

I.A.M.G. NEWS LETTER SEASON'S GREETINGS!



Our Christmas greetings come from St. Barbara, patron saint of geologists. St. Barbara was a 3rd century maiden of great beauty whose suspicious father locked her in a tower to discourage suitors. When her pagan father learned that St. Barbara had become a Christian he killed her, whereupon he was struck by lightning and reduced to ashes. Alas, the legend of St. Barbara first appeared in the 7th century, and it is doubtful that the patron saint of our profession really ever existed.

Print of a woodcut by Albrecht Durer, courtesy of Ole Bruun Christiansen and the Danish Geological Survey.

The Sixth Year of I. A. M. G.

The I. A. M. G. is now in its sixth year and it is possible to discern main areas of interest among our members. Pride of place, as expected, is held by the users of standard computer programs. Many of our members are concerned with the development of new computer programs, mostly of a geostatistical nature.

Utilization of statistical methods in various spheres of geology is clearly what interests most of our members, but there is an active minority engaged in non-statistical aspects of geomathematics such as applications of mechanics. A small, elite group works with innovations in geostatistical theory. Through this group, we have our best line of contact with professional statisticians; hopefully, more statisticians will be drawn into the activities of the I. A. M. G. and become interested in research into geological phenomena.

It is no longer necessary to defend our frontiers against the "non-believers" and little serious geological work is planned these days without the inclusion of some aspect of quantitative analysis. This development has been particularly spectacular in Europe over the last two years, a region previously marked by absolute apathy towards quantification of the Earth sciences.

As our Association becomes better known, we are being asked to advise on many practical problems. For example, our advice has been solicited about the Skopje earthquakes, the subsidence of Venice (Save Venice Project), and the International Geological Correlation Program (for which we have formed an IGCP committee).

In an effort to bring mathematical geology to the undergraduate, a series of introductory texts is being prepared. The first of these, "Geological Factor Analysis" by Joreskog, Klován, and Reymont, should appear near the end of 1974. Some 15 topics in mathematical geology will be rigorously treated in these books at an easily understandable level.

The Association is increasing slowly but surely. Let us hope that this tendency will be maintained.

Richard A. Reymont
President

1974 Corporate and Academic Members: The following organizations are generously supporting the activities of the International Association for Mathematical Geology by their contributions in the form of Corporate or Academic Memberships. This extra revenue is a valuable supplement to the coffers of our Association and will enable us to widen our service to the profession. Our thanks to these 1974 members!

- ❖ Cities Service Oil Company, Tulsa, Oklahoma 74150
- ❖ EXXON Company, U. S. A., Houston, Texas 77001
- ❖ Gas Council (Exploration) Ltd., London, England
- ❖ Geotecneco, Pesaro, Italy
- ❖ Kansas Geological Survey, Lawrence, Kansas 66044
- ❖ Syracuse University, Syracuse, New York 13210

I. A. M. G. Meetings

Special I. A. M. G. session at the 9th International Congress of Sedimentology: The I. A. M. G. will co-host an invited symposium on "Quantitative Techniques for the Analysis of Sediments" during the International Congress of Sedimentology in Nice, France. Final date for the session is not yet established but will be during the period July 6-13, 1975. Persons interested in the session should contact Prof. D. F. Merriam, Secretary-General, Dept. Geology, Syracuse University, Syracuse, New York 13210 U.S.A.

Special I. A. M. G. session at the 8th International Congress of Carboniferous Stratigraphy and Geology: The I. A. M. G. will sponsor an invited session on "Quantitative Interpretation of Cyclic Sediments" during the Carboniferous Congress in Moscow. Final dates for the Congress have not been set, but will be during August and September, 1975. The I. A. M. G. session will be held during the Congress. For additional details, contact Prof. D. F. Merriam, Secretary-General, Dept. Geology, Syracuse University, Syracuse, New York 13210 U.S.A.

Forthcoming Meetings

12th Annual International Symposium on Computer Applications in the Mineral Industry, April 8-12, 1974, Colorado School of Mines, Golden, Colorado 80401 U.S.A. Technical sessions on exploration, geostatistics, ore reserve assessment, financial evaluation, process modeling, and a number of sessions on mine planning and design. Write to Dr. Donald W. Gentry, Mining Dept., Colorado School of Mines for details.

Southeastern Section, Geological Society of America, pre-meeting short course "Statistical Analysis of Geological Data" on the campus of the University of Georgia, April 2-3, 1974. Enrollment is limited to 15 people. Fee is \$20. For further information, write Dr. George Koch, Dept. Geology, University of Georgia, Athens, Georgia 30601 U.S.A.

Special session on "Computer Techniques in Petroleum Exploration" at the 59th Annual Meeting of the American Association of Petroleum Geologists, to be held in San Antonio, Texas, on April 1-3, 1974. For information, write Dr. Mark McElroy, Exxon Company, U.S.A., P.O. Box 61812, New Orleans, Louisiana 70161 U.S.A.

Another Reminder: If you have not yet paid your 1974 dues of \$15.00 U.S., they are now overdue! Send your dues, with the yellow membership card completed, directly to the Western Treasurer. DO NOT PAY invoices issued by: (1) Plenum Press, (2) Fleetbooks S.A., or (3) Johan Philip Lenz/Feffer and Simons (Nederland) NV, or any other bookdealer or agent purporting to offer Journal subscriptions at members' rates.

Publications Needed: A fire in Rio de Janeiro last May destroyed the major geological library in Brasil. Loss of reference material has handicapped work in geomathematics by one of our Association's largest and most active national groups. Please help the Brazilians rebuild their geomathematical library by sending reprints or photocopies of any papers on computer applications, geomathematics, and geostatistics to: Dr. John M.A. Forman, Geo Mineracao S.A., Av. Pasteur 110, Rio de Janeiro, Brasil. Donors in the U.S.A. can send material to: Dr. Al Miesch, Branch of Regional Geochemistry, U.S. Geological Survey, Denver Federal Center, Denver, Colorado 80225, who will forward it via APO to the U.S.G.S. office in Rio de Janeiro.

Position Available: Qualified persons are invited to apply for a position as Research Associate in the Geologic Research Section of the Kansas Geological Survey. Candidates must have the doctorate degree in geology and a background that includes mathematics, statistics, and computer applications. The successful candidate will be expected to conduct original, independent research in geomathematics. Current research in the Section is concerned with probabilistic exploration techniques, automated sedimentary petrography, remote sensing and pattern recognition, and studies of areal variability. The Survey is an Equal Opportunity Employer. Applicants should write to Dr. John C. Davis, Kansas Geological Survey, 1930 Avenue A, Campus West, The University of Kansas, Lawrence, Kansas 66044 U.S.A.

Sabbatical Position Available: The Consiglio Nazionale delle Ricerche needs a geostatistician willing to spend his Sabbatical at the Laboratory for the Study of the Dynamics of Large Masses in Venice. Although the C.N.R. cannot provide financial remuneration, it will provide ample work space in the historical Palazzo Papadopoli, access to land and sea going facilities of C.N.R., and computing time. The geostatistician will direct the work of six young geologists and a statistician working in the SAVE VENICE PROJECT. This group will assist the geostatistician obtain data for analysis and will learn the basic techniques used by him in his research on the Venice problem. Research topics include:

- (1) Estimation of where subsidence is likely to take place and its cause;
- (2) Whether a particular case of local subsidence is of mainly natural origin or has been brought about by man;
- (3) Consideration of geotechnical problems caused by the injection method of arresting local subsidence; and
- (4) Model building and quantitative analysis related to the influence of natural factors on subsidence.

For further details, please contact Dr. R. Frassetto, Director, Laboratorio per lo

Studio della Dinamica delle Grandi Masse, Ca'
Papadopoli 1364 San Polo, Venice 30125, Italy.

Notice to New Members: Long-standing members are used to our strange publication schedule, but those new to the fold may become prematurely impatient for the Journal. Volume 6, number 1 will be issued on April 1st.

Computer Program Available: "FORTRAN IV program for spline-surface interpolation and contour map production" by M. E. V. Koelling and E. H. T. Whitten has been published as Geocom Program 9. The program computes surfaces by bicubic spline interpolation between nodes of a regular grid. Further information may be obtained from Geosystems, P.O. Box 1024, Westminster, London SW1P 2JL, England.

Course Survey: The I. A. M. G. has begun a survey of geomathematics courses offered in universities in North America. Questionnaires have been mailed to chairmen of the 108 departments in the U.S. and Canada that offer the doctorate in geology. We hope to determine what courses are being taught, at what level, and to how many students. Members in academia are urged to help in the survey by insuring that questionnaires mailed to their departments are answered and returned!

IUGS Newsletter: Members of the I. A. M. G. may subscribe to the IUGS Geological Newsletter for Dfl. 14.00 or its equivalent in U.S. dollars, a reduction from the regular price of Dfl. 20.00. The Newsletter appears quarterly and publishes announcements and articles on meetings, programs, and the like. Most of the Newsletter is in English. Orders and payments should be sent to Dr. S. van der Heide, Secretary General, IUGS, P.O. Box 379, Haarlem, Netherlands.

What the Petroleum Industry Needs from Mathematical Geology.

The optimum utilization of mathematical geological concepts and techniques in the petroleum and mining industry has not yet been realized. There is a wide gulf between the technology of mathematical geology as developed in the last ten years and its application within the operational structure of large, intermediate and small natural resource companies. Why? The reasons, of course, are complex, but I think the primary causes can be isolated:

1. A general apathy by management against a "computer-oriented" approach to geologic exploration exists. This attitude is justifiably arrived at by a history of bad experiences stemming from the overselling of the "systems approach" during the sixties.

2. There is an almost complete lack of trained mathematical geologists within industrial organizations.

3. There is a paucity of geologically-oriented data banks within the industry... the very backbone of mathematical geological applications. Can you imagine the state of digital seismology if it were not for the tremendous amount of data to play back (or with)? The tremendous growth of exploration geophysics during the last ten years can be traced in part to the absolute necessity to reduce a massive data base (in the form of seismic records) to meaningful information.

Of course, these three factors all interrelate in practice. For example, the lack of geologic data banks may be traced to poor systems management of the industry-developed systems of the sixties, with the resultant waste of resources. Partly as a result of the energy crisis, we are now beginning to see initiation of practical data acquisition in the geological/exploration sector. Two examples are the AAPG-sponsored geothermal file just completed, and the presently organized AAPG oil and gas field data file.

However, in my estimation, the primary constraint to the orderly growth of mathematical geological applications in industry is the almost complete lack of trained specialists and generalists in mathematical geology. Until all major geological departments of our universities offer a balanced curriculum which includes training in quantitative techniques, the current situation will not change, regardless of improvements in 1 and 3 above.

Therefore, in summary, what the industry needs in terms of mathematical geology is well trained people at the Ph.D. level, who will be the specialists and innovators. At the Masters level we need petroleum-oriented geologists trained to utilize computer-oriented techniques along with other tools of the trade, such as petrology, structural geology, sedimentology, and stratigraphy.

Dr. M. K. Horn
Cities Service Oil Co.
Tulsa, Oklahoma, U.S.A.

"Boletín de Geoestadística" is published by the Centro de Geoestadística y Evaluación de Yacimientos of the Department of Mines at the University of Chile. The bulletin consists of five issues per year, and is devoted to articles on the theory of regionalized variables, applications of geostatistics to economic geology, discussions on computational or algorithmic problems, case studies, and reviews and comments. Emphasis is on work done in Latin America. Subscriptions outside Chile are \$7.00 US, or E°600. within Chile, Write to Señor Director, Boletín de Geoestadística, Departamento de Minas, Casilla 2777, Santiago, Chile.

Partial List of 1973 I.A.M.G. Members
(Continued from last issue)

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I.A.M.G.
KANSAS GEOLOGICAL SURVEY
1930 Avenue "A" Campus West
University of Kansas
Lawrence, Kansas 66045

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