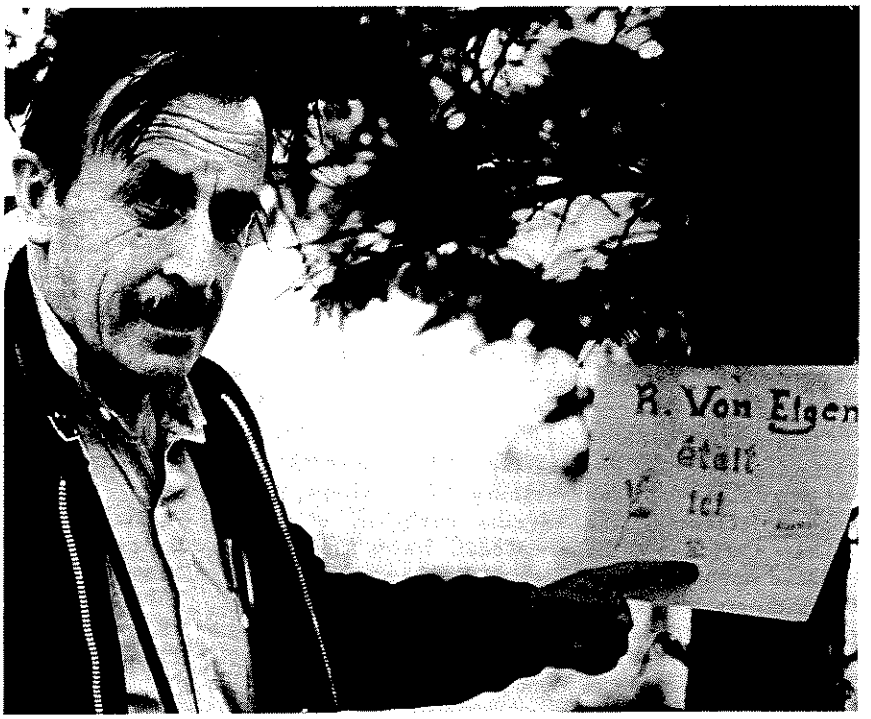
IAMG News Letter

In Memoriam
Geoffrey William Hill, 1928–1982



November 15, 1982, Geoff Hill suffered a fatal heart attack, removing from the rolls of the IAMG one of its most enthusiastic supporters and a leader in the geostatistical profession. Geoffrey William Hill was born in Australia in 1928; he graduated with honors in mathematics and physics from the University of Sydney in 1950 and received his MSc in mathematics and computing from the same university in 1955. His professional career began in 1949 with an appointment as a Technical Assistant in CSIRO. Upon completion of his first graduate degree, Geoff served in the Division of Mathematics and Statistics of CSIRO for the next 21 years, rising to the post of Senior Principal Research Scientist.

In 1961, Geoff was awarded the PhD from Melbourne University for his thesis, "Advanced Programming of Digital Computers." He was at the time intimately involved in the development of CSIRAC, the first Australian computer and the fourth computer built in the world.

Geoff perceived the growing importance of geostatistics and in the early 1970's determined to make this area his future career. In 1975 he studied at the Centre de Morphologie Mathematique at Fontainebleau under a French Government Fellowship. On his return to Australia, he transferred to the CSIRO Division of Mineral Chemistry, where he devoted his research efforts to studies of both the theoretical and practical aspects of geostatistics. He made significant contributions to many Australian mining companies, introducing them to the benefits of geostatistical analysis, and also developed methods for regional assessment of mineral resources in Australia.

From 1976 to 1980 Geoff Hill served as Vice-President of the International Association for Mathematical Geology. Geoff was especially concerned with cooperation between geoscientists and statisticians, and was responsible for the Association's increased participation in the meetings of the Bernoulli Society. He used the occasion of the Manila Conference of the ISI in 1978 to arrange and chair several sessions which first introduced geostatistics to many professional statisticians. Since 1980, Geoff served on the editorial board of **Computers and Geosciences**, and worked diligently to tighten the review process for computer algorithms and programs. In his professional career, Geoff authored over 40 scholarly publications, and reviewed, advised, and counseled numerous colleagues on problems in statistics and its application to the Earth sciences.

In addition to his scholarly contributions, Geoff will be remembered for his ready wit and constant good humor. Many an otherwise dull Council meeting was enlivened by his quips and observations. He took especial delight in disclosing his findings in the unfolding saga of R.G.V. Eigen, as attested to by the accompanying photograph taken near Fontainebleau in 1980. Geoff will be sorely missed by his family, his friends and associates, and by the IAMG.

NEWSLETTER EDITOR: JOHN C. DAVIS

no. 30

KANSAS GEOLOGICAL SURVEY, 1930 AVENUE "A" CAMPUS WEST
UNIVERSITY OF KANSAS LAWRENCE, KANSAS 66044, USA

D.G. "Danie" Krige
William Christian Krumbein Medalist
1982

Daniel Gerhardus Krige, Professor of the Department of Mining Engineering of the University of the Witwatersrand, Johannesburg, South Africa, has been selected as the seventh recipient of the William Christian Krumbein Medal. Danie Krige has donated not only his talents and skills to the service of mathematical geology, but also his name! The estimation procedure used in regionalized variable theory is called "kriging" (or "krigeage" in the original) in his honor, a tribute to Danie's contributions to the statistics of mine evaluation.

Danie Krige received his academic degrees from the University of the Witwatersrand, in the field of mining engineering. His DSc was conferred in 1963; in 1981 he received an honorary degree of Doctor of Engineering from the University of Pretoria. Most of his professional career has been with the Anglovaal Mining Group, where he rose to the position of Group Financial Engineer. Since 1981 he has been Professor of Mineral Economics at the University of Witwatersrand. The South African Institute of Mining and Metallurgy has awarded him their gold medal on two occasions, and in 1982 he received the gold medal of the South African Academy of Science and the Arts.

Danie Krige has published over 50 scientific articles, including seminal contributions on methods of mine evaluation that were the direct precursors of Professor Georges Matheron's regionalized variable theory. In addition to his work on mining statistics, he has been deeply involved in the science of investment and financial analysis. In 1955 he published the first work that dealt with risk analysis in mining ventures, founding an area of investigation which actively flourishes today.

The William Christian Krumbein medal will be publicly presented to Danie Krige in a ceremony in the near future. A more extensive article describing the many achievements, awards, and honors of our seventh medalist will appear in the Journal of the IAMG.

Thoughts on IAMG from the Western Treasurer

Interaction at the international level is a key element in the continued vitality of IAMG. Programs, rather than mere extension of membership or establishment of more regional organizations, hold the key to future progress. Programs, for instance, that help to strengthen scientific interaction between individuals and institutions in the developed countries and their counterparts in developing countries, as well as among scientific communities in the developed countries, bears consideration. A central need for IAMG, now consisting of over 600 members worldwide, is to develop such programs. I propose we begin the process of identifying projects that can be implemented at the IGC meetings in Moscow in 1984. As a beginning, I would appreciate hearing from members on projects that might be considered. —R.B. McCammon

[Write to **Dick McCammon** in care of the U.S. Geological Survey, National Center 920, Reston, VA 22092 USA.]

President's Prize Awarded for 1982

The IAMG President's Prize is awarded for "an original and outstanding contribution [through publication] to the application of mathematics to the geological sciences." As the prize is intended to encourage young scientists at the beginning of their career, it is restricted to recipients no older than 35 years of age at the time of nomination. Two outstanding recipients have been selected for 1982: **William E. Full**, Wichita State University (USA) and **Stephen Henley** of Mineral Industries Computing Ltd. (UK). Bill's recent research has been in the area of Fourier analysis of grain shape; Steve is author of the innovative book, **Nonparametric Geostatistics.** Both recipients will receive certificates and a book of their choice from the IAMG.

Best Paper Award for MATHEMATICAL GEOLOGY

John Aitchison (Hong Kong) authored the 1981 Best Paper in the IAMG Journal, entitled "A new approach to null correlations of proportions." The article appeared in vol. 13, no. 2. John will receive a year's subscription to **Mathematical Geology** and a certificate of award.

Best Paper Award—COMPUTERS & GEOSCIENCES

Alex McBratney (Australia) and **Richard Webster** (UK) receive this honor for 1981 for their paper, "The design of optimal sampling schemes for local estimation and mapping of regionalized variables, Part II," which appeared in vol. 7, no. 4. The co-authors will both be given complimentary subscriptions to **C&G** in addition to certificates.

Time for a Change?

From its inception, the IAMG has devoted its efforts to the advancement of quantitative Earth science, promoting the use of mathematics and computers in geology. In recent years, dramatic technological changes have taken place in computing. One obvious change is the virtual extinction of the 80-column punched card that appears as part of the seal of the IAMG. In keeping with the times, perhaps we should consider replacing the punched card on our logo with a representation of the desk-top computer, a device symbolizing many of the changes that have occurred. The design shown below has been proposed as a replacement. Send your comments, critical or otherwise, to IAMG Western Treasurer R.B. McCammon (address appears elsewhere in this issue), so that further action can be considered by the Council.

The Prez Sez

At the start of the new year, I appointed a whole set of new committees to take care of the Association's activities in 1982-83. Every effort has been made to secure international representation on our committees. In the past, I have called for members to volunteer for committee service with gratifyingly good response; I would appreciate more names, to be ready for the next round of appointments. Over the past year, our committees have done an excellent job and the membership owes each committee member a debt of gratitude. The best-paper-award committees have a relatively easy time because they have to choose from known sets; not so with the Krumbein Medal and President's Prize committees. Please help by sending nominations to the committee chairmen or to me. Potential Krumbein Medalists usually are internationally prominent scientists, although committee members from one country may sometimes overlook deserving candidates from other parts of the world. Excellent potential President's Prize candidates, who must be no older than 35 years of age, are more difficult to identify, so please give particular thought to making a nomination.

We are now more than half way in the journey between IAMG General Assemblies. Specific plans for the August 1984 General Assembly, to be held in conjunction with the XXVII International Geological Congress in Moscow, USSR, are now gathering momentum. Make sure that you get the Second Circular of IGC. The IAMG is organizing three symposia:

(1) Quantitative interpretation of exploration data. Convener: Richard Howarth (UK)
(2) Quantitative methods for global resource estimation. Convener: (to be named)
(3) Current advances in geomathematics, including the use of minicomputers and microcomputers in geology. Convener: D.F. Merriam (USA)

In addition, the IGC will hold four symposia and two intersectional symposia:

C.20.1.1 Mathematical models of geological processes. Conveners: E.H.T. Whitten (USA) and A.B. Vistelius (USSR)
C.20.1.2 Mathematical approaches to geological classification. Convener: F.P. Agterberg (Canada)
C.20.1.3 Geostatistics. Convener: A. Journel (USA)
C.20.1.4 Mathematical analysis of geological information obtained from space. Convener: J.M. Monget (France)
S.20.2.1 Computer applications in evaluation and forecasting of geological resources. Convener: A.L. Clark (USA)
S.20.2.2 Geological information—applications of factual and biographic data bases. Conveners: R.G. Gravesteijn and J. Hruska

For all of these sessions, good papers are solicited from authors who can offer reasonable assurance of attending the Moscow meetings in 1984. Naturally, I will be particularly glad to hear from those with exciting material for C.20.1.1—"Mathematical models of geological processes," but the IAMG has an opportunity to play a major role at IGC by providing top quality papers throughout the mathematical geology sessions.

IAMG Council member **Andrei B. Vistelius** is interested in a symposium at IGC on "Stochastic models of crystallization and metasomatic transformations of granitic rocks." Others keen for such a session should write to me. —E.H.T.W.

[Tim's address: Prof. **E.H. Timothy Whitten**, Vice President for Academic Affairs, Michigan Technological University, Houghton, MI 49931 USA.]

Silly Picture of the Month Award

Secretary-General **John Davis** (left), Eastern Treasurer **Vassil Vuchev**, and IAMG member **Ricardo Olea** (right) whoop it up upon learning that the Bulgarian Academy of Science has offered to join with the IAMG in preparing a multilingual Glossary of Mathematical Geology. The project, which was on-again/off-again until Treasurer Vuchev returned to Bulgaria from sabbatical at the Kansas Geological Survey and assumed a direct role in negotiations with the Academy Publishing House, will result in an English-language dictionary with cross-references in seven languages. [Actually the depicted festivities, heightened by considerable quantities of slivovitz, marked the conclusion of Vassil's stay at Kansas.]

President's Prize '83 Committee Appointed

President Whitten has appointed **Alan C. Cook** (Australia) chairman of the President's Prize Committee for 1983. Also serving on the committee are **John Davis** (USA), **K.T. Fang** (PRC), **Andre Guillaume** (France), and **D.A. Rodionov** (USSR). Names of potential recipients (who must be no older than 35 years) are requested by the committee.

Upcoming Meetings

SEPM Computer Technology Research Group, meeting on **Applications of Microcomputers.** April 17, 1983, 1:00-5:00 p.m., in the Junior Ballroom, Hilton Hotel, Dallas, Texas (USA). (In conjunction with the AAPG Annual Meeting). Contact: D.F. Merriam, Dept. Geology, Wichita State University, Wichita, KS 67208 USA.

Computer Applications in Geology V, **Computing in the Field.** April 27, 1983, in Manchester, England (UK). Contact: W.T.C. Sowerbutts, Geology Dept., University of Manchester, Manchester M13 9PL UK.

NATO Advanced Study Institute, on **Geostatistics for Natural Resource Characterization.** Sept. 4-17, 1983, at Fallen Leaf Lake, California (USA). Contact: GEOSTAT TAHOE 1983, Dept. Applied Earth Sciences, 310 Mitchell Bldg., Stanford University, Stanford, CA 94305 USA.

NATO Advanced Study Institute, on **Chemometrics (the application of statistics to chemistry, including geochemistry).** Sept. 12-23, 1983, at Cosenza (Italy). Contact: Bruce Kowalski, Laboratory for Chemometrics, Dept. Chemistry BG-10, University of Washington, Seattle, WA 98195 USA.

Auto-Carto VI, **Symposium on Automated Cartography.** Oct. 16-21, 1983, in Ottawa (Canada). Contact: Auto-Carto VI Secretariat, Dept. Geography, Carleton University, Ottawa, Ont. K1S 5B6 Canada.

International Statistical Institute, 44th Session, with the Bernoulli Society program focusing on **geological and geophysical statistics.** Sept. 12-22, 1983, in Madrid (Spain). Contact: E. Lunenberg, ISI Permanent Office, 428 Prinses Beatrixlan, 2270 AZ Voorburg, Nederlands.

12th Annual Geochautauqua — **Think Deep! Computer Methods and the Subsurface.** Nov. 10-11, 1983, with workshops preceding and following, at Lawrence, Kansas (USA). Contact John C. Davis, Kansas Geological Survey, 1930 Avenue A, Lawrence, KS 66044 USA.

Membership Chairman Reappointed

Proving that the reward for success is more of the same, **Peter Feldhausen** (USA) has been reappointed Chairman of the Membership Committee for 1983. Assisting Peter will be **Heinrich Siemes** (FRG), **Niichi Nishiwaki** (Japan), and **Dick McCammon** (USA). Additional committee members are needed from other areas of the world. Please write to Peter [1115 Residence Drive, Aiken, South Carolina 29801 USA] and volunteer.

About People

Colin Ferguson has joined the Geologic Research Section of the Kansas Geological Survey (USA). Colin's previous post was Lecturer in the Department of Geology, Nottingham University (UK).

Dan Gill of the Geological Survey of Israel is spending a year with the U.S. Geological Survey at Reston (USA).

[cont.]

. . .People

Li Yuwei (PRC) is at Northwestern University (USA) through this September. He is a vice-president of the Specialized Committee on Mathematical Geology of the PRC and affiliated with the Chinese Academy of Geological Sciences in Beijing.

Ricardo Olea is on leave from the Kansas Geological Survey (USA) to work with ENAP, the South American national oil company, at its headquarters in Santiago, Chile.

Richard Reyment of Uppsala University (Sweden) has been appointed regional editor of the **Journal of African Earth Sciences.**

Vera Rohrlich of Technion (Israel) will spend a 1983 sabbatical working with **John Harbaugh** at Stanford University (USA).

Paul Switzer of Stanford University (USA) is in Australia for an extended visit under the sponsorship of the Associated Australian Universities.

Suzanne Weston and **Stephen Weston** are now living in Anchorage, Alaska (USA), where Stephen is employed by ARCO Alaska, Inc.

CODATA Meeting Set

The Committee on Data for Science and Technology (CODATA) of the International Council of Scientific Unions has announced its next meeting, to be held in Jerusalem (Israel), June 24–27, 1984. The conference will include Session F, **Numerical Data Processing in the Geosciences**, which will consider capture of data in the field, remotely sensed data, environmental information systems, and automated cartography. Six symposia of special interest to members of the IAMG include: S.12—Numerical data for energy systems; S.16—Management and analysis of marine geological data; S.17—Management and analysis of numerical data in geochemical exploration; S.18—Geological resources information systems; and S.19—Geostatistical applications in the mining and petroleum industries. Those interested in participating should correspond as soon as possible to: The Secretariat, Ninth International CODATA Conference, 122 Hayarkon St., P.O. Box 3054, 61030 Tel-Aviv, Israel.

Mathematical Geology in China

The First National Conference on Mathematical Geology was held in Hangzhou in 1978. There were 195 participants in attendance and 131 papers were presented. This meeting marked a new stage of development and academic exchange in mathematical geology in China. The Second National Conference, sponsored by the Geological Society of China, was held in Changsha in 1981. Three hundred participants attended, representing all areas of government, academia, and industry. There were 213 papers covering applications of multivariate statistics in geology, assessment of mineral resources by quantitative models, geostatistical ore reserve estimation, computer simulation of geological processes, and other topics.

During the 1981 conference, the **Specialized Committee on Mathematical Geology** (SCMG) of the Geological Society of China was established. Twenty-nine geomathematicians were chosen as committee members. The SCMG President is **Liu Chengzhuo** of the Institute of Geology, Academia Sinica, Beijing. The Secretary-General is **Sun Huiwen**, of the Institute of Geology. The Committee, representing the Geological Society of China, is responsible for organizing all national activities in mathematical geology and has become the regional organization of IAMG in China.

On June 8–20, 1981, UNESCO, the U.S. Geological Survey, and the Chinese Academy of Geological Sciences sponsored the "Beijing Seminar on Resource Assessment." **R.B. McCammon**, IAMG Western Treasurer, and IAMG member **Niichi Nishiwaki** lectured at the seminar, which involved the application of mathematical methods to resource assessment. A joint meeting was held with the SCMG to exchange views on the development of mathematical geology in China and in the world.

In the last ten years, mathematical geology has been developing quickly in China, and the application of mathematical methods and computers to problems in geology has increasingly attracted both geologists and mathematicians. A number of good local or departmental symposia have been held and many short training classes have opened; several universities and geological colleges now offer specialized courses in mathematical geology, and some research institutes now conduct studies on special topics. A series of books by Chinese mathematical geologists, organized by the Geological Publishing House, are to be published. During the 26th International Geological Congress in Paris in 1980, Chinese mathematical geologists first attended the meetings of the IAMG and contacted the leaders of the Association to discuss how Chinese scientists could join this international organization and participate in its activities. So far, 16 Chinese mathematical geologists have become individual members of IAMG, and the Geological Society of China is an institutional member. Through extensions of these connections with the IAMG, Chinese mathematical geologists intend to actively participate in international exchanges in order to do their bit for the development of the discipline of mathematical geology.

—Li Yuwei, SCMG Vice-President

THINK DEEP!

Nov. 10–11, 1983

Computer Methods and the Subsurface

12th Annual GEOCHAUTAUQUA

Return with Dorothy and Toto to the Land of Oz and the top of the Arbuckle—**Back to Kansas** where it all began! Remember line-printer maps? Punched cards? Those too-narrow, too-short blue ties with the hammer and IBM card? Recall it all at the **12th Annual Geochautauqua**, whether you're an Old Hand nostalgic for the long-ago Computer Colloquia at Kansas or a Young Turk anxious for the latest word. **Come to Kansas where it all began . . . and still continues!** The 12th Annual Geochautauqua will be held at the home of the Kansas Geological Survey, Moore Hall, University of Kansas, Lawrence, Kansas. **November 10–11, 1983.**

The 12th Annual Geochautauqua will focus on the application of computers to interpretation of subsurface geology with special emphasis on topics related to petroleum exploration. Papers are solicited; those wishing to make presentations should contact the organizers as soon as possible. Papers now scheduled: ★ automated petrophysical analysis ★ three-dimensional mapping and display of facies ★ reassessment of offshore petroleum prospects ★ optimal interpretation of the configuration of subsurface structures ★ regional exploration potential based on the "discoverability" of oil fields. **Conference attendance is limited to 150 participants.** The registration fee is $75.00 U.S.

TWO SHORT COURSES!

(1) **Automated Lithofacies Analysis from Well Logs** — Taught by Dr. John H. Doveton using the KOALA interactive log analysis system and specially developed software. Two days of hands-on experience in the most modern of petrophysical interpretation procedures. Topics will include graphical, numerical, and matrix algebra methods for lithology estimation; normalization of logs; three-dimensional analysis; and lithofacies mapping. Participants will use interactive graphics terminals attached to the Survey's Data General MV-8000 computer. Course fee, covering all materials and computer time, $75.00 U.S. **November 8–9, 1983.**

(2) **Automated Cartography and Map Production** — Taught by Charles G. Ross using the GIMMAP software developed by the Kansas Geological Survey and the Bureau de Recherches Geologiques et Minieres, Orleans. A two-day introduction to digitizing, editing, map assembly, and production by computer. Participants will have the opportunity to participate in all steps of the preparation of a modern four-color geologic map, using digital cartographic equipment and the Kansas Geological Survey computer. Course fee, covering all materials and computer time, $75.00 U.S. **November 12–13, 1983.**

Attendance in the Short Courses is strictly limited to 15 participants; admission on a first-come/first-served basis. For further information, write or call:

Dr. John C. Davis or Dr. John H. Doveton
Kansas Geological Survey
1930 Avenue "A", Campus West
Lawrence, Kansas 66044-3896 USA
Telephone: (913)864-4991

REGISTRATION FORM — Please register me in:

☐ THINK DEEP! Computer Methods and the Subsurface
☐ Automated Lithofacies Analysis from Well Logs
☐ Automated Cartography and Map Production

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