

# I. A. M. G. NEWS LETTER



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**DANIEL F. MERRIAM: WILLIAM CHRISTIAN  
KRUMBEIN MEDALIST FOR 1981**

**Daniel Francis Merriam**, Endowment Association Distinguished Professor in Geology and Chairman, Department of Geology, Wichita State University, Wichita, Kansas (USA), was recently named sixth recipient of the William Christian Krumbein Medal. It is appropriate that this highest honor of the International Association for Mathematical Geology be bestowed on Dan Merriam. He has long been associated with the development of mathematical geology and probably has done more to promote the growth and success of the field than any other individual. From the inception of the IAMG in 1968 at the XXIII International Geological Congress in Prague, where Dan participated in those tumultuous events, his efforts on behalf of the Association have been unstinting. He has served as Secretary General of the IAMG and is immediate Past-President of the Association. He was founder, and for eight years Editor-in-Chief of the Journal of the IAMG, Mathematical Geology, begun in 1969. In 1975 he founded the journal Computers & Geosciences, of which he continues to serve as Editor. During his 1971-1981 tenure as Jessie Page Heroy Professor of Geology and Chairman, Department of Geology, Syracuse University, Syracuse, New York (USA), Dan established the IAMG "Geochautauqua on Computer Applications in the Earth Sciences," now in its 11th year. The presentation of the Krumbein Medal to Dan was made by IAMG President E.H.T. Whitten in Golden, Colorado (USA), January 27, 1982. An article to appear soon in Mathematical Geology will more amply describe the scholarly activities, scientific accomplishments, and perhaps most notably, the herculean labors made on behalf of the IAMG by Daniel F. Merriam, our distinguished 1981 Krumbein medalist.

## **1981 ANNUAL REPORT OF IAMG TO IUGS**

The IAMG, as an Affiliated Association of the International Union of Geological Sciences, is required to submit an annual report to that body. Following are excerpts from the 1981 report prepared by IAMG Secretary-General John Davis.



D. F. Merriam (right), 1981 Krumbein Medalist, accepts award from IAMG President E.H.T. Whitten.

## Membership in 1981

The IAMG has continued its steady growth in membership through 1981, and has continued to provide scientific and scholarly services to the geoscience community. Membership in the area served by the Western Treasurer now stands at 536, with exactly one-half of these (268 members) resident in the United States. The other 268 members live in 52 different countries. In order of number of members, the largest of these are: Canada (51), Australia (30), England and Federal Republic of Germany (20 each), China (16), France (13), and Brazil (10). This represents a growth during 1981 of almost 10%, with a 10% increase in the number of countries represented in the Association. [Ed. note: Membership data are based on information available September 30, 1981.] In addition, the IAMG has many adherents in countries within the jurisdiction of the Eastern Treasurer. No formal roll of these members is maintained, nor are dues collected in any systematic fashion, because currency restrictions make it almost impossible for these persons to subscribe to the Association's journals. For this reason, no accurate count is available of the number of scientists affiliated with the IAMG in the Socialist countries, although the number is estimated to be several hundred.

## Publications in 1981

Volume 13 of Mathematical Geology (a bimonthly publication) and Volume 7 of Computers & Geosciences (a quarterly) were issued during 1981. A 12-page brochure describing the history and objectives of the Association has also been published and will be used to help recruit new members and to introduce the Association to the scientific community. Two issues (Nos. 26 and 27) of the IAMG News Letter (published irregularly) were produced and distributed to members during the year. The Australian Regional Organization of the IAMG now publishes BANG--The Bulletin of Australian News in Geomathematics. The Group on Statistics in the Earth Sciences (UK) will coordinate its activities, including publication of its newsletter, with the IAMG. The US Regional Organization of the IAMG is updating its Directory of North American Geoscientists Engaged in Mathematics, Statistics and Computer Applications which appeared first in 1980.

No special volumes were issued by the Association during 1981, although plans are being made for a publication in conjunction with the forthcoming International Sedimentological Congress. Volume 13, No. 3 of the IAMG Journal contains the report on the IV General Assembly of the International Association for Mathematical Geology held at the XXVI International Geological Congress (Paris, France, July 1980). Discussions are underway with **Vassil Vuchev**, Eastern Treasurer, concerning a cooperative scientific publishing venture in Bulgaria that may provide a way to circumvent currency restrictions which now hamper distribution of the Association's journals in the Socialist countries.

## Association Meetings in 1981

During 1981, the IAMG cosponsored a number of highly successful technical meetings in various parts of the world. Perhaps foremost among these was the International Conference on Mathematical Methods in Geology, at the 20th International Mining Pribram in Science and Technique, held October 12-16, 1981, in Pribram, Czechoslovakia, where 80 contributions to mathematical geology were presented. Another outstanding meeting was the 10th Annual Geochautauqua held at Ottawa, Canada, cosponsored by the IAMG and the Geological Survey of Canada. In addition, the IAMG cosponsored research symposia at the 43rd ARPEL Congress of Latin American oil companies in Rio de Janeiro (Brazil), and at the meeting of the Geological Information Group in London (UK).

## Prizes and Awards Bestowed in 1981

The IAMG bestows a number of prizes and awards to members of the geomathematical community in recognition of their contributions to the field. A significant new award, the IAMG President's Prize, has been established by the Association to encourage the use of geomathematics by young scientists; a condition of the award is that the recipient must be no more than 35 years of age. The first prize, presented in 1981, went to **John M. Cubitt** of Poroperm Laboratories (UK). The Best Paper Award for Computers & Geosciences has been given to **Richard G. Craig** of Kent State University (USA). The Best Paper Award for Mathematical Geology has been given to **Paul Switzer** of Stanford University (USA).

## Medium to Long-Term Plans

The anticipated major thrusts of the Association within the next five years will represent a continuation and expansion of traditional activities: sponsorship of international scientific meetings, publication of scholarly works, promotion of the quantitative approach to Earth science, and recognition of the contributions of outstanding scientists.

A major preoccupation of the Association will be the planning for the XXVII Geological Congress, to be held in Moscow in 1984, which will also be the V General Assembly of the IAMG. The Association is developing four sessions and co-sponsoring two others.

The IAMG anticipates continuation of its association with the International Sedimentological Congresses and the Mining Pribram. We hope to expand the role which the Association plays in the meetings of the International Statistical Institute, particularly in the sessions of the Bernoulli Society. Attempts are now underway to broaden the disciplinary scope of the Association by becoming involved in meetings of the oceanographic community and with certain engineering groups.

The IAMG hopes to greatly expand and strengthen its system of national and regional organizations. This will be done by providing some direct financial support, by participation of key members of the international body in the activities of the regional groups, by assisting in local publication efforts and scientific meetings, and by providing publicity and a medium for communication. Several regional organizations function as part of a national geological society

(e.g., the UK group with the Geological Society of London; the Canadian group with the Canadian Society of Petroleum Geologists). Others, such as the US and Australian groups, have established themselves as independent national societies. It is anticipated that the People's Republic of China will establish a regional organization as a part of the Chinese Geological Society. Other organizational vehicles may be appropriate for other countries, but whatever the mechanism, the IAMG has a commitment to the strengthening of these groups.

#### **MGUS ELECTION RESULTS AND A REQUEST FROM THE NEW PRESIDENT**

Election results were announced at the January meeting of the Mathematical Geologists of the United States. MGUS officers for 1982-1984 are: President -- **James B. Campbell, Jr.**; Vice President -- **Douglas M. Lorenz**; Secretary -- **Thomas A. Jones**; Treasurer -- **John H. Schuenemeyer**.

Getting right down to business, President Campbell writes: MGUS needs individuals who are willing to assist in conducting current activities. Specifically, we need help with the distribution and promotion of the 2nd edition of the Directory of North American Geoscientists Engaged in Mathematics, Statistics, and Computer Applications, to be available this summer. We need help for compilation and for solicitation of advertising for the 3rd edition, starting in January 1983. Individuals who are interested should contact Jim Campbell, Department of Geography, Virginia Polytechnic Institute, Blacksburg, VA 24061 [tel: (703) 961-8541 or 961-6886] or Doug Lorenz, Sohio Petroleum Corp., 633 17th Street, Denver, CO 80202. In addition, MGUS is currently soliciting sponsors for the 2nd edition of the directory. If MGUS members can identify organizations who may wish to purchase advertising space in the 1982 edition, please contact Doug Lorenz.

#### **10th GEOCHAUTAUQUA\*--OTTAWA '81**

"Use of Computers in Mineral-Resources Evaluation" was the theme of the **10th Geochautauqua on Computer Applications in the Earth Sciences**, held in Ottawa, Canada, October 23-24, 1981, and hosted by the Geological Survey of Canada. Co-sponsors, in addition to GSC, were the IAMG, International Geological Correlation Programme (IGCP), and Syracuse University (USA). A three-day Workshop on Interactive Graphic Computer Programs was

held by the Geological Survey of Canada immediately prior to the Geochautauqua, October 20-22. Both the Geochautauqua and the Workshop were well attended, and well received. GSC hospitality was outstanding, and the smooth conduct and quality of the meetings were a tribute to the efforts of conference convener **F. P. Agterberg** and his staff, to the session chairmen, and to Workshop leaders **C. F. Chung** and **A. G. Fabbri** of the Geological Survey of Canada. (Even the computing machinery was well behaved, a critical factor for interactive endeavors!)

Workshop participants were welcomed by **John G. Fyles**, Acting Director General, Geological Survey of Canada, and **Ken Pulfer**, Vice-President for Laboratories, National Research Council of Canada. Featured in the Workshop on Interactive Graphic Computer Programs were **SIMSAG**, a system of interactive graphic programs for multivariate statistical analysis of geoscience data developed by C. F. Chung, and **GIAPP** (Geological Image Analysis Program Package), a program developed by A. G. Fabbri which combines methods of picture processing, mathematical morphology and stereology to estimate geometrical probabilities. Interspersed with the interactive graphic computer experiments of the Workshop participants were presentations by Chung and Fabbri, and papers by **D. P. Harris** and **L. Chavez** ("A reevaluation and assessment of multivariate geostatistical analysis for the prediction of mineral occurrences") and by **R. B. McCammon**, **J. M. Botbol**, and **R. Sinding-Larsen** ("The anatomy of characteristic analysis"). Workshop participants represented 10 countries, including the host country: Australia, Canada, China, England, Federal Republic of Germany, France, Israel, Norway, Scotland, and United States.

Geochautauqua sessions, with over 100 participants, began Friday morning, October 23, in Camsell Hall, Ottawa, with welcoming and introductory remarks by **F. P. Agterberg** of the Geological Survey of Canada. The opening address was given by **W. W. Hutchison**, Assistant Deputy Minister for Earth Sciences, Department of Energy, Mines and Resources. IAMG Past President **D. F. Merriam**, formerly of Syracuse University and now at Wichita State University, Wichita (USA) was introduced. Merriam was originator of the annual Geochautauqua series of conferences, begun at Syracuse, New York, in 1972. Presentations by internationally known authorities followed, and continued Saturday, on topics in the areas of computer-based systems for resource

analysis; integration of geological, geophysical, and geochemical data; computer simulation of ore forming processes; and multivariate statistical analysis of geoscience map data. [Authors are identified and brief summaries of the presentations are given in Episodes, Vol. 1981, No. 4, (Dec. 1981), p. 22-23]. The 23 papers which were presented will be published in the Journal of the IAMG, Mathematical Geology (Vol. 14, No. 5, Oct. 1982).

A scheduled open meeting of committee members of IGCP Division No. 4 (Quantitative methods and data processing in geological correlation) was held after the buffet dinner Friday evening and chaired by **F. Chayes**, Leader of IGCP Project 163. About 50 geoscientists from 9 countries were present. **F. P. Agterberg**, Leader of IGCP Project 148, was Rapporteur; his report on the five IGCP presentations is contained in IGCP Project 148 Newsletter No. 6 (Dec. 1981). An informal meeting of the IAMG Council followed, with Council members **J. C. Davis**, **R. B. McCammon**, **D. F. Merriam**, and **R. J. Howarth** present, as well as other IAMG members and interested persons.

Sessions on Recent Advances in Geomathematics occupied the Geochautauqua on Saturday and included a paper entitled "Geological similarity determined by q-analysis" by **J. C. Griffiths**, Emeritus Professor of Geology, Pennsylvania State University (USA), first recipient of the IAMG's William Christian Krumbein Medal. The meeting concluded in late afternoon with closing remarks by Agterberg (who is, incidentally, also a Krumbein medalist). The 10th Geochautauqua will be a hard act to follow. Conveners had best get cracking on the 11th (**C. John Mann**, University of Illinois, Urbana, USA) and 12th (**J. C. Davis**, University of Kansas, Lawrence, USA) Geochautauquas.

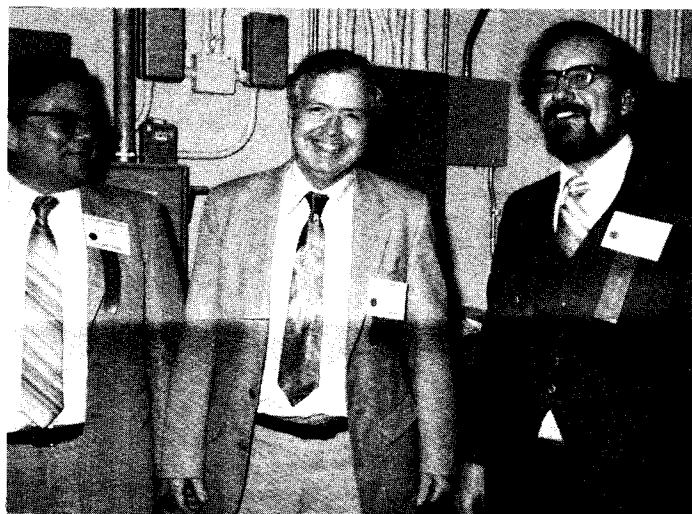
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\*The following information was provided by GSC:

"DID YOU KNOW...According to the Britannica Dictionary, a chautauqua is: 'Any educational association, especially one of a number holding sessions in a circuit of communities.' The word originated from a summer school for Sunday School teachers first held in 1873 at Lake Chautauqua, New York. In Canada, Chautauqua became a household word when, from 1917 to 1935, troupes of entertainers and lecturers travelled across the country. In 1974, Chautauqua was held again at Battleford, Saskatchewan."

## FRENCH GEOSTATISTICIANS IN THE NEWS

**D. Francois-Bongarcon** and **Jean-Paul Marbeau** have moved from Fontainebleau and Orleans, France, to the Denver area of Colorado (USA), where they have established a commercial subsidiary of the School of Mines of Paris. The company, GEOMATH (a name chosen "as a respectful reference to Prof. **Georges Matheron**"), will provide comprehensive consulting services in mining, computing and geological mathematics, especially in the field of geostatistics. GEOMATH is located at 4891 Independence Street, Suite 250, Wheatridge, Colorado 80033. All geomathematicians are welcome to visit at any time!



"MGUS-82" organizers (left to right):  
Doug Lorenz, Dick McCammon, and John Kork

## MGUS CONFERENCE IN GOLDEN

The Mathematical Geologists of the United States (MGUS) "**First Annual Conference on the Management, Analysis, and Display of Geoscience Data**" was held on the campus of the Colorado School of Mines in Golden, Colorado (USA), January 27-29, 1982. MGUS is the US regional organization of the IAMG -- any IAMG member, of whatever nationality, residing in the USA is considered to be a member. Of course, it is not only the regional membership that benefits from meetings such as the very well attended three-day conference organized by MGUS. The list of approximately 300 participants included representatives from Australia, France, Holland, and Saudi Arabia, as well as a large contingent of Canadian geoscientists.

MGUS officers and conference organizers (particularly program chairman **Richard B. McCammon**, outgoing MGUS president, and local events chairmen **John O. Kork** and **Douglas Lorenz**, who also served as session chairmen) are to be congratulated for an informative and enjoyable meeting that progressed "without hitch" from IAMG President **E. H. T. Whitten's** keynote address Wednesday morning, January 27, to closing remarks by McCammon Friday afternoon. Thirty-eight papers were presented at "MGUS-82". In addition to papers on a variety of topics presented in sessions on database systems, geostatistics, computer applications, geomathematics, and computer graphics, a general session included papers with the following titles: Geoscience Data Management--Why, What, and How; Evaluation of Integrated Large Multiple Data Sets; Statistical Techniques Using NURE Airborne Geophysical and NURE Geochemical Data; Interactive Digital Image Processing as a Tool in the Geosciences; and The Role of Digital Cartographic Data in the Geosciences.

The **William Christian Krumbein Medal**, the highest distinction the IAMG bestows, was awarded to **D. F. Merriam** for 1981. The medal was presented to Merriam at the Golden meeting by IAMG President Tim Whitten. A photograph and article appears elsewhere in the News Letter.

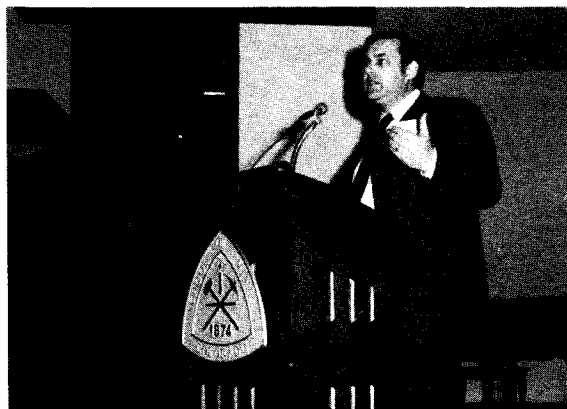
MGUS officers for 1982-84 were installed at the MGUS business meeting Wednesday evening. **Jim Campbell** (Department of Geography, Virginia Polytechnic Institute, Blacksburg, VA) is incoming President. **Doug Lorenz**, formerly of Scientific Software and now with Sohio in Denver, is Vice President. **Tom Jones**, of EXXON, Houston, is Secretary (Tom is editor of Mathematical Geology). **John Schuenemeyer** of the Department of Mathematical Science, University of Delaware, is Treasurer. Among other business, possible sites for "MGUS-83" and plans for the 1982 MGUS Directory of North American Geoscientists Engaged in Mathematics, Statistics and Computer Applications were discussed.

[The Directory is prepared as a service to the profession and affiliation with IAMG or MGUS is not necessary. MGUS makes every effort to include all North American workers in the area and distributes forms by mail and at scientific meetings. A free copy of the Directory is provided to those who submit a completed questionnaire (or the requested information), which is to be accompanied by a photograph. For inclusion, one should send name; academic degrees (subject, school, and year); business address and phone number; list of professional specialities and recent

professional affiliations; and a photo, identified on the back, to Prof. James B. Campbell, Dept. of Geography, Virginia Polytechnic Institute, Blacksburg, VA 24061 USA. Copies of the previous edition of the Directory are still available from Prof. Campbell for \$2.75, which includes postage.]

Invited speaker at the Thursday evening dinner banquet of "MGUS-82" was **R. G. Garrett** of the Geological Survey of Canada, who spoke on "Opportunities for the '80s." The banquet was held in Friedhoff Hall in Green Center, site of the conference, and was preceded by a social hour sponsored by Petroleum Information Corp., Geostat Systems, and IAMG. The Wednesday evening icebreaker, also in Friedhoff Hall, was hosted by Scientific Software Corporation. These activities provided a most convivial atmosphere for meeting fellow geomathematicians, renewing friendships, discussing research, and generally "having a good time," as evidenced by photos appearing in this edition of the News Letter.

Proceedings of the "First Annual Conference on the Management, Analysis, and Display of Geoscience Data" will be published as special issues of the IAMG journals, Mathematical Geology, and Computers & Geosciences and should appear within the year. "MGUS-82" has been judged an excellent success; it should serve in every instance to further the purpose of MGUS: "to promote the application and use of mathematics in the Earth sciences, to encourage development of quantitative methods, to disseminate to its members information relating to mathematical geology, and to foster research, improve technology, and advance the science of mathematical geology...."



R. G. Garrett, Geological Survey of Canada, addresses MGUS banqueters

## YOU SAW IT FIRST IN BANG

**BANG** (Bull. Australian News in Geomathematics), Number 6 (Dec. 1981), announced the first meeting of the Western Australian Geomathematical Society, to be held in Perth in February 1982. The W.A. Geomathematical Society was recently established by **Spiro Carras**, Systems Research Institute of Australia, and IAMG members **Norm Hansen** (Seltrust Mining) and **David Gasmier** (Western Mining). The Society is open to persons interested in geomathematics and computer applications in the mining and petroleum industries. Meetings are to be held every second month. Contact: S. Carras, Systems Research Institute of Australia, 22 St. Georges Terrace, Perth, WA 6000 (Tel. 09-325-7644).

If you didn't see it first in **BANG**, and wish you had, contact **BANG** editors **M. A. Cameron**, **N. I. Fisher**, **B. D. Johnson**, and **R. W. Rutledge** at P.O. Box 136, North Ryde, N.S.W. 2113 AUSTRALIA. **BANG**, a bimonthly newsletter appearing Feb.-Apr.-June-Aug.-Oct., provides topical information on all aspects of geomathematics in Australia.

## LIFE-OF-THE-PARTY CONTEST WINNERS

Faithful News Letter readers will recall the photo of an "eminent, globe-circling geoscientist" in full regalia (lampshade and red silk tie) that appeared in No. 27, and the promise of a set of the Kansas Geological Survey's Series on Spatial Analysis publications to the first and to the "Farthest-away" IAMGers who correctly identified the gentleman. The winner of the former category, who correctly identified Richard B. (Dick) McCammon, is **Goran Granath**, University of Uppsala Institute of Geology, Uppsala, Sweden, who claims his identificatory effort was hampered by the paucity of eminent globe-circling geoscientists who pass by his latitudes, but who in true geomathematical fashion "put 2 and 2 together": red silk tie and trip to China. The "farthest-away" winner is **Ivan Pauncz**, Australian Coal Industry Research Laboratories, North Ryde, N.S.W., Australia. Ivan, now you can pass your dog-eared copies of SSA's 1 and 2 along to a colleague and put a whole pristine set on your shelves.

Because the News Letter staff (of 2) so enjoyed the following letter (the body of which is reproduced in entirety), a third set of publications is being sent to **Brian R. Shaw**, Samson Resources Company, Houston, Texas (USA), who was actually the

first contestant to respond. Eschewing intuition and the easy answer, Brian came to the following conclusion:

"I may not be the first person to recognize the life of the party seen in the rare photograph, but I am fairly certain (as opposed to uncertainty) of his identity.

"After extensive research\* [\*hindered by a complete lack of documentation] in the archives of the Houston branch of the Eigen Memorial Library, I believe that the subject may be the second cousin, thrice removed (but never convicted) of the brother-in-law of our beloved R. G. V. Eigen, R. B. McEigen.

"R. B. McEigen is chiefly remembered for his skills on the Squash court (a lesser family in Austria), although he has been known to "forget his racquet" upon visiting colleagues. The family relationship is best seen in the cut of his tie (off-diagonals, transposed vectors, or sparse patterns) and the designer label of his clothes (Gauss-Jordan or occasionally Jacobian). His main contribution to matrix theory lies in his manner of wearing lampshades. R. G. V. was constantly reminding him not to "invert" the shade. It has also been reported that upon leaving a party the room has begun to reach a certain stage of entropy.

"I also feel that even though there is a superficial resemblance to Dick McCammon, the one, rather faded photo in the archives (which has since faded completely) is conclusive and that another relationship has been established."



Hassan Sherazi, Bill Mallory, and Joe Botbol (left to right) sample local product at Golden, CO, MGUS meeting

11th GEOCHAUTAUQUA  
will be held at  
UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN  
1-2 October 1982

Theme

NEW DEVELOPMENTS IN COAL GEOLOGY  
QUANTIFICATION

This day-and-a-half to two-day informal meeting will explore some new methods and re-examine some old ones in EXPLORATION (sampling, reserve estimation, and incorporation of geological data), PRODUCTION (long term optimization), and SYSTEMS CONCEPTS in coal geology.

Sponsored, in cooperation with the International Association for Mathematical Geology, by: Department of Geology, University of Illinois, Urbana-Champaign; Department of Geology and Coal Extraction & Utilization Research Center, Southern Illinois University, Carbondale; Illinois State Geological Survey, Urbana; Mathematical Geologists of the United States.

Contact: C. John Mann, Department of Geology, University of Illinois, 1301 West Green Street, Urbana, Illinois, 61801 USA.

**NEWS FROM THE USSR**

We are indebted to **Vassil Vuchev**, IAMG Eastern Treasurer, for the first two news items below, excerpted from a recent letter received from IAMG Councillor **Andrew B. Vistelius**. Vistelius is former President of the IAMG, and in 1980 was awarded the William Christian Krumbein medal. [On leave in the United States and serving as Visiting Research Scientist of the Kansas Geological Survey, Vassil Vuchev is Senior Research Scientist with the Geological Institute of the Bulgarian Academy of Sciences, Sofia.]

Now In Print

Volume II of Foundation of Mathematical Geology [published in two volumes; in Russian] by A. B. Vistelius is now available. Foundation of Mathematical Geology is a state-of-the-art presentation of the author's basic concept of mathematical geology as a science that creates and tests geologically meaningful models, using predominantly probabilistic methodologies. This concept is embodied in the general research strategy of the Steklov Mathematical Institute's Laboratory of Mathematical Geology, directed by Vistelius. The Institute, in Leningrad,

is part of the USSR Academy of Sciences. Several monographs on research conducted by methods of mathematical geology are available from the Laboratory, including one on volcanic rocks of northeastern Asia. The Laboratory of Mathematical Geology will report fully on its activities and results during sessions of the 27th International Geological Congress in Moscow, August 1984.

In Memoriam

Professor **Nikolaj Vassoevich**, Corresponding Member of the USSR Academy of Sciences and Chair of Geology and Geochemistry of Caustobiolites, Moscow University, passed away recently at the age of 79, in Moscow. Vassoevich was among the first Soviet geologists to apply and to promote the use of quantitative methodologies. Among his outstanding studies are monographs on Mesozoic flysch sediments of the Caucasus (published in two volumes; in Russian, and translations), on Cenozoic molasses of Middle Asia, and evaluation of organic geochemical data by rank correlation techniques.

USSR NCG

A recent letter to IAMG Secretary General Davis from **R. Volkov**, Scientific Secretary, USSR National Committee of Geologists, compliments the IAMG on its efforts and outlines the main objective of the USSR NCG: "to promote and organize international activities of Soviet geologists in all fields of Earth sciences." Volkov states, "We are sure that the role of mathematics in geology will constantly increase. Accordingly, direct contacts between the Association and National Geological Societies should, from our point of view, become more and more efficient. In this case the USSR National Committee of Geologists (USSR NCG), which has a section named 'Mathematical methods in geology', represents our geologists dealing with mathematics." The NCG is greatly interested in close cooperation with the administration of all IUGS affiliates, scientific associations, and committees. Secretary Volkov's address is: USSR National Committee of Geologists, Pyzhevsky 7, 109017 Moscow Zh-17.

**ADVANCES IN AUTOMATIC PROCESSING AND MATHEMATICAL MODELS IN GEOLOGY**

SCIENCES DE LA TERRE, Série "Informatique Géologique," No. 15, Advances in Automatic Processing and Mathematical Models in Geology (167 pp., 44 figs., price 140 FF) is now available. Edited by **J. J. Royer**

and **P. Leymarie**, this special issue includes papers presented at Symposia S.12 of the XXVI International Geological Congress (Paris, July 1980). Combined with papers from Symposia S.12 chosen to reflect recent developments in mathematical geology, automatic processing of geological data, numerical models in geology, and geological data bases are other papers on the topics which present case histories from different countries. "Part I -- Automatic Processing of Geological Data" contains six papers (French or English; Abstracts in three languages, French, English, German): D.F. Merriam and J. E. Robinson, "Numerical description, enhancement, segmentation and comparison of thematic maps"; J. E. Robinson, "Statistical comparison of quantitative computer maps"; J. J. Naudin and R. Prud'Homme, "L'analyse cartographique: étude numérique des caractéristiques morphologiques des surfaces"; LY Yuwei, YU Jinshen and XIE Xilin, "Cluster prediction of mineral resources"; A. G. Fabbri and T. Kasvand, "Applications at the interface between pattern recognition and geology"; K. V. Mardia, "Some statistical inference problems in kriging II: Theory." "Part II -- Mathematical Models in Geology" contains two papers: J. L. Buisson, M. Deveughele, G. Gros and J. P. LePretre, "Modèles numériques en géologie de l'ingénieur"; and A. Winter, "Identification of naturally fractured reservoirs by optimal control methods." Order from: SCIENCES de la TERRE, FONDATION SCIENTIFIQUE de la GEOLOGIE et de ses APPLICATIONS, 94 Avenue de Lattre de Tassigny, 54000 NANCY (France).

**PETE'S AT IT AGAIN (AND A CALL FOR PAPERS AT XI ICS)**

News Letter No. 27 mentioned the laudable efforts of **Peter Feldhausen** and his Membership Committee to recruit IAMG members from the ranks of oceanographers and civil engineers. Our latest report is that 420 IAMG brochures and letters of invitation to join the IAMG have been sent to U.S. members of the International Association of Sedimentologists (IAS). IAMG will hold three sessions during the **Eleventh International Congress of Sedimentology, August 22-28, 1982**, in Hamilton, Ontario, Canada. Presumably, some of the membership crew will be on hand at that time to proselytize the non-U.S. sedimentologists. Where did you get that mailing list, Pete, or should we ask?



The Call. While we're on the subject, topics of the 1/2-day IAMG sessions at the 1982 International Congress on Sedimentology are "Statistical Facies Analysis," and "Petrography:--The Role of Image Analysis"; the third session is entitled "General" and will include any paper that does not fit the other sessions. The session on image analysis in petrography can accommodate additional papers. Please contact the session chairman: **John C. Davis**, Kansas Geological Survey, 1930 Avenue "A", Lawrence, KS 66044 USA. For information on the General Session, contact **D. F. Merriam**, Department of Geology, Wichita State University, Wichita, KS 67208 USA. Co-chairmen of the session on statistical facies analysis are **James C. Brower**, Department of Geology, Syracuse University, Syracuse, NY 13210 USA and **John Qubitt**, Poroperm Laboratories Ltd., Chester Street, Saltney, Chester CH4 8RD England.

"The Organizing Committee of the Symposium THE MINING PRIBRAM IN THE SCIENCE AND TECHNIQUES has the pleasure to invite you to take part in the international section on

MATHEMATICAL METHODS IN GEOLOGY

to be held under the cosponsorship of the International Association for Mathematical Geology at Pribram, Czechoslovakia,

OCTOBER 10-14, 1983.

"The problems to be discussed: APPLYING MATHEMATICAL METHODS AND COMPUTERS in (1) REGIONAL GEOLOGY (for searching mineral deposits as well as for solving other technical problems), (2) GEOLOGICAL EXPLORATION (mainly computing ore and water reserves, geologico-economic estimation of mineral deposits), (3) EXPLOITATION (optimization of mining conditions and processes including solution of hydrogeological problems). Storage and retrieval of geological data will be submitted to the above mentioned problems.

"Deadlines:

March 31, 1982: Preliminary registration.  
September 30, 1982: Abstracts of papers.  
March 31, 1983: Submission of final papers.  
October 10, 1983: Arrival to Pribram.

"Additional information: SYMPOSIUM HORNICKA PRIBRAM, SCHR. 41, 261 01 PRIBRAM, CZECHOSLOVAKIA. Antonin Rycl, Symposium Secretary. Vaclav Nemeč, Convener of the Section."

## THE OBJECTIVES OF MAINTAINING EARTH-SCIENCE DATABASES

IAMG President E. H. T. Whitten seeks the reactions of IAMG members and other interested persons to a critical and timely issue which became a focus of attention at the Mathematical Geologists of the United States "First Annual Conference on the Management, Analysis, and Display of Geoscience Data" (Golden, Colorado, USA, Jan. 27-29, 1982).

Several of the papers presented at "MGUS-82" described very large governmental and proprietary geoscience databases such as the U.S. Geological Survey database, which will soon contain  $10^{15}$  bits of information. Concern was expressed that barriers are being erected between various countries that may prevent free access of such databases. It was suggested by D. F. Merriam that a study of problems associated with the storage, retrieval, and exchange of geological data might be an appropriate task for the IAMG.

President Whitten noted that such a study would involve IAMG in a "second-order problem," and perhaps IAMG should instead investigate the objectives and cost effectiveness of maintaining various types of databases. The activities of groups such as COGEODATA, a scientific committee of the International Union of Geological Sciences (IUGS), might overlap significantly with a study of the type originally suggested. In President Whitten's opinion, COGEODATA's stated aims ("to assess computer-oriented information technology and to promote its worldwide application to the management and interpretation of geological data...facilitate the collection, compilation and communication of computer-processable geological data...promote general awareness of data and other information resources in geology; and to provide advice and training assistance within the scope of COGEODATA's objectives and activities") ignore the primary issue of the objectives of maintaining databases in the first place. The following paragraphs are taken from a letter being sent by President Whitten to IAMG Councillors, "MGUS-82" participants, COGEODATA, IUGS, and others with a potential interest in this subject. IAMG members are urged to forward their comments to Professor E.H.T. Whitten, Vice President for Academic Affairs, Michigan Technological University, Houghton, Michigan 49931 USA.

"Scientific effectiveness and significance obviously make it imperative that ongoing (and possible new) mathematical-geology

activities be scrutinized at not-too-infrequent intervals. The current financial exigencies in many countries make such internal audit and review particularly timely and important today. The rate of growth of data bases means that the objectives underlying each data base should be reviewed--almost on an emergency basis.

"It would be difficult to find mathematical geologists who do not recognize the essential importance of easily accessed data banks. However, much geological data has but ephemeral interest and/or value. The 114 full chemical analyses which I made for granitoid samples collected in 1952 from the Thor Pluton, Donegal, Ireland, are appropriate in my personal data bank, but the samples reflect the particular bias and objectives which I had in mind in 1952. These analyses would be inappropriate to a general data base accessible to others with miscellaneous disparate objectives. To envision preserving information for all variables that all earth scientists could and might measure is obviously unrealistic. There is an infinite set of variables ranging from, say, the yttrium content of biotites of less than 0.5mm maximum dimension in granitoids, to the orientations of "straight" segments of rivers shown on 1:500,000 maps of Alabama, to the variation of length/breadth ratio of strophomenids in a particular member across two 10,000km<sup>2</sup> areas of two mid-western states, to the Sr-isotope ratios in rocks from an abandoned mining camp in Nevada. By contrast, computer-generated topographic maps demand meticulous data bases of digitized topographic data.

"Personally, I am persuaded that a small working group must enunciate objectives as a matter of urgency. Who should be involved? Clearly, not just those who have built and maintain the existing data bases, any more than decisions about a university library should be made in isolation of the needs and insights of the current and potential users, and of the budgetary interactions of the several components of the university. What part of available resources should be devoted to archiving critical data and useless data? Who is, and who should be, discriminating between the critical and useless data, and on the basis of what criteria and objectives? Manifestly, objectives must be defined before expending much time and effort on considering compatibility and format between different data bases within organizations or countries. In the USA, the National Academy of Sciences, the National Bureau

of Standards, and numerous other bodies are involved; the numerous papers at the MGUS meeting, however, demonstrated clearly that there is currently intense activity in widely differing uncoordinated directions.

IAMG, or possibly, MGUS, perhaps in liaison with COGEODATA, should get involved before it's too late in my personal view. Several members have offered to be involved--before possibly initiating action within IAMG, I would value your thought and guidance. Reactions please!"

#### ANOTHER WINNER

Winner of the IAMG "Win-a-Calculator Raffle" held during the annual Geological Society of America meetings in Cincinnati, Ohio (USA), November 2-5, 1981, was **Heidi Scheirer** of the Department of Geology at Duke University, Durham, North Carolina (USA). The idea of a raffle was conceived as a means of enticing people to visit the "IAMG Booth" at various meetings and conventions and learn about the Association. The raffle is a lottery in which a card with the name of a person is drawn at random from a collection of such cards signed by visitors who stop by the booth during the meeting. Someone (a non-IAMGer) gets a very nice calculator, and the Association gets the names and addresses of potential new members. By the way, if you're an IAMG member and you don't know about the raffle, you haven't been doing your duty. Stop by the booth and volunteer your services for an hour or so -- give Dick McCammon a break!

#### KNOW YOUR IAMG AWARD COMMITTEE MEMBERS

Award committee appointments for 1982, listed below, were recently announced by IAMG President Whitten. In answer to questions about the method of identifying winners of our various prizes and awards each year, President Whitten has this to say: "...as President, I appoint a committee (and designate a chairman) for each prize and award--in some cases, our By-Laws specify that some Councillors be included. In all cases, I insure truly international representation and sometimes a small overlap from year to year to insure continuity. Although, as President, I am an ex officio member of these committees, I have never voted, but have only goaded slow committees. In each case, the chairman has conducted mail ballots--commonly, at least two ballots--the first to narrow down the field and

then a decisive vote. For example, for the 1981 Krumbein Medal, the initial nominees numbered six; this list was reduced to three for the final vote, and all five committee members voted each time. In practice, the chairman is free to institute whatever democratic method seems appropriate." As always, President Whitten is anxious to hear from IAMG members who are willing to serve on committees. (President Whitten's address is given elsewhere in this issue. See **The Objectives...** The News Letter staff regrets that space doesn't always allow us to print full addresses of IAMG officers, Council and committee members, etc. If you need an address, or additional information about any news item, send a note to the IAMG News Letter in care of the Kansas Geological Survey, The University of Kansas, 1930 Avenue "A", Campus West, Lawrence, KS 66044 USA.)

Krumbein Medal Committee: **D. M. Hawkins** (South Africa), Chm., Council Member; **G. B. Baecher** (USA); **R. J. Howarth** (UK), Council Member; **S. Mizutani** (Japan); **V. Nemec** (Czechoslovakia).

President's Prize Committee: **D. F. Merriam** (USA), Chm., Council Member; **D. Glass** (Canada); **T. V. Loudon** (UK); **N. Nishiwaki** (Japan), Council Member; **J. S. Schnellke** (USA).

Committee for Best Paper in Journal of Mathematical Geology: **W. Wadsworth** (USA), Chm.; **H. Ambach** (Canada); **V. J. Fulfaro** (Brazil); **K. V. Mardia** (UK).

Committee for Best Paper in Computers & Geosciences: **G. Hill** (Australia), Chm.; **D. Gill** (Israel); **A. Woronow** (USA); **Li Y.** (China).

#### PRACTICAL GEOSTATISTICS

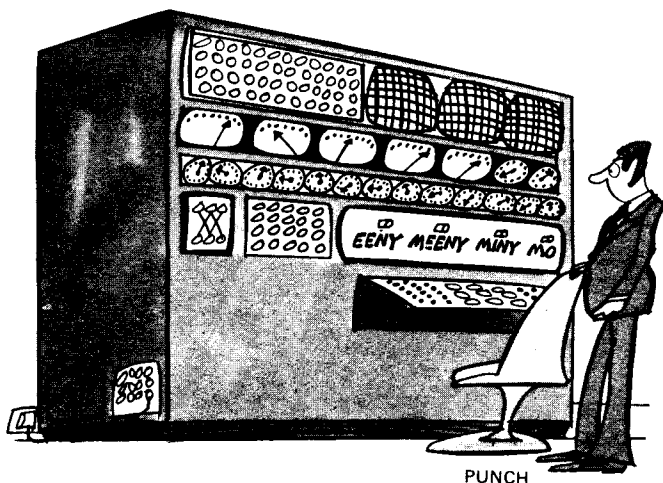
A short course (in English) will be given from September 27 to October 1, 1982, at the Iglesias mine site, Sardinia, Italy. Topics will include the practical use of geostatistical methods in mining operations, through the studies carried out over the past few years at the Sardinian mines of the SAMIM Company (ENI group). The course is organized by Mining Italiana (Rome) and the Centre de Geostatistique de Fontainebleau (France). Engineers from SAMIM will also take part in the discussions. Micro-computers will be at the disposal of short course participants. Registration fee is \$750. For further details, contact: Regine Dumay, Centre de Geostatistique, 35 rue St-Honore, 77305 FONTAINEBLEAU, France.

## NEW BOOK

Predictive Geology, edited by **G. DeMarsily** and **D. F. Merriam**, has been published by Pergamon Press Ltd., Headington Hill Hall, Oxford, OX3 0BW, England. The book contains papers presented in sessions sponsored by the IAMG at the XXVI Geological Congress in Paris. Most of the articles cover the topic of nuclear waste disposal and the prediction of long-term behavior of waste repositories. Other papers are concerned with exploration for mineral and energy resources. The book contains 222 pages; price US \$35.00 or £17.50.

## COMRA'82 CANCELLED

Computer Methods in Resource Assessment--COMRA'82, scheduled for London, March 31-April 2, 1982, has been cancelled because of inadequate enrollment, according to organizers **M. F. Horder** and **R. J. Howarth**. The meeting was to have been cosponsored by the Geological Information Group of the Geological Society of London; the Royal School of Mines, Imperial College; COGEO-DATA; and the IAMG.



## NEW DENVER OFFICE

**Geoffrey Mathews** has been appointed head of the new Denver, Colorado (USA) offices of TERRADATA, a San Francisco-based geomathematical consulting firm and supplier of computer programs. The company concentrates on petroleum and mineral exploration, and markets large software packages for petrophysics and mapping. Geof was formerly head of the National Uranium Resource Estimation (NURE) program for Bendix Corporation in Grand Junction, Colorado. TERRADATA's offices are at 7555 West 10th Avenue, Lakewood, Colorado; Geof

extends a warm welcome to any geomathematicians passing through the Denver area.

## COMMITTEE ON GEOSTATISTICS

As the field of mathematical geology evolves, it is important that the activities of IAMG reflect both ongoing work and also the cutting edge of the science. It is apparent that geostatistics (in the sense used by Matheron and co-workers in France) is a domain of very important pure and applied scientific activity throughout the world. To coordinate IAMG endeavors in this area, President Whitten has initiated the IAMG Committee on Geostatistics. The new committee will serve for two years, until 1984; a new 4-year committee will then be installed at the General Assembly in Moscow. The initial charge to this new committee is: (1) To stimulate collaborative scientific exchange throughout the world between geostatisticians working in academe and industry; (2) To recruit to IAMG membership all individuals involved in geostatistics; (3) To initiate regular workshops on geostatistics in conjunction with meetings cosponsored by the IAMG and the International Statistical Institute, the World Geostatistics Congress, and other groups; (4) To prepare and disseminate information of topical interest to the IAMG membership. Dissemination should be through the Association's three publications (News Letter, Mathematical Geology, and Computers & Geosciences), but if necessary, additional specialized newsletters may be established.

The Chairman of the Committee on Geostatistics is **Andre Journel**; President Whitten has appointed six other members, from Australia, Canada, England, France, South Africa, and the USA. Additional members may be appointed to the committee to insure wide geographic and disciplinary representation.

To emphasize IAMG commitment to the area of geostatistics, President Whitten has nominated Chairman Journel to the U.S. National Committee for the IAMG, a committee of the U.S. National Academy of Sciences. Through this and other actions, the IAMG intends to vigorously demonstrate that the Association represents the interests of all geomathematicians, regardless of their particular specialty or "school" to which they adhere.

It is apparent that in recent years a "schism" has developed between geostatisticians and other mathematical geologists. In part this has occurred because

of linguistic and nationalistic differences, with geostatistics being identified as "the French school" while most English-speaking geomathematicians follow more classical statistical traditions. Typically, geostatisticians have been educated as engineers, reflecting the early emphasis on mine evaluation problems that inspired **Georges Matheron** to develop the field. Other mathematical geologists usually have backgrounds in geology or statistics, thus creating a second source of distinction between the two groups. A third factor involves publications; the seminal contributions of the geostatistical fraternity appeared in private journals that did not enjoy wide circulation. As a consequence, the field developed to a high level of sophistication in relative isolation from other areas of geomathematics. The recent appearance of several English-language texts on geomathematics has greatly alleviated this latter problem. These include books such as **Michel David's Geostatistical Ore Reserve Estimation** (Elsevier, 1977), **A. G. Journel** and **Ch. J. Huijbregt's Mining Geostatistics** (Academic

Press, 1978), and the excellent little tome by **Isobel Clark, Practical Geostatistics** (Applied Science Publishers, 1979).

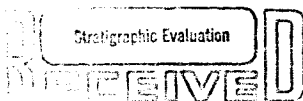
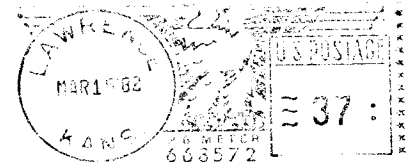
Fortunately, the distinction between geostatistics and other areas of mathematical geology is already beginning to blur. A "second generation" of geostatisticians is now practicing and teaching throughout the world. Applications of geostatistical techniques are now being made in many areas other than mining. Perhaps most importantly, a few statisticians of "classical" background are now working in geostatistics, treating it as a new expansion of more traditional areas of research such as time series analysis. This will lead to the eventual incorporation of some of the novel concepts of geostatistics, such as the regionalized variable, into the main body of statistical theory. These developments will lead to the enrichment of both geostatistics and other branches of mathematical geology. It is the intent of the IAMG to contribute to the greatest extent possible in this development.

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