



# Quaternary Geologist and Geomorphologist

NEWSLETTER OF THE QUATERNARY GEOLOGY AND GEOMORPHOLOGY DIVISION

Volume 27, No. 1

March, 1987

## DIVISION FINANCIAL STATEMENT

Finances of the QG&G Division as of Sept. 30, 1986:

### QG&G Division Fund:

Fund balance 12/31/85	\$880.24
Dues income thru 9/30/86	\$2560.00
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Total resources and income	\$3440.24
Division expenses	(\$1777.54)
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Division Fund balance as of 9/30/86	\$1662.67

### J. Hoover Mackin Appropriated Fund:

Fund balance 12/31/85	\$8273.86
Earnings from 1/1/86 thru 9/30/86	\$346.25
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Total resources	\$8620.11
Grant Awards:	
D. Sack	(\$250.00)
C. Menges	(\$250.00)
M. Gonzalez	(\$500.00)
Total awards:	(\$1000.00)
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J. Hoover Mackin Fund balance as of 9/30/86	\$7620.11

## CONTRIBUTIONS TO THE J. HOOVER MACKIN FUND

We received a \$100 contribution to the J. Hoover Mackin Fund from Dr. and Mrs. Dwight L. Schmidt during 1986. The Quaternary Geology and Geomorphology Division thanks the Schmidts for their long-continued support of this very beneficial program. Tax-deductible contributions to the Mackin Fund may be made in any amount and sent to the Executive Director, The Geological Society of America, P.O. Box 9140, Boulder, CO 80301.

## IN MEMORIAM

Donald W. Ash May 21, 1986	Robert M. Lindvall October 27, 1985
Henry V. Beck May 11, 1986	Howard S. Stafford November, 14, 1985
Martin J. Buerger (date unknown)	Thomas Thornburn August 3, 1986
Conrad P. Gravenor July 26, 1986	Albert E. Weissenborn (date unknown)

## RESULTS OF 1986 DIVISION ELECTION

A total of 1028 ballots were mailed to the Division's voting affiliates for the 1986 election of officers and Panel members, and 321 valid ballots (31%) were returned. Division officers and Panel members elected for 1986 are:

### OFFICERS:

Chairman	Victor R. Baker
First Vice-Chairman	James C. Knox
Second Vice-Chairman	Dale F. Ritter
Secretary	Richard F. Madole

### PANEL MEMBERS (1986-88):

Parker E. Calkin
William L. Graf
Paul F. Karrow

A tie vote for the third Panel member (Karrow) was resolved at the meeting of the Division Management Board at the Annual Meeting in San Antonio, Texas, as prescribed by the Division Bylaws.

## MEMBERSHIP

Membership for the Division decreased slightly in 1986, from 1488 to 1387. Student membership declined by 79 and regular members declined by 18. The QG&G Division is the third largest of the ten Divisions of the Society, having been surpassed in 1986 by the Hydrogeology Division. The Structural Geology and Tectonics Division is the largest having 2226 affiliates and the Hydrogeology Division is the second largest having 1585 affiliates.

	Sept. 30, 1984	Oct. 18, 1985	Oct. 2, 1986
Members	616	785	767
Fellows	235	231	226
Honorary Fellows	2	2	1
Students	241	365	286
Exempt Members	5	7	9
Exempt Fellows	92	98	98
<b>TOTAL MEMBERS</b>	<b>1191</b>	<b>1488</b>	<b>1387</b>

Exempt Members and Fellows include persons who have reached the age of 70 years and have paid dues for 30 years or who have reached the age of 65 years and have paid dues for 25 years, and specifically request exemption from payment of further dues.

## MANAGEMENT BOARD MEETING, SAN ANTONIO, NOVEMBER 1986

The 1986 Division Management Board meeting was held November 10, 1986, from 10:00 a.m. to 1:00 p.m., in the La

Carona Room, Hilton Palacio Del Rio Hotel, San Antonio, Texas. The meeting agenda contained 11 items involving both new business and reports that are part of each annual meeting. The latter include such matters as election results, Division-sponsored awards and grants, finances, membership, and plans for Division-sponsored events at the next annual meeting. Most of these items are reported elsewhere in this Newsletter. Three items of new business dealt with in San Antonio that will also be reported on separately, either in this

#### NEW NEWSLETTER EDITOR

At San Antonio, the Management Board approved the proposal that the duties of the Newsletter Editor be separated from those of the Division Secretary. With this action, the Quaternary Geology and Geomorphology Division became the eighth, out of ten, Divisions to make this separation. The Management Board is pleased to announce that Michael N. Machette, U.S. Geological Survey, Denver, has agreed to be the Division Newsletter Editor, beginning with this issue.

#### NOMINATIONS FOR DISTINGUISHED CAREER AWARD DEADLINE APRIL 15, 1987

The Distinguished Career Award was established in 1985 to recognize Quaternary geologists and geomorphologists who have demonstrated excellence in their contributions to science. This award complements the Kirk Bryan Award, which is for a single paper, by recognizing many years of distinguished contributions. The new award is called the Distinguished Career Award, because the Geological Society of America bylaws allow for only one named award per Division, and the Kirk Bryan award is our named award.

The Distinguished Career Award is open to all 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 for the award will be accepted at any time during the year, but the deadline for this year (ONLY) will be **April 15, 1987**. Nominations should be submitted to the Division Secretary. The nominator should assemble the following for the candidate: (1) a brief biographical sketch, which may be xeroxed from American Men and Women of Science, (2) a statement of no more than 200 words describing the candidate's scientific contributions to Quaternary geology and geomorphology, (3) a selected bibliography of no more than 20 titles, and (4) three letters of support from colleagues. The names of unsuccessful candidates proposed for this award will remain open to consideration without renomination for three years. Further consideration after this period will require renomination. As of January, 1987, the Division Secretary had received only one new nomination for the 1987 award.

#### CALL FOR FIELD TRIPS 1988 GSA ANNUAL MEETING DENVER, CO OCTOBER 31-NOVEMBER

Let's make sure that our Division is represented with a selection of field trips. If you have a good idea, don't hesitate to cast a proposal early.

In keeping with the GSA Centennial theme, the focus of the trips should be on geologic problems or areas of classic geology about which our understanding now is much different from what it was 100 years ago. Flamboyant notions such as "Along Part of the 40th Parallel with King" or "Along the Colorado with Powell" would be welcome.

Newsletter or subsequent issues, included (1) the appointment of a Newsletter Editor separate from the Secretary's position, (2) preliminary plans for establishing, in cooperation with the Geomorphology Specialty Group of the Association of American Geographers, a procedure for selecting the U.S. Delegate to the International Geomorphological Organization (see Vic Baker's Ramblings, this issue), and (3) an inquiry by the Division into the statistics of funding of research in Quaternary geology and geomorphology.

#### ABSTRACTS DEADLINE FOR THE 1987 ANNUAL MEETING

The deadline for receipt of abstracts at GSA headquarters for the Annual Meeting in Phoenix is June 11, 1987. Abstract forms are available from Abstracts Secretary, Geological Society of America, P.O. Box 9140, Boulder, CO 80301. Volunteered abstracts should be mailed to the same address in time to arrive on or before June 11. Members intending to submit abstracts should obtain the 1987 forms.

The following guidelines should be followed:

- Pre-Centennial trips may start and end at any point of convenient access, but travel to Denver at the conclusion of the trip should be arranged.
- Post-Centennial trips should start in Denver; travel to initial point should be part of the field trip. The trip may end at any convenient point for dispersal.
- Length should be 1-3 days for most trips, but longer ones are possible.
- Although the trips will have a topical or areal orientation, as much information as possible should be included on development of geologic knowledge and changes in concepts as our science has matured in the past 100 years.

It will be helpful if all proposals can be in the same format. Please respond by April 30, 1987, so the summer of 1987 will be available to field-trip leaders to reconnoiter their trips. Write (or call) Greg Holden at the address below and a proposal form will be sent to you along with a brief statement of duties and responsibilities of field-trip leaders.

Gregory S. Holden  
GSA Field Trip Chairman  
Geology Department  
Colorado School of Mines  
Golden, CO 80401  
Phone: (303) 273-3800

#### DNAG VOLUME OF GEOMORPHOLOGY IS COMPLETE

The division's volume on geomorphology for the GSA DNAG publication series is complete and is now in production by the staff at GSA headquarters. The volume, entitled Geomorphic Systems of North America and edited by William L. Graf, will be published in the early Summer of 1987 and will contain about 500 pages. The production of the volume resulted from the efforts of one editor, three associate editors, 34 reviewers and referees, and 54 chapter leaders and authors. The volume focuses on geomorphic processes and forms, and recent theory development based on field research in the various geomorphic provinces of North America.

#### MEETINGS AND CONFERENCES

**Late Quaternary Sea Level: The Marine and Terrestrial Record**, April 6-12, 1987, Ferry Reach, Bermuda. James L. Carew, Dept. of Geology, College of Charleston, Charleston, S.C. 29424; (803) 792-5589. (GSA Penrose Conferences)

**Glacial Facies Models**, May 3-8, 1987, Manitoulin Island, Ontario. Nicholas Eyles, Dept. of Geology, Scarborough Campus, University of Toronto, Scarborough, Ontario M1C 1A4, Canada; (416) 284-3336. (GSA Penrose Conferences)

**Coastal Sediments '87**, May 12-14, 1987, New Orleans, Louisiana. Nicholas C. Kraus, USAE Waterways Experiment Station, Coastal Engineering Research Center, P.O. Box 631, Attn. WESCR-P, Vicksburg, MS 39180-0631.

**Coastal Lowlands Symposium: Geology and Geotechnology**, May 25-27, 1987, The Hague, Netherlands. Coastal Lowlands Symposium, c/o CONGREX, Keizersgracht 610, 1017 EP Amsterdam, The Netherlands; Telex NL-14527.

**12th Congress of the International Union for Quaternary Research (INQUA)**: July 31-August 9, 1987, Ottawa, Canada. (See note on INQUA--this issue.)

**Paleoenvironmental Interpretation of Paleosols**, September 11-17, 1987, Warm Springs Indian Reservation, central

Oregon. Gregory R. Retallack, Dept. of Geology, University of Oregon, Eugene, OR 97403-1271; (503) 686-4573. (GSA Penrose Conference)

**18th Annual Geomorphology Symposium on Catastrophic Flooding**, September 26-28, 1987, Oxford, Ohio. Larry Mayer, Dept. of Geology, Miami University, Oxford, OH 45056; (513) 529-3218.

**Geological Society of America 100th Annual Meeting**, October 26-29, 1987, Phoenix, Arizona. Geological Society of America, P.O. Box 9140, Boulder, CO 80301.

**International Working Meeting on Soil Micromorphology**, July 10-15, 1988, San Antonio, TX. Vance Holliday, Dept. of Geography, Science Hall, University of Wisconsin, Madison, WI 53706.

**5th International Conference on Permafrost**, August 2-5, 1988, Trondheim, Norway. U.S. Committee for the IPA (JH-841), National Research Council, 2101 Constitution Ave., Washington, D.C. 20418.

#### UNIVERSITY OF WATERLOO—Quaternary Sciences Institute

Faculty members in Anthropology, Biology, Earth Sciences, Geography, and Planning at the University of Waterloo, Geography at Wilfrid Laurier University, and Land Resource Science and Zoology at the University of Guelph, have formed a Quaternary Sciences Institute. Although various joint research projects have involved combinations of some of the participants before, the new Institute is expected to increase this activity and stimulate new interdisciplinary research and educational programs. At present, the Institute has 20 scientists that specialize in all fields of Quaternary studies. Students interested in applying for graduate work should contact the graduate officer for the relevant department.

#### FRIENDS OF THE PLEISTOCENE 1987 FIELD TRIPS

After years of sporadic activity, all of the U.S. Cells (including a new one for the southeastern U.S.) are active and prospering. It seems appropriate that this renewed interest coincides with the 50th Reunion of the Eastern (and original) Cell. Although some of the field trips are still in the planning stage, here is the current schedule for some of America's cheapest and best field excursions.

##### South-Central Cell: March 27-29, 1987

Late Quaternary stratigraphy, neotectonics, and geoarchaeology of southwestern Oklahoma. Contact C. Reid Ferring, P.O. Box 13078, Institute of Applied Science, North Texas State University, Denton, TX 76203; (817) 565-2993.

##### Eastern Cell: May 8-10, 1987

50th Reunion Meeting: Glacial Lake Hitchcock and its significance to post-glacial uplift, Connecticut Valley, Massachusetts and Connecticut. Contact Karl Koteff, U.S. Geological Survey, MS 928, National Center, Reston, VA 22092; (703) 648-6924.

##### Midwest Cell: May 15-17, 1987

Pre-Woodfordian stratigraphy of north-central Ohio. Contact Rick Pavey, Ohio Geological Survey, Fountain Square Building B, Columbus, OH 43224; (614) 265-6599.

##### Rocky Mountain Cell: September(??), 1987

Quaternary geology and tectonics of the Taos Plateau, Espanola Basin, and Sangre de Cristo Mountains, New Mexico. Contact Steve Wells, Dept. of Geology, University of New Mexico, Albuquerque, NM 87131; (505) 277-2348.

##### Pacific Cell: September 18-20(??), 1987

Quaternary geology and archeology of the Black Rock Desert area, northwestern Nevada, with special emphasis on Lake Lahontan. Contact Johnathan Davis, P.O. Box 60220, Reno, NV 89506; (702) 673-7304.

##### Southeast Cell: November(??), 1987

Bob Behling and Steve Kite (Dept. of Geology and Geography, West Virginia University) have compiled a mailing list for the Cell. A questionnaire was mailed to about 300 individuals residing or working south of the glacial limit and east of the Mississippi River; response has been very good. It is probable that the group will sponsor a field trip in Nov. 1987 (topic and area presently unknown). Anyone wanting further information or to have their name added to the mailing list should contact Steve Kite, Dept. of Geology and Geography, West Virginia University, Morgantown, WV 26506; (304) 293-5603.

#### QUATERNARY GLACIATIONS IN THE NORTHERN HEMISPHERE

The final report of International Geological Correlation Program Project 24, published in 1986 as volume 5, nos. 1-4 of Quaternary Science Reviews (Pergamon Press), deals primarily with the correlation of glacial deposits and the chronology of glaciations. The volume includes 50 papers by one or more of 76 scientists representing 17 nations in the glaciated regions of the Northern Hemisphere. Eighteen papers with large correlation charts concern different regions of the United States and one is on Mexico. Four are on regions of Canada, nineteen are on Europe, and eight are on Eurasia. (Submitted by G.M. Richmond)

#### XII INQUA CONGRESS OTTAWA, CANADA, JULY 31-AUGUST 9, 1987

The International Union for Quaternary Research (INQUA) will hold its 12th Congress in Ottawa, Canada, July 31-August 9, 1987. Deadline for registering for the Congress is April 30, 1987. For information contact:

Dr. Alan V. Morgan  
Secretary, General XII Congress  
Department of Earth Sciences  
University of Waterloo  
Waterloo, Ontario, Canada N2L 3G1  
Phone: (519) 885-1211 ext. 3029/3231

Here is an abbreviated schedule of Symposia (A-G) and Special Sessions (SS1-33) for the INQUA Congress.

Friday, July 31

- A Inception, growth, and decay of the Laurentide Ice Sheet: R.J. Fulton (Canada) and J.T. Andrews (USA)
- SS1 Quaternary of South America: K. Suguio (Brazil) and J. Rabassa (Argentina)
- SS2 Rates of change--the time factor in Mediterranean landscape evolution: J.L. Bintliff (U.K.) and S. Bottema (Netherlands)
- SS3 To be confirmed.
- SS4 The early prehistory of Africa: R.L. Carlson (Canada) and P.V. Tobias (S. Africa)
- SS5 Global carbon cycle--paleoclimatic perspectives: A.D. Hecht (USA) and E. Sundqvist (USA)

Saturday, August 1

- B Glaciomarine environments: R.D. Powell (USA) and A. Elverhoi (Norway)
- SS6 Global comparisons of southern hemisphere climates during the last glaciation: J.C. Vogel (S. Africa) and C.J. Heusser (USA)
- SS7 Reconstruction of the environmental setting for archeological sites: J. Donahue (USA) and P. Goldberg (Israel)
- SS8 Mineral exploration in glaciated terrain: R.N.W. DiLabio (Canada) and W.B. Coker (Canada)

Sunday, August 2

- SS9 Paleoenvironments des plus anciens hominides europeens: M.F. Vonifay (France) and J.P. Suc (France)
- SS10 Glaciation of the northern Appalachian region: D. Grant (Canada) and G.H. Denton (USA)
- SS11 Patterns of development of north-temperate lakes in late glacial and postglacial time: R.B. Davis (USA) and H. Löffler (Austria)

Monday, August 3

- C Peopling of the New World: R. Bonnichsen (USA) and K.R. Fladmark (Canada)
- SS12 Quaternary of the Queen Elizabeth Islands: J. England (Canada) and D.A. Hodgson (Canada)
- SS13 Shorelevel change and its impact on coastal development: D.R. Grant (Canada) and H.J. Streif (W. Germany)
- SS14 Late Quaternary paleohydrology of Canada: M. Church (Canada), J.C. Ritchie (Canada), B. Berglund (Sweden), and L. Starkel (Poland)

Tuesday, August 4

- D Long continental records: D. Adam (USA) and G. Kukla (USA)
- SS15 Subglacial bedforms--drumlins, fluted moraines, and ribbed moraines: J. Menzies (Canada) and J. Rose (U.K.)
- SS16 Sealevel changes as a measure of climatic and geodynamic processes: P.A. Pirazolli (France) and D.R. Grant (Canada)

- SS17 Late Pleistocene and Holocene insect assemblages; their uses in Quaternary paleoecology and archaeology: G.R. Coope (U.K.) and A. Morgan (Canada)
- SS18 Global Change: H. Faure (France) and N.W. Rutter (Canada)
- SS19 Holocene Glaciers: P.T. Davis (USA) and G. Osborn (Canada)

Wednesday, August 5

No technical program

Thursday, August 6

- E Applied Quaternary studies: B.P. Hageman (Netherlands) and G. Luttig (W. Germany)
- SS20 Quaternary paleoceanography of the Arctic Ocean: Y. Herman (USA) and P. Mudie (Canada)
- SS21 Holocene climatic change (data/model comparisons): T. Webb, III (USA) and F.A. Street-Perrot (U.K.)
- SS22 Climatic and lithostratigraphic significance of paleosols: K. Valentice (Canada) and J.A. Catt (U.K.)

Friday, August 7

- F Long-term restructuring in Late Cenozoic terrestrial ecosystems: K. Luchterhand (USA) and E.B. Leopold (USA)
- SS23 Comparative studies of active, inactive, and Pleistocene periglacial phenomena: H.M. French (Canada) and E.A. Koster (Netherlands)
- SS24 Paleoseismicity and neotectonics: J. Adams (Canada) and N.A. Morner (Sweden)
- SS25 Paleoclimates of the circum-north Pacific region: L. Heusser (USA) and C. Sancetta (USA)
- SS26 Stratigraphical and environmental geological, geochemical and geotechnical problems of loesses: M. Pesci (Hungary) and I. Smalley (U.K.)
- SS27 Atlas of the Northern Hemisphere 20,000 to 18,000 yr B.P.: A.A. Velichko (U.S.S.R.) and R.J. Fulton (Canada)

Saturday, August 8

- G Monsoons and Paleomonsoons: R.J. Fairbridge (USA) and M. Rossignol-Strick (France)
- SS28 The late-glacial transition in North America: L.J. Maher (USA) and W.A. Watts (Eire)
- SS29 Quaternary dating methods: N.W. Rutter (Canada) and J.K. Brigham-Grette (Canada)
- SS30 The Antarctic and Southern Ocean; recent and last glacial maximum: G.H. Denton (USA), E. Zinderen Bakker (S. Africa), and L.H. Burkle (USA)

Sunday, August 9

- SS31 Genetic classifications of glacial deposits and their landforms: A. Dreimanis (Canada) and A. Raukas (U.S.S.R.)
- SS32 Paleoenvironmental reconstructions from arid lands: O.K. Davis (USA) and L. Scott (S. Africa)
- SS33 Paleocyanography of the North Atlantic--Late Pleistocene vs. Pliocene--Early Pleistocene: D.B. Scott (Canada) and K. Miller (USA)

#### RAMBLING THOUGHTS OF THE DIVISION CHAIRPERSON (VIC BAKER)

Like Uncle Sam, the Quaternary Geology and Geomorphology Division needs you; I know. You are one of the readers of this "Dull message from the Chair" who regularly sits in the back of technical sessions, views organizations with suspicion, and considers organization officers to be dangerous. As with your views of national (or local) politics, you may even harbour some cynicism about the present state of our science, its respectability among other sciences, its current state of funding, etc.

I will come back to some of the above concerns. First, however, let me assure you that the QG&G Division officers and Panel members, which constitute the Management Board do not wish to perpetrate an "old boys" (or "old girls") club. Some of us are quite disreputable (even slightly mad)--sufficiently so to mingle with the membership, listen to your ideas, and even to make changes to reflect your concerns.

### Give us your ideas

We need, we implore, we beg suggestions on how to make this Division serve you best. With something like 1400 affiliates, the QG&G Division is the largest national organization of "superficial geologists" in the world. We seem to be the sole organization that maintains geomorphology as an integral part of geology and recognizes its intimate association with Quaternary geology. Many of us are also members of INQUA, AMQUA, the Geomorphology Specialty Group of AAG, and other organizations. Most of us probably are specialists in areas of glacial, fluvial, soils, stratigraphic, paleoecological, or other studies. Yet, in this Division we share a common association with geology, in the tradition of Hutton, Agassiz, Powell, Gilbert, Bryan, Mackin, and others too numerous to list. Please help us maintain that tradition with dignity and honor by contributing in the following ways:

- Send your nominations for Division Awards, including the Kirk Bryan Award and the Distinguished Career Award.
- Send items for the Newsletter (including field trips, special symposia, discussions, or outrageous proposals).
- Nominate Division members to be Division officers and Panel members.
- Send proposals to the Division Management Board for Division activities and initiatives.
- Participate in Division elections. (Imagine--since only 1/3 of the membership voted in the last election, the "silent majority" could easily have defeated the slate. You might even have avoided this harangue.)
- Contribute innovative, stimulating scientific presentations at the national meeting.

### International Geomorphology

As a result of initiatives taken at the First International Conference on Geomorphology (Manchester, England; Sept. 1985) progress is being made on establishing a permanent International Association. The plan is to ratify the new organization at the Second International Conference on Geomorphology to be held at Frankfurt/Main, Sept. 3-9, 1989. Details on the structure of the Association are being developed by the Working Committee on International Geomorphology, which is chaired by Denys Brunsten of the United Kingdom.

Your suggestions on International Geomorphology and its organization are solicited. You may send your thoughts to me (for transfer to the committee) or directly to Denys. The relevant addresses are as follows:

Vic Baker Department of Geosciences University of Arizona Tucson, AZ 85721	Prof. Denys Brunsten Department of Geography University of London King's College, Strand London, WC2R 2LS England
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Those interested in attending the Second International Conference on Geomorphology (Theme: "Geomorphology and Geocology") should write for the FIRST CIRCULAR from:

2. ICG--c/o Prof. Dr. Arno Semmel  
Institut für Physische Geographie  
Universität Frankfurt  
Senckenberganlage 36  
Postfach 11 19 32  
D-6000 Frankfurt/Main 11  
Federal Republic of Germany

Our German colleagues are planning an outstanding program with a phenomenal list of field trips in central Europe and the Alps. The conference language will be English. The organizers would like your suggestions/proposals for themes, papers/posters, symposia/workshops, and commission and working group meetings.

### A Concern

The progress toward International Geomorphology seems to be a bright spot for our disciplines. Other areas of potential excitement include initiatives at the national and international level variously titled "Earth-System Science,"

"Global Change," "Geosphere-Biosphere" programs, etc. Yet, despite the obvious connections, Quaternary geology and geomorphology are not given prominence in such programs.

Instead of excitement, I sometimes detect a sense of malaise among my fellow "superficial geologists." This manifests itself in subtle ways, including the apathy and cynicism noted above. Increased competition for funding, criticism of methodologies (who among us are the "real scientists"?), problems in finding employment, emphasis on practical applications (rather than on basic scientific discoveries), and arguments about scientific philosophy all may reflect this malaise.

Perhaps I can emphasize my point with a true story. A Ph.D. graduate (sedimentology-tectonics) of a quality institution with a strong QG&G program was recently interviewed for a position at a prominent Ivy League University. Filled with the passion of youth, he brazenly asked one of the grand old lions of the department why they had no program, indeed no faculty in geomorphology. (He naively perceived strong connections to his own specialty.)

The reply was quite firm. Indeed, the distinguished faculty had discussed the problem. Famous luminaries in QG&G once had even been at their institution. They concluded, however, that geomorphology was a dead or dying science. Moreover, it was sufficiently trivial that it could be taught by any of their staff. There was some faint hope that it would be reborn someday as a minor branch of geophysics. If and when that occurred, they might again consider it a valid scientific concern.

### An Outrageous Proposal

Perhaps my concern about the health of QG&G is misplaced. However, I know we need more input, ideas, and even complaints from our membership. Therefore, in the interest of stimulating discussion, let me put forward a modest, but outrageous proposition. Please realize that this does not reflect a personal conviction. Indeed, I hope that many readers will be driven to vehement disagreement, sufficient even to achieve the goal of more membership participation in the Division.

Let us follow the philosophy of our Ivy League colleague, suitably enlarged to include the entire QG&G Division. Herewith, be it resolved that, insofar as it lacks the intellectual excitement, revolutionary fervor, and scientific sophistication ("rigor"), the general branch of knowledge known as "Quaternary geology and geomorphology" shall be afforded second-class status. Given its superficial position in the Earth Sciences (too recent, too near the surface, below the atmosphere, beyond the sea, etc.) this branch of knowledge, herewith to be called "superficial geology," shall be held in low esteem, to be avoided by "hot" young intellects, and to be expunged from serious academic centers. (It may persist at "cow colleges," "Podunks," and other locales of appropriate derision and limited aspiration.)

Does this raise your hackles? Still don't care? Consider the advantages of this proposal. With the savings of research funds once devoted to second-class science, we could support impressive laboratories, purchase outrageously expensive instruments (a.k.a. black boxes), and dedicate supercomputers to the intellectual frontiers of geophysics, geochemistry, geofusion, geomolecular biology, and geogenetic engineering. Because superficial geologists produce little that is of interest outside their own narrow sphere, those that remain in this sterile enterprise can support and amuse themselves by writing books for their own consumption. Pages in serious science journals can be filled with even more petrologic phase diagrams, reams of seismic-reflection profiles, and stacks of computer simulations of possible Archean continental configurations. The number of competing sessions at scientific society meetings can be reduced. Indeed, with appropriate nudging, the embarrassment known as "superficial geology" may finally be relegated to its proper status--along side butterfly catching, rockhounding, and other amusements.

What do you think?

## WHERE 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 to the Division Newsletter.

Correspondence to the Division may be sent to our continuing Division Secretary:

Rich Madole  
U.S. Geological Survey  
Box 25046, MS 966, DFC  
Denver, CO 80225

Or you may write directly to the Division Chairperson (who changes each year). Present Chairperson is :

Vic Baker  
Department of Geosciences  
University of Arizona  
Tucson, AZ 85721

Newsletters are mailed in March and September of each year. Members are encouraged to use their Division newsletter to communicate with other members. Deadline for the March Newsletter is Jan. 15th and July 15th for the September Newsletter. Please send information to the Newsletter Editor at the following address:

Michael Machette  
QG&G Newsletter Editor  
c/o U.S. Geological Survey  
P.O. Box 25046, MS 966, DFC  
Denver, CO 80225

## PRESENTATION OF KIRK BRYAN AWARD TO RONALD I. DORN AND THEODORE M. OBERLANDER Citation by Stephen G. Wells, Nomination by John E. Costa

The phenomena of darkened rock surfaces is one of the most striking and puzzling geologic features in desert landscapes. The origin of dark coatings on rocks has been a noteworthy and controversial geochemical and geomorphic subject addressed by numerous scientists since 1898, when G.P. Merrill described "desert varnish" on bare rock surfaces in the western United States. Controversial aspects of rock varnish include the source of the manganese (Mn) and iron (Fe) oxides, which along with clay minerals are the major constituents of rock varnish, and also the potential use of rock varnish in geomorphic and Quaternary geologic studies. For several years, Ron Dorn and Ted Oberlander have conducted research on rock varnish; research which has contradicted previous assumptions concerning the properties and formation of varnish and which has illustrated that rock varnish occurs under a wider variety of environments than arid terrains. One product of these years of study is their 1982 paper "Rock Varnish" published in *Progress in Physical Geography*, which shows that rock varnish is a biogenic chemical coating and that the constituents are derived from sources external to the host rock. For this paper and its contributions, Ron Dorn and Ted Oberlander have been presented GSA's Kirk Bryan Award.

The Society is honoring a research team consisting of a young colleague early in his career and an older well varnished (or do I mean well seasoned) colleague. Ron's interest in rock varnish started at the UC--Berkeley Geography Department where he initiated an undergraduate research project concerning the origin of varnish under the able guidance of Ted Oberlander. Ron's continued research on varnish during his Master's thesis eventually led to Ron and Ted's 1982 publication. Anyone who has worked with Ron knows that his never ending enthusiasm and curiosity added a critical dimension to their research efforts. The rewards of Ron's early research career should provide ample encouragement for bright undergraduate students contemplating research problems. Ted Oberlander, on the other hand, has been a 'desert rat' for a long time with an extensive research record in desert geomorphology. I am sure that Ted's interest in rock varnish evolved as he walked over barren basalt flows in the Mojave Desert and climbed up the sandstone cliffs of the Colorado Plateau. Ted's years of research experience in desert regions throughout the world contributed critical field observations and insights toward their research efforts.

In their 1982 paper, Ron and Ted challenged a long-held idea that varnishing was a physiochemical process by presenting a biochemical model based upon geochemical data and laboratory experiments. This model involves the slow accretion of Mn-rich coating on rock surface as Mn-oxidizing (mixotrophic) bacteria cement externally derived clay and

other minerals to rock surfaces. To test the model, Mn-oxidizing microorganisms were cultured, and Mn-rich varnishes were generated on fresh rock surface. They found that micromorphology of the biogenic laboratory varnish is similar to natural varnish and that Mn-enhancing bacteria thrive in specific surface environments. These environments include sparse organic matter, near neutral pH, episodic wetting and thorough drying, and external input of clays. By comparing these laboratory results with analyzed samples collected from a variety of geographic settings, Ron and Ted concluded that varnish depends strongly upon the local environmental conditions, and they clearly explained why varnish is so conspicuous in desert regions. The lack of organic matter in desert soils enhances oxidation of Mn by mixotrophic organisms, and the episodic brief wetting and thorough drying of rock surfaces promotes fixation of Mn and bacterial adhesion to the accreting rock coating.

Ron and Ted used the biochemical model to explain variations in the rate of varnish development observed in arid and more humid regions. In desert areas, the paucity of organic matter causes the mixotrophic bacteria to oxidize Mn at a rapid rate. However, this process is offset by the low frequency of wetting of the rock surfaces. Thus, rock surfaces in deserts are coated with a darker varnish that grow much slower than in areas with relatively more moisture and little organic matter.

In the characterization of rock varnish, Ron and Ted found that varnish micromorphologies range from lamellate to botryoidal and that varnish micromorphology is influenced by the rate of clay accumulation and the rate of accumulation of oxides at nucleation points. Lamellate varnish forms in areas of rapid clay accumulation, such as arid regions with high dust fluxes or stream channels with clay-rich loads. Botryoidal varnish, on the other hand, was found typically to be depleted in clay and enriched in oxides and hydroxides. Environments in which botryoidal varnish develops include alpine and semiarid terrains, or regions low in atmospheric dust input.

It is difficult to visualize that such a conspicuous geologic feature of desert regions is influenced so much by biologic activity, and perhaps even more difficult to realize that a rock coating tens of microns thick may hold so many clues to the Quaternary history of desert regions. This research has made that possible and has provided a critical foundation from which you and other desert geomorphologists can build a better understanding of past environmental conditions. Our Society applauds your research for the inspiration it has provided toward the development of numerical and absolute

dating tools, such as cation-ratio dating and radiocarbon dating of organic matter in varnish. Because of this type of research and its potential for unraveling the age and conditions of ancient landscapes, geologists' perceptions of desert geomorphology and Quaternary geology are changing. We may even discover that your research has initiated the curiosity of planetary scientists to look for extra-terrestrial life recorded in thin dark coatings on rock surfaces of distant planets. For your research endeavors in rock varnish, we congratulate you, Ron and Ted, on behalf of the Division of Quaternary Geology and Geomorphology.

#### RONALD I. DORN'S ACCEPTANCE OF THE KIRK BRYAN AWARD

I am extremely grateful to the Geological Society of America and the Quaternary Geology and Geomorphology Division for the Kirk Bryan Award. Although Bryan never wrote on rock varnish *per se*, it covers the landforms of the Southwest that he loved and devoted his eminent scientific career to. I have long been a fan of Kirk Bryan, for his careful scrutiny of a problem, for his scientific backbone, and for his X-ray vision of a landscape. I would like to believe that Bryan would have been pleased with the paper that is honored here.

We started research into "desert varnish" simply trying to understand the mystery of its genesis. Like other terrestrial weathering phenomena, the nonanalytical literature on varnish left a void of seemingly contradictory observations, controversy, and the hope that a ubiquitous feature could be useful as a dating method. Our paper on rock varnish is an attempt to use an interdisciplinary approach to understand some of the basic details of the rock varnish system. We found that microbial, chemical, and physical processes combine to produce a complex biogeochemical coating.

As is often the case with basic research, practical applications often float to the surface when the geomorphic bouillabaisse is mixed. One of the by products of this research has been the preliminary development of rock varnish as a dating method and paleoclimatic research tool. More basic research on varnish will be required, however, before these techniques can see reliable and consistent use in geomorphology and Quaternary research. It is my hope that interdisciplinary approaches to basic research in geomorphology and Quaternary studies will continue to blossom, and that the full interaction of chemical, physical, and biotic systems will become more fully appreciated.

It is not at all a cliché that this research benefited from the help of many individuals. First and foremost is my gratitude to coauthor T.M. Oberlander for his subtle humor, constant probing, and clear vision throughout this research. I owe an intellectual debt on the entire varnish issue to Charles B. Hunt and to the physical geographers in the Soviet Union for their work on manganese accumulations. Jake Bendix, Tom Cahill, Denise Dorn, Chris Elvidge, Barry Rahey, Mary Firestone, Ran Gerson, Julian Hayden, Greg Lumpkin, Dave Quimby, and Paul Sypherd also made enlightening contributions to this paper.

#### THEODORE M. OBERLANDER'S ACCEPTANCE OF THE KIRK BRYAN AWARD

To be a geographer sharing the Kirk Bryan Award of the Geological Society of America is a singular honor. I am one of those who discovered geology too late, and, consequently, have always looked at people like yourselves with considerable wistfulness. This occasion, therefore, seems little short of miraculous. I do feel a trace of guilt in accepting an award for a project that cost my co-recipient an order of magnitude more eyestrain at the microscope, SEM, and diabolical electron microprobe in the Department of Geology at Berkeley.

This is traditionally the moment to thank others for their assistance. I think Ron has taken (or is going to take) care of that. In fact, it was mainly his own energy that got us beyond interesting speculation to concrete information about the origin and analytical uses of rock varnish. Dorn is, of course, the German word for thorn, and Ron was a thorn that I felt every time anything distracted me from our pursuit of the varnish problem. I would also like to acknowledge the role of my wife, Lucille, who was actively involved throughout this, and indeed all of my work, and who, as a consequence, has never gotten to spend a vacation in a ponderosa forest, her preferred habitat.

I think we should also express gratitude to the many past investigators of desert varnish who somehow left the problem open to us by overlooking the available facts about the occurrence of manganese in the world generally--the key to its occurrence in desert varnish. In fact, this is where we came in, with the questions, "Where does all this manganese come from?", "What about all the black staining we see in wet, undesert-like places?," and "Is that manganese too, or just 'something organic'?" Of course, we found that it is manganese and organic at the same time. Ironically, we began our research on desert varnish on the blackened boulders along Tamarack Creek in the Yosemite Valley.

I doubt that we would have progressed far without the preceding SEM and microprobe work of Potter, Rossmann, Perry, and Adams--who breathed new life into varnish research. But our most fortunate early step was to climb onto the shoulders of Russian investigators concerned with the possible microbial genesis of manganese ores. Indeed, some of our glossiest varnish and most clearly recognized varnish-producing bacteria came from the subsurface, exposed in the banks of a wash that had cut through semi-consolidated Miocene sediments. Published translations of Russian work provided the guidelines for Ron's initial culturing of bacteria from varnished rocks, allowing him to generate rock varnish in test tubes.

With the bacteria on natural surfaces cooperating by giving us beautiful manganese blips on the SEM, a few shots in the dark produced unexpectedly good results, especially tests of a varnish age-determination procedure using the buildup of titanium relative to leachable cations, and the reconstruction of environmental oscillations by the alternation of iron-rich and manganese-rich laminae in varnish. This was truly a time of immense excitement for both of us. Our principal findings were produced by ad hoc methods, in a department with no laboratory facilities, funded by small university grants, while Ron was still an undergraduate. Eventually, an NSF grant allowed us to substantiate our conclusions, to process sufficient numbers of samples to produce a varnish "aging" curve tied to radiometric dates on volcanic rocks, and to carry out micro-chemical transects through varnish films in which Mn/Fe oscillations seem to mimic  $O^{18}/O^{16}$  fluctuations in the marine record. The paper being recognized here was largely developed from our proposal for NSF funding.

This award puts me on the spot. While Ron has forged ahead with new work on rock varnish, I have bogged down in a morass of other commitments. Meanwhile, my office, home, and garage are awash in unprocessed and half-processed varnish specimens--all surely keys to something or other, from the arrival of the earliest Americans to mid-Pleistocene overflow of a 600 m deep lake in Death Valley (possibly!). Now I have to prove myself and get back to the real work. I would like to thank you all for the incentive to do so.

## DISTINGUISHED CAREER AWARD—1986

The Quaternary Geology and Geomorphology Division of the Geological Society of America is pleased to recognize the continuing contributions of Richard P. Goldthwait to the field of Quaternary geology by presenting him the first distinguished career award. Dr. Richard P. Goldthwait was the first recipient of the award, which he accepted at the Division Luncheon at the 1986 Annual Meeting of the Geological Society of America in San Antonio, Texas. The following is Dr. Goldthwait's acceptance of the award.

### RICHARD P. GOLDTHWAIT'S ACCEPTANCE OF THE DISTINGUISHED CAREER AWARD, 1986

After we recovered from the surprise and great elation of receiving the Distinguished Career Award, we began to think how many people had contributed to any successes or publications which we enjoyed. Advisedly, I include my wife in the "we", for she began as my "rodman" in 1937, 50 years ago. Having sweated over my dissertation (no "word processor"), then raised our family while the father wandered afar on fieldwork, and then been companion on some long trips and 5-10 professional meetings a year, she deserves half the credit.

Career is defined as "consecutive progressive achievement in professional life." This implies perhaps an early start. Anyway, this was my case 60 years ago, thanks to my father (J. Walter Goldthwait), also a glacial geologist. As State Geologist, in summertime he had me visiting kame and esker gravel pits for 50¢ an hour. By using hundreds of stone counts we showed that strong mountain-making pebble types in the aggregate made highways last longer. He was a marvelous challenge and inspiration. Then there is the host of graduate students (such names as Ken J. Hsu, Jim Hays, Bill Farrand, or Dave M. Mickelson, just to mention a few) thinking actively and debating in seminars for more than 30 years; you'd be amazed at how many good geological ideas and hypotheses get started that way. An finally, there's the insatiable urge to keep solving problems and do some fieldwork even after retirement and reaching age 75. But you're on your own; no student help then.

Perhaps five observations which became repeated many times during the 60 years will point up the dynamic changes during just one teaching career:

1. All geology, including our subject, becomes ever more fractured by specialties. As I got started, old physical geography became geomorphology in a search for processes. Then we got the glacial types who wanted to split

off. This did not succeed in GSA in 1948-50, thank goodness. There followed fluvial specialists, coastal workers, karst experts, desert-aeolian students, and permafrost researchers all dragging in another critical ancillary science. For the sake of breadth, thank goodness, we are all essentially together. Once I thought I could know all geology; now I know very little.

2. More growth than one can imagine comes with new techniques. They opened undreamed of channels as we moved from the optical microscope to the electron probe, or from plane-table topography to color-enhanced satellite imagery, and from the adding machine to computer modeling.
3. Since ours is a subject of multiple hypotheses, your favorite hypothesis--no matter how positive you are about it--may have to go down the tube. Don't cry over neglected hypotheses; plenty of others you have will prove correct in time.
4. Popular geological favor and thinking goes in cycles. Your published conclusions, "proven" by you, may go on the antique shelf after one decade, but then new discoveries are brought to light by others and show that you were right after all. My first geological publication in 1934 was shown to be "impossible" by 1950, but then by 1970 it was shown to be "probably true."
5. Ones' favored hypothesis is pushed too far at first. So many of the vicious name-calling arguments heard between the "geological great" at early GSA and AAA meetings (no longer heard in most meetings--no discussion time) later turn out to show that both were partly right. Are drumlins erosional or depositional? Now erosion and deposition are both phases of drumlin formation, but a third main action is added, such as the squeezing in/up of liquid till.

I guess what I'm saying is "always have a flexible mind" like my dad's even when you finish digging in critically, low and hard. You'll be happier--I was. Look at the thrilling readjustments and revisions in thinking when the "impossible" continental drift was declared a "fact."

Through all careers some things are constant. Two that still amaze me are: (1) Any basic relation or significant "truth", such as the most refined soils geochemistry, has to be fitted together with field relations to mean anything. Good fieldwork is still essential. (2) The elementary geology students, or the arriving new graduate students, get younger every year. How can they be so young? You weren't.



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