voted to form a committee to investigate costs and content of a booth.
- (7) Committee on the Environment: Jack Vitek reported on the theme session held at the 1992 meeting. The committee hopes to continue the trend at the Boston meeting and to involve QG&G in the preparation of booklets alerting the public to environmental issues. The environmental committee will consist of 3 members. One member will drop off the committee each year and one will be added; this member will be from the area of the upcoming annual meeting in order to choose topics for theme session.
- (8) Education Committee: Brian Tormey will meet with the committee members during the 1992 [current] meeting.
- (9) The Board discussed the proposed American Geomorphology Council and the proposed U.S. representation to the International Association of Geomorphologists. Advantages of participation are the benefits of interactions among geomorphologists from different countries and the unification of a very diverse group. But some members are unconvinced of the need for further organizations. The Board agreed to approve a 3-year experimental membership in the group, with the understanding that representatives will report to the Board at annual meetings. The dues will not exceed \$350. Vote was Yes:7; No:2; Abstain:2.
- (10) GSA is working on the addition of key works and a key-word index to the Abstracts. Steve Colman or Dave Mickelson will obtain a keyword list from Dyer, Univ. of Oregon, and refine the list. About 20 keywords will be allowed per division. The 1993 abstract forms will be changed so that Geomorphology and Quaternary Geology are combined as categories. This change needs to be announced in the Spring 1993 newsletter.
- (11) The Howard bequest will be used for student grants beginning in the 1994 grant year. The Mackin and Howard grants will be combined as "Quaternary Geology and Geomorphology Division" student awards. It was suggested that the Ph.D. grant be \$1500 and the MS award \$800. The announcements will be changed for the Fall, 1993 newsletter and on the application forms for the 1994 award.
- (12) The Management Board voted to approve the by-laws changes that make the Past Chair of the Division a Management Board Member.
- (13) Steve Wells reported on the meeting of the GSA President with new and outgoing Division chairs. The purpose of the meeting was to discuss relations within and between divisions. QG&G will participate (or is it organize?) this meeting for 1994 in Seattle. Board approved participation.
- (14) Next year (at Boston), the Management Board Meeting will begin at 8:00 and will include breakfast.

**QUATERNARY GEOLOGY &
GEOMORPHOLOGY DIVISION
Financial Activity Summary
YTD through September 30, 1992**

Division Fund Balance 12/31/91	2,176.42	
1991 Division Dues Income	<u>5,216.00</u>	
Total Division Resources		\$7,392.42
Division Expenses:		
Awards—certificates	2.50	
Composition. & print Newsletters	1,066.15	
Member labels	45.00	
Postage, handling & envelopes	<u>277.90</u>	
Total division expenses		<u>1,391.55</u>
Division Fund Balance 9/30/92		\$6,000.87

**J. HOOVER MACKIN FUND
Financial Activity Summary
12/31/91–9/30/92**

Fund Balance 12/31/91		\$13,345.47
Income		
Contributions	292.00	
Interest	638.17	
Realized investment gain	<u>787.64</u>	
Total Income		<u>1,717.81</u>
Expenses		
Awards	1,500.00	
Service charges	<u>42.92</u>	
Total Expenses		<u>(1,542.92)</u>
Balance 9/30/92		\$13,520.36

**ARTHUR D. HOWARD FUND
Financial Activity Summary
12/31/91–9/30/92**

Fund Balance 12/31/91		\$0.00
Income		
Contributions	25,000.00	
Interest	<u>889.01</u>	
Total Income		<u>25,889.01</u>
Expenses		
Awards	0.00	
Service charges	<u>26.95</u>	
Total Expenses		<u>(26.95)</u>
Balance 9/30/92		\$25,862.06

HOW TO HAVE INPUT TO THE DIVISION

1. Submit nominations for Division offices and awards.
2. Submit suggestions, gripes, etc., for consideration by the Division Management Board.
3. Submit contributions (long ones on disk, IBM-compat.) to Division Newsletter.

Correspondence to the Division may be sent to Division Secretary:

Deborah R. Harden
Department of Geology
San Jose State University
San Jose, CA 95192-0102

Or you may write directly to Division Chair:

Stephen G. Wells
Department of Earth Sciences
University of California, Riverside
Riverside, CA 92321

Newsletters are mailed in February and August of each year; deadlines for contributions are January 15 and July 15, respectively. Members are encouraged to use their Division newsletter to communicate with other members. Please send contributions (long ones please on IBM-compatible disk in WordPerfect) to the Newsletter Editor:

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NEWS FROM THE CHAIR

Steve Wells provided the following news items about QG&G Officers, Panel, and committees.

✓ **Division officers:** Stephen G. Wells, (Chair); Parker E. Calkin (First Vice-Chair); Steven M. Colman (Second Vice-Chair); David M. Mickelson (Past Chair); Deborah R. Harden (Secretary).

✓ **Division Panel:** P. Thompson Davis, Thomas W. Gardner, William J. Wayne, Alan R. Gillespie, Ardith K. Hansel, and Thomas V. Lowell.

✓ **The Committee on Environment** is chaired by John Vitek (405) 774-6358. Other committee members are Marie Morisawa, Jack Ridge, Duncan Foley, and Steve Wells.

✓ **The Ad Hoc Committee on the Scientific Health of Geomorphology and Quaternary Geology** is chaired by Vic Baker (602) 621-6003. Other members are John Costa, Art Bloom, Waite Ostercamp, Milan Pavich, Ken Pierce, Bill Dietrich, and Cathy Whitlock.

1992 QG&G DIVISION AWARDS

The complete citation and acceptances for the **Kirk Bryan Award**, the Society award that is bestowed by the QG&G Division, will be published in the March 1993 *GSA Today*. Therefore only excerpts, edited for economy, are printed here. The **Distinguished Career Award** is solely a QG&G Division Award, its citation is not published elsewhere, and thus it is printed in full here.

**PRESENTATION OF KIRK BRYAN AWARD TO
R. DALE GUTHRIE**

Excerpts from Citation by Troy L. Péwé

In 1979 a frozen carcass of an extinct giant bison was uncovered by mining operations in late Wisconsin loess near Fairbanks, Alaska. The skin was covered with vivianite crystals, a light-blue iron phosphate. Here was a giant "Blue Babe" of antiquity—a mummified carcass 36,000 years old. The story of the life and times of this ancient animal is the basis of a thrilling and ingenious detective story of how it met its death and how it came to be preserved. This animal provides a unique window into ice-age life and the environment. The book *Frozen Fauna of the Mammoth Steppe, The Story of Blue Babe* by Professor R. Dale Guthrie of the University of Alaska at Fairbanks was published in 1990 by the University of Chicago Press and is the Kirk Bryan Award winner for 1992.

The *Story of Blue Babe* is the launch pad for a detailed description and proof of a vast, cold, grassland environment that supported a diverse population of ice-age mammals extending from Europe, across Asia, across the present Bering Straits, to Alaska and the Yukon. Guthrie demonstrated that much of this unglaciated vast region was covered not with tundra or taiga forest as it is today but with an extinct grassland environment unknown at present time. Guthrie terms this the *Mammoth Steppe*.

In 1963 a fresh Ph.D from the University of Chicago, R. Dale Guthrie, was hired by the departments of geology and of geology at the University of Alaska at Fairbanks. The geology department needed an expert to study the enormous, growing collection of Pleistocene mammal bones and to aid in unraveling the Quaternary geological and environmental history of central Alaska. The zoology Department needed a competent vertebrate palaeontologist and zoologist in their expanding group.

Dale was a declared art major when he enrolled at the University, but after taking a biology course from a stimulating instructor, his lifework has concentrated on zoology, past and present. Art is still an active part, evidenced by the abundant and informative illustrations in his book. His sculptures of Pleistocene animals, cast in bronze, grace leading museums. It is not surprising that one of his major art interests is the study and use of the European Paleolithic cave art of mammals of the extinct Mammoth Steppe. These cave drawings have supplied many details of the Pleistocene environment.

How could all these animals thrive in a habitat so dry that trees could not grow? How did they endure long winters in the severe winds and air temperature of 60 degrees below zero? Guthrie demonstrated for the first time that this land behind the north wind did exist, a cold, arid grassland with a high carrying capacity—The Mammoth Steppe. Palynologists have long known that there was a virtual absence of trees in the unglaciated north country during glacial episodes of the Pleistocene. Many believed that the present northern boggy, unproductive tundra was more expansive, and they downplayed the existence of grasses and of a continuous fauna. They thought that the megafauna was limited to the interglacials and interstadials. Guthrie showed that not only did an extensive fauna exist, but that only an arid, windy, grassy land was favorable to it.

The easiest way to prove an extensive fauna is to look at the enormous number of bones preserved in all horizons of Wisconsin loess and alluvial deposits of the unglaciated north country of Siberia, Alaska, and the Yukon. Most of the megafauna were grazers and lived on grass. The vegetation preserved in the teeth and stomachs of the frozen fauna is mostly grasses. The mammoths died with “buttercups in their mouths” because buttercups grew on the Mammoth Steppe. Guthrie shows that the vegetation of the present tundra and taiga is toxic and low in nutrients, much of it poisonous. Less vegetation existed on the Mammoth Steppe, but it was edible—a grassland, not today’s boggy tundra. And few of the large grazers of the Pleistocene Mammoth Steppe could tolerate today’s snow depths.

Frozen Fauna of the Mammoth Steppe is the climax of Guthrie’s detailed investigations from Alaska to France to Asia to Alaska and the Yukon, a cold and grassy plain that supported the megafauna. The book details a unique and extinct ecological system, the Mammoth Steppe, which has no modern counterpart environment today. This book transcends the boundaries of scientific disciplines and integrates geology, paleontology, ecology, palynology, and archeology—indeed a *tour de force*.

Excerpts from Acceptance by R. Dale Guthrie

Many recipients of this award have commented on how much fun their work is. Science seems to have certainly been fun for Kirk Bryan. I want to say something around this theme of fun, and tell you a brief story about the Quaternary legacy of play. E. O. Wilson, whom some would call the father of sociobiology, once said “good science consists largely of play disguised as work”. I propose that it is not only legitimate that good science be fun but that fun may be the essence of its definition.

As historical scientists, we find our fun by examining the rubble of the past. The trophies of our games are insights. But these insights are not often obvious. I grew up along the breaks of the Mississippi River near Hannibal, Missouri. Like Tom Sawyer and Huck Finn, I was ignorant of the Ice Age dimension of the landscape. We called the oxidized loess “groundhog dirt”, because red mounds of dirt dotted the hay pastures

from fresh groundhog diggings. Most farmers had a box of “arrow heads” which they had found walking fresh-plowed fields after spring rains, and we kids often did the same.

I entered the academic conduit which ultimately landed me in Alaska. I was puzzled to see Alaskan gold miners finding Pleistocene bison, horse, and mammoth fossils like those uncovered in the grasslands of the mid-west. It became apparent that the grassy landscapes which dominated the American West were similar to those across Eurasia and on into Alaska. At times these connected, Alaska becoming the turnstile of the faunal interchange. The book *Frozen Fauna of the Mammoth Steppe*, for which this award is given, is an installment from a continuing saga of trying to resolve those puzzles.

As a paleontologist I keep a sometimes awkward stance with one leg in geology and the other in biology. At this point I shift weight to the biology leg and talk about the natural history of fun to introduce a new idea. I want you to consider the idea that the fun of geology is itself an Ice Age legacy. Could our appetite for the play of science have an evolutionary history? Play is calisthenics for an open-ended program, an open mind. One does not learn to be creative *de novo*; the cleverness of a raven, the insights of a good scientist, come from exercising those talents in play. And of course humans are the big players in this evolutionary game. We have no real niche, and so we need to play a lot, not only when young but also as adults.

Now let us shift back to geology. What is the Pleistocene record of play? Play has left us trace fossils in cranial endocasts, and on deep cave walls. The record of the blossoming elaboration of tools, exploration, and art are salient features of hominid Pleistocene prehistory. The powerful forces of the Pleistocene itself seem to have been responsible for all of this. Its turmoil and unsettling changes throughout the globe introduced unpredictable vicissitudes in new environments. These uncertainties favored animals who were capable of evolving their creative streak, abandoning the old proven behavior. Pleistocene hominids made a career of skipping through the cracks of opportunity.

But creative behavior itself was unprogrammable. As a young mammal, one develops insight and imagination through experimentation in a protected atmosphere—students in school, faculty under tenure, or researchers in USGS. It is significant that the Latin word for playground is “campus”. The driving emotion of this play we call fun. Good science fits exactly any definition of play, something done without obvious immediate benefits, for its own internal satisfactions, because it is exciting fun.

Geology itself is an Ice Age legacy. Our ability and delight in reconstructing the past is a facet of the playful empirical approach which evolved in the late Pleistocene as part of being human. This play of mind created our large brain, and it stumbled over the past as an exciting perspective. As scientists we polish that special nature into some shared aspect which makes it even more fun. This science stuff is only a new name for an old Pleistocene addiction: a fun-driven appetite to understand and create. So it is indeed a remarkable and strange loop to the story, that the essence of geologizing itself is an Ice Age legacy—we are in more ways than one a child of the Pleistocene.

Certainly for me, working with frozen bits of the Alaskan Quaternary was fun: stumbling across things like tooth punctures in the skin of a frozen 36,000 year old bison carcass, marking where it had been strangled by a Pleistocene lion. And yes, we did cook up a chunk of neck meat into a stew with new spring potatoes, rather like a metaphor for Quaternary research, combining the past with the present.

Kirk Bryan, whose creativity you recommemorate every year by this ceremony, would have, I think, been pleased to know that the excitement and pleasure he derived from Quaternary insights were themselves part of an Ice Age legacy—part of this same poetic loop. So my last line must be to remind you to honor this play in your own work, to remind you that good science must ultimately be driven by the enjoyment of it.



Award citationists and recipients at Cincinnati QG&G Awards Ceremony. Left to right: Allan F. Schneider, Herbert E. Wright, R. Dale Guthrie, and Troy Péwé.

PRESENTATION OF THE DISTINGUISHED CAREER AWARD TO HERBERT E. WRIGHT, JR.

Citation by Alan F. Schneider

I have known Herb Wright for more than 40 years—since 1951, when I decided to pursue my Ph.D. at the University of Minnesota under his direction. At that time, Herb's investigations of the Quaternary geology of Minnesota were in their infancy, and it was my good fortune to have worked closely with him in identifying and defining many of the distinctive till units that have led to a better understanding of the complex Wisconsin glacial history of the State. During the past four decades, I have watched with amazement the wonderful contributions that this unpretentious gentleman has made to Quaternary science.

I cannot possibly itemize this evening the detailed nature of all of Professor Wright's contributions to Quaternary science. Furthermore, others who are more qualified than I, particularly in palynology and paleoclimatology, can better attest to the significance of Wright's contributions. Therefore I shall concentrate on the magnitude and breadth of Herb's distinguished career.

Perhaps more than any other individual, Herb Wright personifies the interdisciplinary nature of Quaternary studies. The University of Minnesota recognized this in 1974, when Herb was named Regents' Professor of Geology, Ecology, and Botany. In addition to his contributions to geomorphology, glacial geology, paleoecology, and palynology, Professor Wright has also distinguished himself in the fields of paleolimnology, paleoclimatology, and archaeology. Although Wright's studies have concentrated on the Quaternary glacial and vegetational history of the upper Midwest, he, his students, and his colleagues have conducted research throughout the United States and around the world.

Herb Wright began his professional career as a prototype Harvard geomorphologist, having studied under the late Kirk Bryan. Like so many of Bryan's students, Herb completed his doctoral research in the American Southwest; his dissertation on the Tertiary and Quaternary geology of the lower Rio Puerco area in New Mexico was published in the GSA Bulletin in 1946—a comprehensive article more than 70 pages long. That investigation was followed through the years by several additional studies of the geomorphology, stratigraphy, structure, and palynology of the Southwest, particularly in the Chuska Mountains.

Although he had undertaken some glacial studies while on the faculty of Brown University, glacial geology was a relatively new field for Wright when he joined the faculty at Minnesota in 1947. Almost immediately, he was urged by George M. Schwartz, Director of the Minnesota Geological Survey, to begin studies of the glacial history of Minnesota, and in 1948 he started a reconnaissance of the glacial geology of the State under the auspices of the Survey.

Since beginning his studies in Minnesota over four decades ago, Wright's impact on our knowledge of the glacial and postglacial record

of Minnesota has been greater than that of any other person, including Frank Leverett. Most of our present understanding of the Quaternary history of Minnesota is the direct result of basic field research conducted by Herb and his students. Among his specific contributions to the Pleistocene geology of Minnesota are the recognition of the extreme complexity of the glacial movements in that state, the identification of lithologically distinct till units of different provenances, the complex stratigraphic and geographic relations among these units, the significance of specific landforms to the interpretation of glacial history (largely through the study of air photos), the identification of previously unrecognized ice lobes (most notably the Wadena Lobe), introduction of the phase concept, the formation of drumlins, recognition of subglacial tunnel valley and esker systems, and the suggestion of glacier surges in the Lake Superior basin.

In the mid-1950s, Wright became interested in the application of palynology to an understanding of Quaternary history and obtained a research grant to initiate pollen studies in Minnesota. The establishment of the Pollen Laboratory in 1957 and the initiation of a coring program in lakes and bogs added another dimension to Herb's research. Among the products of the early years of the pollen lab was the design of the world-standard square-rod piston sampler for lake sediments.

In 1963, the pollen lab became part of the Limnological Research Center (LRC), and Wright was named its Director. Under his direction, the LRC emerged as a leading research center in palynology, paleolimnology, paleoclimatology, and peatland and boreal ecology. Research of the LRC has led its scientists (including Wright) to all parts of the U.S. and the world, including Greece, Iran, Mexico, Central America, Peru, the Yukon, Labrador, Sweden, and Ireland. Scholars from research centers around the world have come to Minnesota to work on joint projects; mutual exchanges have resulted in the LRC staff and students studying at many foreign institutions. Clearly, the University of Minnesota LRC became the most productive laboratory of its kind in North America, if not in the entire world, under Professor Wright's direction. More than 450 publications have emanated from the LRC. Herb's own research papers have been widely acclaimed, especially his reviews of Holocene climates in the Great Lakes region. His paper on "The roles of pine and spruce ..." published in *Ecology* was one of the first to provide a continent-wide view of American pollen stratigraphy.

From 1951 to 1970 Professor Wright was associated with the Oriental Institute of the University of Chicago as an archaeological geologist on six expeditions to the Middle East—to Lebanon, Syria, Iran, and Iraq. In this capacity, he worked closely with Dr. Robert Braidwood, and in the 1950s their studies of fossil pollen from lake sediments completely altered our earlier understanding of the effects of climate upon the early agricultural settlements of the Middle East. Wright's subsequent investigations of the paleoecology and climatic change in the eastern Mediterranean region have been equally significant and have earned him the respect of archaeologists everywhere.

In keeping with his universal interests, Herb Wright has also conducted studies in several arctic and subarctic areas—Alaska, the Yukon, Labrador, and Greenland. The list of his publications and research grants attest to his participation in Quaternary studies in virtually every continent. His knowledge of the world Quaternary is probably unequalled by any other living scientist.

In addition to authoring (or co-authoring) more than 180 journal articles, Professor Wright has been the editor or co-editor of nearly a dozen books on the Quaternary. The first of these was the monumental volume on *The Quaternary of the United States* prepared for the 1965 INQUA meeting in Boulder, which Herb co-edited with Dave Frey of Indiana University. This was followed by seven additional volumes that emanated from the Boulder meeting. His most recent volume, published about five years ago and co-edited with W.F. Ruddiman, is the GSA DNAG volume K-3 on *North America and Adjacent Oceans during the*

Last Deglaciation. (One of Herb's finest contributions, in my opinion, appears in another DNAG volume—an article titled "The Quaternary" in Volume A of The Geology of North America edited by A. W. Bally and A. R. Palmer.)

In the late 1970s, Wright became associated with a group of American and Russian scientists that met in conferences on Quaternary paleoclimates sponsored by the US-USSR Bilateral Agreement on the Environment. An outgrowth of these meetings was the publication of a two-volume set on Late Quaternary Environments of the United States, which Herb co-edited with Steve Porter. He also co-edited a companion volume on Late Quaternary Environments of the Soviet Union.

Of the 30 letters that supported Wright's nomination for the Distinguished Career Award, only those of his former students were more laudatory than those from his co-workers on the Cooperative Holocene Mapping Project—better known as COHMAP. Herb was one of the organizers of the project, and it was he who provided the inspiration and direction that led to an overall time-space perspective of the climatic and environmental changes of the past 18,000 years. His knowledge bridged the differences between the mathematical modelers and the paleoclimatic analysts. One of his colleagues has stated that Herb's efforts to reconstruct past climatic and vegetation patterns reached their climax in COHMAP.

Herb Wright has served his profession well, including service to the Geological Society of America as an Associate Editor of the *Bulletin* (1970–1975) and service to our QG&G Division as Secretary for three years, as a member of the Panel for two years, and as Second Vice-Chairman, First Vice-Chairman, and Chairman (1968). In the early 1970s he served as President of AMQUA. He has been on the editorial board of numerous journals in addition to the *GSA Bulletin*, including *QR*, *JQS*, *Ecology*, *The Holocene*, and *Geografiska Annaler*.

In recognition of his distinguished career, Professor Wright has been the recipient of many honors and awards, including election to the National Academy of Science in 1977. He has been awarded two honorary doctor's degrees, a D.Sc. from Trinity College, Dublin (1966) and a Ph.D. from Lund University, Sweden (1987). In 1985, he was honored by the Archaeological Institute of America with the Pomerance Award for scientific contributions to archaeology, and in 1989 he was given the Archaeological Geology Award by GSA's Archaeological Geology Division at the Annual Meeting in St. Louis. During the 1950s he was both a Guggenheim Fellow and a Wenner-Gren Fellow.

During his tenure at Minnesota, Professor Wright has supervised nearly 30 Ph.D. students in geology, ecology, botany, and archaeology. Approximately 35 masters theses have been completed under his direction, and he has worked with numerous post-doctoral scientists. Many of his students are themselves eminent Quaternary scientists and college administrators, including two university presidents.

Although now retired from teaching, Professor Wright remains active as a researcher, writer, and graduate advisor. When I asked his late wife Rhea about five years ago what they planned to do upon Herb's retirement, she replied that he would continue with life (meaning his professional interests) as though nothing were different. She was, as always, absolutely correct.

Those of us who have been associated with Herb through the years can all tell many stories about our experiences with him. One of the stories that I like best—and one that can be told here—is related by Bob Baker, and I will follow Bob's account closely with only a little paraphrasing. The incident occurred on a sunny Saturday afternoon in October, when Professor Wright made his standard stop with his glacial geology class at the St. Rosa esker in central Minnesota to see a complex assortment of tills. Now Herb had already demonstrated on two previous field trips the fine art of texturing till by using his teeth rather than his thumb and forefingers. So on this trip Herb asked the students to determine the texture

of a particular dark brown till. As Baker put it, most of the students stood around with their hands in their pockets waiting for divine inspiration. Finally after some hesitation, the professor asked one of the students to pass him a sample, and the student obliged by handing him a lump of brown till on the tip of his geologic pick. The group was astounded as Herb not only proceeded to texture the till with his teeth, but to consume the entire lump. Herb then remarked that it was pretty good till and asked the student for another sample. The student again obliged and again Herb devoured the entire sample. Suddenly all the students became eager to texture the till with their teeth and began chewing with a vengeance. Only one person in the class was aware that the "pretty good till" Herb ate was actually a somewhat deformed chocolate brownie. Herb never did let on that the whole incident was prearranged, and many of the students are convinced to this day that Herb ate about six ounces of till, pebbles and all.

I feel honored to have been chosen by my colleagues to nominate Herb Wright for the Distinguished Career Award of the Quaternary Geology and Geomorphology Division. Without question, Herb is a giant of the Quaternary and one of the most highly respected Friends of the Pleistocene in the country. He is truly worthy of this award. Mr. Chairman, it is indeed a pleasure for me to present Dr. Herbert E. Wright, Jr., recipient of the Distinguished Career Award for 1992.

Acceptance by Herbert E. Wright, Jr.

I grew up with the Division of Quaternary Geology and Geomorphology. That is, I witnessed its birth as the Division of Geomorphology and was especially active in its early years. It had a hard time getting started as one of the first divisions of the GSA, in part because a vigorous debate developed between Art Strahler and Dick Flint about the relative scientific merits and futures of Geomorphology vs. Pleistocene Geology. Fortunately some years later the two fields became equally represented with the introduction of the present name.

in those early days the three big names in the field were Kirk Bryan of Harvard, Dick Flint of Yale, and Douglas Johnson of Columbia. I have a vivid memory of an early field trip of the Friends of the Pleistocene somewhere in Connecticut about 1940, when the three of them were standing in the pouring rain in a gravel pit arguing about the merits of the Milankovitch hypothesis for climatic change. in retrospect, it would seem that Bryan won the day. He had a real feel for the European work that supported the idea as it was applied to the history of multiple glaciation.

Bryan was a very effective teacher, and his students and grand-students have made important contributions to the field of Quaternary geology and geomorphology since his premature death at the age of 62 in 1950. Among his students are several recipients of the Kirk Bryan Award as well as the career award, and I am honored to be a part of this group. As an undergraduate major in biology I became discouraged with my progress in microscopic work in histology and embryology, but I was stimulated by an assignment to read Darwin's *Voyage of the Beagle*, as well as by a grand trip to the West. My adviser in Biology, sensing my problem, suggested I talk to Kirk Bryan about shifting to Geology. Bryan very soon indoctrinated me with a feeling for interdisciplinary studies in landscapes, and when I continued as a graduate student he suggested a thesis in his favorite field area in the Southwest. Contrary to the opinion often expressed today that a thesis should be based on a specific problem with a well delineated set of hypotheses to be tested, Bryan believed that educational objectives could be served if a student were set loose in an unmapped area to work out the geological and geomorphic relations and then specialize on some aspect of particular interest. So I mapped a sizeable area in the Rio Grande Depression in central New Mexico. Subsequently I adopted the same approach and took up a project on the geology and geomorphology of the Chuska Mountains in north-western New Mexico.

When I started out the senior graduate students in geomorphology included Bob Sharp, Dick Goldthwait, John Hack, Charlie Denny, Louie Ray, Art Butler, and H.T.U. Smith, and among my contemporaries were Clyde Wahrhaftig, Sheldon Judson, Charlie Stearns, Doak Cox, Gerry Richmond, Sidney White, Lou Peltier, Cliff Kaye, and Allen Sinnott. It's well accepted that one may learn as much from one's fellow students as from a faculty, and I can vouch for that.

One of the discouraging aspects of studies in landscape history in the early days was the difficulty in establishing rates of geomorphic processes over time scales beyond those involved in experiments or in documentary records. One had to depend on correlation with such elusive chronologies as those based on the rate of waterfall retreat or on the Swedish varve sequence. One of Bryan's contributions was an attempt to date the Folsom Paleoindian culture in Colorado on the basis of the glacial sequence and its correlation with the Swedish varve chronology. But this all changed with the introduction of radiocarbon dating, and the award of the Nobel Prize to Willard F. Libby is a tribute to the significance of this development. Application of the technique often involves the existence of organic matter in stratigraphic context, and for me that shifted my focus from land surfaces, which in their soils rarely contain carbon of a single age, to lakes, where the sediment is commonly rich in organic matter in undisturbed stratigraphic sequence. A radiocarbon date for basal lake sediments provides a minimum age for the origin of the lake basin, and thus for what may be a major feature of the landforms of the area. Being heavily involved at the time not only in geomorphic studies in the Chuska Mountains but also in revising concepts of the glacial history of Minnesota, I took advantage of the abundant lakes in both areas to develop a chronology of landform development.

But lakes contain more than material for radiocarbon dating. Most useful in many respects are pollen grains, which record the vegetation of the areas and thus the climatic history—another factor of interest in landform development. Here again the legacy of Bryan's tutelage proved important for me, for he had introduced me to the European literature on Quaternary pollen analysis and vegetation history.

So I established a pollen laboratory at Minnesota, and over subsequent years I was able to bring experienced pollen analysts from Europe to undertake research and instruction in this field. A little later the pollen laboratory was incorporated into the Limnological Research Center, which became concerned with interdisciplinary stratigraphic investigations of fossil diatoms, zooplankton, plant macrofossils, and chemical constituents in lake sediments. Nowadays it is realized that lake sediments are an exceptionally rich archive of environmental history, not only of vegetational and limnological history but also the history of erosion and of other geomorphic and hydrologic processes under the influence of past climates during tens or hundreds of thousands of years, as well as the human impacts on natural landscapes in prehistoric and historic time. Thus we're back to the strong tie between geomorphology and Quaternary history, and to the importance of the Milankovitch radiation cycles in deciphering glacial and postglacial climatic trends.

When I was a freshman in college I was fascinated by dynamic lectures in a world history course, and a sense of history has stimulated me ever since as I moved from biology to geology. It's a precious perspective as applied to the study of landscapes, for most of the landforms we see actually developed under environmental conditions different from those of today, and where the vegetation, although dynamic on a seasonal time scale, can reveal environmental conditions from past decades and centuries. It has been more than 50 years since Kirk Bryan first exposed me to historical aspects of geomorphology and to Quaternary history in general, and I pay tribute to his pedagogy and to his wise and kindly counsel. I am grateful for his setting me on a course that seems to have led unexpectedly to the receipt of the career award. Just as students learn from students, so also do professors learn from students. Jim Zumberge,

as my first graduate student, taught me an appreciation for the importance of undergraduate teaching, and he subsequently followed a distinguished career as college and university president. Al Schneider taught me the value of meticulous observations in the field, and a host of other graduate students and research associates in various specialties over the years provided me with the stimulation to foster the kind of interdisciplinary investigations that give Quaternary studies their special appeal—and their relevance to many societal problems. I must consider this career award as much a tribute to the field as to my small part in its development. But in any case, I appreciate the honor, and I thank you for the indulgence in sharing my reflections on 50 years of a good life.

NOMINATIONS FOR 1993 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 15, 1993. Nominations should be sent to the Division Secretary, Deborah Harden, 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 résumé 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.

NOMINATIONS NEEDED FOR 1994 KIRK BRYAN AWARD

The Kirk Bryan Award is worthy of more nominations. Some papers highly worthy of consideration, no member has taken the initiative to nominate. If there is a report in Quaternary geology that you find particularly innovative, please take a bit of time to write a nomination, which can be sent to Division Chair Steve Wells or to Division Secretary Deborah Hardin. The nomination deadline for the 1994 award will be about 1 December 1993. Please see September 1992 newsletter for further details.

JONATHAN O. DAVIS SCHOLARSHIP Quaternary Sciences Center Desert Research Institute

Jonathan O. Davis, geologist and geoarchaeologist, was killed in 1990. Family and friends of Jonathan have established an endowment for the Jonathan O. Davis Scholarship. This scholarship will be given annually to support the field research of a graduate student working on the Quaternary geology of the Great Basin or surrounding areas. The initial grant will be \$750. The scholarship, administered by the Quaternary Sciences Center of the Desert Research Institute, Reno, is open to graduate students enrolled in a M.S. or Ph.D. program at any U.S. university. The research must have a substantial geologic component or demonstrate a strong reliance on geologic techniques. To help the endowment grow, please send contributions to: Executive Director, Quaternary Sciences Center, Desert Research Institute, P.O. Box 60220, Reno, NV 89506. Checks should be made out to the Board of Regents-DRI. Please indicate on the check or in a separate note that the donation is for the Jonathan O. Davis Scholarship Fund.

GLADYS W. COLE MEMORIAL RESEARCH AWARD

The Gladys W. Cole Memorial Research Award is for investigations of the geomorphology of semiarid and arid terrains in the United States and Mexico. It will be given each year to a GSA Member or Fellow between 30 and 65 years old who has published one or more significant papers in geomorphology but is for support of new work. The award amount in 1993 will be \$7,000.

Application forms for the Gladys W. Cole Award may be obtained from the Research Grants Administrator, GSA, P.O. Box 9140, Boulder, CO 80301; tel (303) 447-2020. Applications must be postmarked by 15 February each year for award that is made in April.

1993 GSA ANNUAL MEETING, BOSTON Symposium, Theme Sessions, and field trips in Quaternary Geology

The QG&G Division is sponsoring a Symposium and co-sponsoring a Theme Session at the 1993 Annual Meeting of the Geological Society of America in Boston. The Division half-day symposium, co-chaired by T. Gardner and P. Patton, is "Neogene and Quaternary sea level changes and coastal-Plain evolution—eastern USA". The QGGD-NAGT theme session is titled "Quaternary Geology—new advances and implications for geoscience education", organized by Brian Tormey.

Several field trips may be of interest to QG&G members, including (summary titles):

- Sea level change & coastal processes, northern New England, 10/22–24, \$150: Joseph Kelley et al. ((207) 581-2162.
- Late glacial marine invasion coastal New England, 10/22–24, \$175: Thomas Weddle et al. (207) 287-2801.
- Coastal processes, Cape Cod, 10/23–24, \$175: Bob Odale & Steve Leatherman (301) 454-3548.
- Archeological geology of Long Island (Boston Harbor), 10/24, \$35: Barbara Luedtke (617) 287-6850.
- Pleistocene geology of Boston basin & surroundings, 10/24, \$40: William Newman et al. (617) 437-3176.
- Glaciations & deglaciation of a transect from Boston MA to White Mtns. NH, 10/29–30, \$135: Tom Davis et al. (617) 891-3479.

1993 GSA SECTION MEETINGS

- South-Central Section: Fort Worth, Texas. 15–16 March.
- Northeastern Section: Burlington, Vermont. 22–24 March.
- North-Central Section: Rolla, Missouri. 29–30 March.
- Southeastern Section: Tallahassee, Florida. 1–2 April.
- Cordilleran and Rocky Mountain Sections (joint): Reno, Nevada. 19–21 May.

1994 ANNUAL MEETING SEATTLE Symposia & Theme Sessions in Quaternary Geology

The QG&G Division is soliciting proposals for symposia (invited papers) and Theme Sessions (volunteered papers) for the 1994 Annual Meeting at Seattle. These should fit into the overall focus of the meeting "Processes at a Convergent Plate Margin—The leading Edge," which has two central connotations: "the position of Seattle on the Pacific Rim and the emphasis on methods that are modern, theoretical, observational, and experimental." For Quaternary and Geomorphology studies, we particularly need proposals incorporating process geomorphology.

Contact: Parker E. Calkin, Dept. of Geology, SUNY at Buffalo, 415 Fronczak Hall, Buffalo, NY 14260. Tel (716) 645-3985 (office), -6100 (Dept.), -3999 (FAX). Direct 20 Feb thru 15 May: c/o Institute of Arctic and Alpine Research, Univ. of Colorado, Boulder, Colo. 80309-0950. Tel (303) 492-7589 or 6387; -6388 (FAX).

FRIENDS OF THE PLEISTOCENE 1993 FIELD TRIPS

South-Central Cell: 26–28 March 1993

Whitney Autin and Charles Pearson will host the 11th South-Central FOTP field conference titled "Quaternary geology and geoarcheology of the lower Red River valley" near Alexandria, Louisiana. The geological component will review stratigraphic patterns and sedimentary processes near the junction of the Red and Mississippi Rivers. The geoarcheology component will review cultural occupation history and discuss prehistoric and historic Indian settlement patterns. For further information please contact Whitney J. Autin, 1993 South-Central FOTP, Louisiana Geological Survey, Box G, Baton Rouge, LA 70893. Tel (504) 388-5320.

Pacific Cell: 23–25 April 1993

Curt Peterson, Mark Darienzo, Harvey Kelsey, Rick Mulder, and Scott Burns (Portland State Univ.) will lead the 1993 Pacific Cell FOTP: "Quaternary history of the northern Oregon Coast," between Newport and Seaside, Oregon. Topics to be covered are: paleoseismicity, Quaternary terraces, paleotsunamis, littoral cell sand dynamics, estuarine dynamics, and landslides. For more information please write or call: Scott Burns, Dept. of Geology, P.O. Box 751, Portland State University, Portland, Oregon 97207. Tel (503) 725-3389.

Midwest Cell: 21–23 May 1993

Al Schneider (University of Wisconsin-Parkside) will lead the 40th annual Midwest FOTP trip through Wisconsin's Door Peninsula on 21–23 May. The excursion will include examination of late Pleistocene and Holocene shorelines along the Lake Michigan and Green Bay coasts, bedrock control of geomorphic features and glacial history, till deposits of late Wisconsin age, the postglacial geology and ecology of an inland lake, and a karst system. The Two Creeks Forest Bed will be visited for the first time on a Friends trip since 1953. Headquarters will be at the Best Western Maritime Inn in Sturgeon Bay. For more information and/or registration materials, contact Allan F. Schneider, Department of Geology, University of Wisconsin-Parkside, Box 2000, Wood Road, Kenosha WI 53141 no later than 1 April. Tel (414) 595-2439.

Northeast Cell: 21–23 May 1993

Carol Hildreth and Richard Moore as hosting the Northeast FOTP in south-central New Hampshire along the Contoocook River valley, the largest north-draining basin in New Hampshire, which near Concord joins the south-draining Merrimack River. Topics include successive glacial lakes dammed by the north-retreating icesheet margin and an associated succession of deltas, lake outlets, etc. The trip will begin at the Hampton Inn at Concord (Bow) N.H. For further information please contact Carol Hildreth, 135 Washington Street, Holliston, Mass., 01746. Tel (508) 429-5085. Or Richard B. Moore at USGS-WRD at Bow N.H. Tel (603) 225-4681.

Rocky Mountain Cell: 10–12 September 1993

Ralph Klinger, Dean Ostenas, and Dan Levis (Bureau of Reclamation, Denver) are organizing the Rky Mtn FOTP to the Mission Valley—Flat-head Lake area in northwest Montana. The trip will focus on three topics: stratigraphy and sedimentology of proglacial lacustrine sediments and evidence for the interactions of the Cordilleran Icesheet, alpine glaciers, and glacial Lake Missoula; neotectonics of the Mission fault, the first identified Holocene fault in northwest Montana; and postglacial Lake Missoula geomorphology of the Mission Valley, including Flat-head River terraces, eolian deposits, and permafrost features. The first announcement will be mailed 1 April 1993. For more information or to get on mailing list, contact Dan Levis at the Bureau of Reclamation, P.O. Box 25007, D-3611, Denver, CO 80225-0007. Tel (303) 236-8532.

(CANQUA) 1993
Applied Quaternary Research
Victoria, British Columbia
18-21 April 1993

The 1993 Meeting of the Canadian Quaternary Association (CANQUA) will be held at the Newcombe Theatre, Royal British Columbia Museum, Victoria, British Columbia, from 18 to 21 April 1993. Theme sessions will be held on: mineral exploration in drift-covered areas, surficial resources, global change, marine and coastal studies, geologic hazards and geotechnical studies, environmental assessment, environmental archeology, and general (including urban geology, GIS and other computer applications, and public education). Premeeting field trips are on the 18th; postmeeting trips on the 22nd-24th, some of them kayak trips.

For further information please contact: CANQUA 1993, Environmental Geology Section, Geological Survey Branch, 553 Superior Street, Victoria, British Columbia, CANADA V8V 1X4. Tel (604) 387-6249; FAX 356-8153.

IGCP 253—"Termination of the Pleistocene"
26 June to 3 July 1993

Meeting at Winnipeg 26-28 June, followed by field trip across glaciated and flood-scoured Canadian Prairies to Canadian Rockies 29 June to 3 July

Talks will be on topics related to any of the IGCP 253 Subgroups, viz. (1) History and drainage of large ice-dammed lakes, (2) Problematic ice sheets, (3) Glacial modelling, (4) Fluctuations of local glaciers, (5) North Atlantic lacustrine and vegetational changes, (6) Global Younger Dryas, (7) Changes in permafrost, and (8) Changes in nonglaciated regions.

Deadlines for abstracts 28 February, for registration 1 May. Please indicate interest in meeting and/or field trip to Dr. James T. Teller, Department of Geological Sciences, University of Manitoba, Winnipeg, Manitoba, R3T 2N2 Canada; Tel (204) 474-9371.

BINGHAMPTON GEOMORPHOLOGY SYMPOSIA

The 24th Binghampton Geomorphology Symposium will be held 25 August 1993 as part of the Third International Geomorphology Conference (see below) at McMaster University in Hamilton, Ontario, Canada. J.D. Vitek (Oklahoma State University) and J.R. Giardino (Texas A&M) are organizing a symposium of invited papers on **Geomorphology: the Research Frontier and Beyond**.

**THIRD INTERNATIONAL
GEOMORPHOLOGY CONFERENCE
With 24th Binghampton Symposium and
10th Symposium on Coastal Sedimentology
International Association of Geomorphologists
23-29 August 1993, McMaster University**

A third circular will be mailed in March 1993 to all persons who completed advanced registration (deadline 31 December 1992). For more information contact Third International Geomorphology Conference, Department of Geography, McMaster University, Hamilton, Ontario, Canada L8S 4K1, (416) 525-9140 Ext. 4535, FAX (416) 546-0463, E-Mail GEOMORPH.

SYMPOSIUM IN MEMORY OF DICK GOLDTHWAIT
*The Ice Age in the White Mountains: The geologic and human
history at the end of the Ice Age around Mount Washington*

Sponsored by Mount Washington Observatory

A symposium honoring the memory of Richard P. Goldthwait will be held on Friday, 18 June 1993, sponsored by the Mount Washington Observatory and its Education Resource Center at North Conway, N.H. The symposium will be held at the Red Jacket Motor Inn, Main St. (Rt. 16), North Conway, NH. For Inn reservations: Tel: 1-800-RJACKET. Symposium registration \$5. For information on symposium, including 2-page announcement, please contact: Mount Washington Observatory, P.O. Box 2310, No. Conway, NH 03860. Tel: (603) 356-8345.

GEOLOGY FIELD SEMINARS
Coast of Maine, Summer 1993

Dr. Harold W. Borns, Jr. (Univ. of Maine), will lead a field seminar, **The Late Glacial History of Eastern Maine: A Microcosm of Global Environmental Change**, 6-12 June 1993. Dr. Roger LeB. Hooke (Univ. of Minnesota and Univ. of Maine) will lead a seminar, **Geomorphology**, 29 August thru 4 September 1993. Additional information is obtainable from Eagle Hill Wildlife Research Station, Steuben, Maine 04680; phone (207) 546-2821. Numerous courses in biological sciences are also offered at the station.

CALL FOR PAPERS
Instability of clay and shale slopes

Contributions on instability of clay and shale slopes are solicited for a volume to be published by GSA in the Reviews in Engineering Geology series, to be edited by William Haneberg and Scott Anderson. Papers that integrate geological and engineering aspects of clay-and shale-slope instability are especially welcome. Target date for manuscripts is 1 June 1993. For information please contact: William C. Haneberg, New Mexico Bureau of Mines and Mineral Resources, Campus Station, Socorro, NM 87801. Tel: (505) 835-5808.

NEW BOOK SHELF

Eustasy: The Ups and Downs of a Major Geological Concept, Edited by Robert H. Dott, Jr., Geological Society of America Memoir 180, 120 p. hardbound (\$36 GSA members; \$45 nonmembers).

Understanding eustasy is important because possible greenhouse warming predictions warn of a sea level rise due to melting of the remaining Antarctic and Greenland icecaps. Expanded from a symposium at Dallas in 1990, the book's nine chapters discuss the history of eustasy, from the 18th-century ideas of neptunism, to the 20th-century thought of Chamberlin and Grabeau as well as the idea of cyclothems, to the modern perspective of sequence stratigraphy. The last chapter ponders the difficulty of distinguishing a clear eustatic signal from others in the stratigraphic record.

IN MEMORIAM

J. Phil Shafer 9/28/91
John T. Hack 12/15/91

Richard J. Janda 5/ 4/92
Denise Gaudreau 7/15/92

David G. Frey 4/ 1/92
James H. Zumberge 4/15/92

Richard P. Goldthwait 7/17/92

**BIOGRAPHIES OF THE CANDIDATES
QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION**

- ASHWORTH, ALLAN C.** QUATERNARY GEOLOGY, FOSSIL BEETLES, PALEOCLIMATOLOGY, BIOGEOGRAPHY. Educ: Birmingham Univ, BSc, 1963, Ph.D, 1969; Prof Exp: Asst Prof, NDSU, 1969-71; Asst Prof, Univ Waterloo, 1971-72, Asst Prof-Prof/Chair, NDSU 1972 - ; Vis Fellow, Clare Hall, Cambridge, 1988; Vis Research Scientist, Byrd Polar Res Cen, The Ohio State Univ, 1989; Dist Vis Prof, QRC, Univ Washington, 1991; Dir, Pop Change Gen Diversity, NDSU-UND, 1992-Hon & Awards: Outstand Paper, Coleopterists Bull, 1985; Sigma Xi Outstand Res Award, 1989; Dist Prof Award, NDSU, 1989. Mem: Geol Soc Am; AMQUA; NAGT; Ent Soc Am; Coleopterists Soc. Res: Fossil beetles, late Quat climates, South America; biogeography northern N. Amer. insects, paleontology, mol. genetics, Midwest and N. Amer. Arctic.
- CALKIN, PARKER E.**, b Syracuse, NY, April 33; m 55; c 2. QUATERNARY GEOLOGY, GEOMORPHOLOGY. Educ: Tufts, BS, 55; Univ Brit Columbia, MSc, 59; Ohio State Univ. Ph.D (geol), 63. Prof Exp: Asst Prof SUNY Coll at Buffalo, 63-65; Asst Prof 65-68 to Assoc Prof 68-75 to Prof SUNY at Buffalo 75-; Concurrent Pos: Vis scholar Univ Cambridge, 70-71, 86; Vis scholar Univ Colo, 79. Mem: Geol Soc Am (fel), Quaternary Geology & Geomorph (panel 86-88), Am Quat Assn (councilor 85-88), Int Glaciol Soc, Sigma Xi (pres. Buf. Ch. 74), NYSGA (pres. -82). Res: glacial - Quaternary geology and geomorphology Alaska, Antarctica, Great Lakes - eastern North America; environmental geology of Great Lakes shorelines in New York. Mailing add: Dept. Geol., State Univ of New York at Buffalo, Buffalo, NY 14260.
- COLMAN, STEVEN M.**, b New Kensington, PA, April 1, 49; m 72; c 2. QUATERNARY GEOLOGY, GEOPHYSICS, PALEOCLIMATOLOGY. Educ: Notre Dame Univ, BS, 71; Penn State Univ, MS, 74; Univ. Colorado, Ph.D, 1977. Prof Exp: RESEARCH GEOLOGIST, US Geol Surv, Menlo Park, CA, 72-74; USGS, Denver, CO, 75-83; USGS, Woods Hole, MA, 83-. Mem: Geol Soc Am (fel), Am Quat Assn (Counc), Am Geophys Union. Hon & Awards: NDEA Fellowship, 71-73; Geol Soc Am QG&G Panel, 85-86; Geol Soc Am, Kirk Bryan Award, 84. Res: Lacustrine and estuarine history and paleoenvironments, sea level and coastal geologic evolution, Quaternary dating methods, soils and weathering processes, glacial chronology. Mailing Add: U.S. Geological Survey, Woods Hole, MA 02543.
- GRAF, WILLIAM L.**, b. Zanesville, OH, Feb 7; FLUVIAL GEOMORPHOLOGY, QUATERNARY PALEOHYDROLOGY. Educ: Univ of Wisc-Madison, BA, 69; Univ of Wisc.-Madison, MS, 71; Univ of Wisc-Madison, Ph.D, 74. Prof Exp: US Air Force Intelligence Officer, 71-74; Assist and Assoc Prof, Univ of Iowa, 74-78; Assoc Prof and PROF ARIZ STATE UNIV, 78-. Concurrent Pos: GSA, Quat Geol and Geom Div Panel, 87-88, Div Nominat Com, 89, Div Cent Vol. Com. 84, Ed of Div DNAG Vol on geom, 85-87, Div Cole Award Panel, 91; NSF, Geogr and Reg Sci Rev Panel, 86-88; NRC, Water Sci and Tech Bd, 92-. Glen Can Env Studies Com, 86-; AAG, Nom Com, 89; Awards Com, 92, Geom. Spec Gp Chair, 81; Amer Soc Civil Eng, Task Com on Streams and Sed, 82-83. Mem: Geol Soc Amer (Fel); Assoc Amer Geogr; Brit Geom Res. Gp. Hon and Awards: Fellowship, US Dept of Interior, 70; GK Gilbert Award for Geom Res, AAG, 84; Cole Mem Award for Arid Reg Geom Res, GSA, 84; Ariz State Univ Distinguished Res Professorship, 87; Honors Award, AAG, 90; Distinguished Visit Professorship, Univ Col London, 92. Res: river channel change, fluv erosion and sed, dynamics of heavy metals and radionuclides in rivers, Quat hydrol changes, geom interactions with riparian environments. Mailing Add: Dept of Geogr, Ariz State Univ, Tempe, AZ 85287-0104.
- HALL, ROBERT D.** GLACIAL GEOLOGY, PEDOLOGY, QUATERNARY GEOLOGY. Educ: Purdue Univ, BS, 63; Univ Colorado, MS, 66; Indiana Univ, Ph.D 73. Prof Exp: Geologist, Texaco, 66-69; Asst Prof, 74-83, Assoc Prof, 83-93, Prof 93-, Indiana Univ-Purdue Univ at Indianapolis. Mem: GSA, AMQUA, SSSA, NAGT. Res: Glacial geology and soils of the Middle and Northern Rocky Mountains; Quaternary paleosols and till stratigraphy in Indiana and western Ohio. Mailing Add: Dept. Geology, IUPUI, 723 W. Michigan St., Indianapolis, IN 46202-5132.
- OLSON, Carolyn G.** QUATERNARY GEOLOGY, SOIL-GEOMORPHOLOGY, CLAY MINERALOGY. Educ: Syracuse Univ, BS, 74; Indiana Univ, MA, 77; Indiana Univ, Ph.D, 79. Prof Exp: Research Geologist 79-81 and Research Hydrologist 81-88, US Geol. Surv.; STAFF LEADER FIELD INVESTIGATIONS and RESEARCH SOIL SCIENTIST, USDA-Soil Conservation Service 88-. Concurrent Pos: Adjun. Prof. Iowa State Univ, 88-, Adjun. Prof. Univ Nebraska and Kansas State Univ, 92-. Hon & Awards: Fulbright Research Award, 88. Mem: Geol Soc Amer, AMQUA, INQUA, AGU, Sigma Xi, Soil Sci Soc Amer, Int'l Soil Sci Soc, Clay Min Soc, AIPEA, Phi Beta Kappa. Res: Soil-landscape relations; Quaternary paleostratigraphy; process geomorphology; surficial geology. Mailing Add: USDA-SCS, 100 Centennial Mall N, Fed. Bldg. Rm 152, Lincoln, NE 68508.
- OSTERKAMP, WAITE R.** GEOMORPHOLOGY, HYDROLOGY. Educ: Univ Colorado, BA, 1961 (Geology); 1963 (Chemistry); Univ Arizona, MS, 1970; Univ. Arizona, Ph.D, 1976. Prof Exp: Ground-water Geologist, USGS, 1961-1966; Chemist, USGS, 1966-68; Hydrologist, USGS, 1970-1980; RESEARCH HYDROLOGIST, USGS, 1980 -, Adjun Prof, George Mason Univ., 1984-87, Visiting Sci, Agri Res Ser, 1991-93. Mem: Geol Soc Amer, Geol Soc Washington, Brit Geom Res Grp, Int Assoc Sed, AAAS, Amer Geom Flrd Grp, Amer Geoph Un, Amer Quat Assoc, Int Un Quat Res. Res: fluvial processes, geomorphology of extreme events, vegetation, ground-water hydrol/geomorphology, erosion/sedimentation, cosmogenic-radioisotope tracers. Mailing Add: Agricultural Research Service, 2000 East Allen Road, Tucson, AZ 85719.
- PATTON, PETER C.** GEOMORPHOLOGY, QUATERNARY GEOLOGY. Educ: Franklin and Marshall College, BA, 1971; Colorado State Univ, M.S., 1973, Univ. Texas, Austin, Ph.D., 1977. Prof. Exp: Asst-Asst Prof Wesleyan Univ. 76-89, PROF OF EARTH SCIENCE, DEPT OF EARTH & ENVIRONMENTAL SCIENCES, WESLEYAN UNIVERSITY 89-. Mem: Geol. Soc. Am. (fel), AGU, AAAS, Sigma Xi. Res: fluvial geomorphology, paleoflood hydrology, coastal geomorphology. Mailing add: Dept. Earth & Environmental Sciences, Wesleyan Univ., Middletown, CT 06459.
- PAVICH, Milan J.** Geomorphology, Quaternary Geology. Education: Franklin & Marshall College, BA '69; Johns Hopkins University, Ph.D, '74. Professional Experience: Geologist, U.S. Geological Survey, 1974 - Present. Honors & Awards: Gilbert Fellowship, USGS, '83; Kirk Bryan Award, GSA, '91. Memberships: Geological Society of America; Res.: soil genesis, rock weathering, ¹⁰Be chronometry of soils, climatic effects on landscape evolution. Mailing Address: U.S. Geological Survey, 908 National Center, Reston, VA 22092
- TELLER, JAMES T.** QUATERNARY GEOLOGY, SEDIMENTOLOGY. Educ: Univ. Cincinnati B.S. 62; Ohio State Univ. M.S. 64; Univ. Cincinnati Ph.D. 70. Prof. Exp.: Field geologist 64-65, Antarctica (Byrd Polar Res. Center, OSU); Petroleum exploration geologist 65-67, Atlantic Richfield Co.; Asst. Prof. to Professor, Dept. Geological Sciences, UNIV. MANITOBA, WINNIPEG, 70-; Visiting Prof., 76, Geology Dept., Univ. Cincinnati; Visiting Fellow, 77, Dept. Biogeography and Geomorphology, Australian Nat. Univ.; Visiting Scientist, 83, Univ. Cape Town; Co-leader Easter Island and Polynesia Lake Coring Project, 83, Visiting Scientist, 90, School of Geography, Oxford Univ., U.K.; Visiting Sedimentologist, 91, Marine Sciences Inst., Univ. California, Santa Barbara; Awards: Stillwell Medal of Geol. Soc. Australia, 87. Mem: GSA, AMQUA, CANQUA, Internat. Assoc. Sedim., AGU, SEPM, IGCP 253, 324. Res: Sedimentology and history of lacustrine, fluvial, and glacial deposits, Lake Agassiz and proglacial lake overflow to oceans, catastrophic flooding, S. Hemis. playas. Mailing addr: Dept. Geological Sciences, Univ. Manitoba, Winnipeg, Manitoba, Canada R3T 2N2.