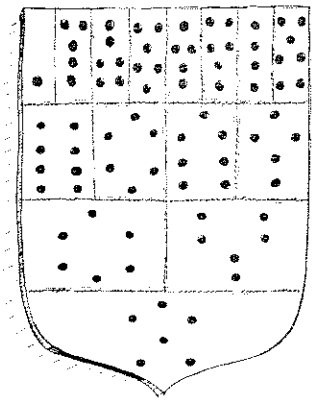
I.A.M.G. NEWS LETTER



It's THAT Time Again!

1975 dues notices have recently been mailed to members. To save postage, the new dues notices are a two-part, self-mailing form. Please don't throw it away! Cut off the top membership card, check that the affixed mailing label is correct (note any changes in the spaces provided on the reverse side), and return the card along with your check or money order for $15.00 U.S. You may then throw the remaining part of the card away. A receipt will be sent promptly to acknowledge your payment. The usual unctuous solicitation from the Western Treasurer has been drastically shortened to fit on the new form, but hopefully this will not deter you from promptly sending in your 1975 dues. Remember, volume 7 will contain six issues rather than four, all at no increase in dues! And, we must receive your dues and membership card before January 30, 1975 to insure receipt of all issues.

The Progress of Probability in Geology

An examination of the recent literature of the biological, physical, and social sciences, engineering, and technology shows that probability theory (in particular, the theory of stochastic, or random, processes) is exerting a profound influence on theoretical developments and the formulation of mathematical models in many applied fields. In turn, concrete problems posed in applied fields are motivating a considerable amount of research in probability theory.

As is well-known, progress in any science is highly dependent upon developments in methodology; and there are many who believe that a highly developed science is characterized to a great extent by an extensive use of mathematics to formulate theories and to develop abstract models of the natural phenomena with which the particular scientific discipline is concerned. Of all the physical sciences, physics stands out as one which utilizes mathematics to analyze data and to formulate rigorous theories of physical phenomena. And, as is well-known, several branches of classical and modern mathematics trace their origins to problems in physics.

Within recent years mathematics has been playing a greater role in geology; and, in particular, probabilistic methods are being used by an increasing number of geophysical scientists. The systematic use of probabilistic methods in geology is a relatively recent development; however, the geophysical literature of the early 1900's contains several papers which utilize probabilistic models. (We refer to H.O.A. Wold (Editor), Bibliography on Time Series and Stochastic Processes, The M.I.T. Press, Cambridge, Mass., 1965. In the 1940's and 1950's studies using probabilistic methods increased, and in this period we find the papers of Kolmogorov (in the Soviet Union) and Litwiniszyn (in Poland). The 1960's ushered in a new era; and during this period we have the interesting papers of Dacey and Krumbein (in the U.S.A.), Schwarzacher (in the U.K.), Vistelius (in the Soviet Union), as well as those of other mathematical geologists.

From an examination of the literature dealing with stochastic processes in geology, I feel that the preliminary groundwork has been laid, and that the probabilistic formulation of many problems in geology has been carried out correctly. At this stage communications between mathematical geologists and probabilists should increase and some of the more modern and powerful techniques from the theory of Markov processes, as well as other stochastic processes, should be utilized to formulate and study problems arising in geology. On the other hand, we must always be on the lookout for problems in geology which might lead to new problems in the theory of stochastic processes. That is, there must be geological processes which require a probabilistic formulation, but do not fit into (nor should they be forced into) the framework of some of the well-known classes of stochastic processes. In this way mathematical geology will become sophisticated, and problems in geology will lead to new developments in the theory of stochastic processes.

A.T. Bharucha-Reid
Vice President

Changes at the Western Treasurer's Office

This is the last issue of the News Letter to have the name of Kathy Remark as assistant editor. Mrs. Remark will soon move to Richland, Washington, where her husband has joined the staff of Battelle Institute. She has been responsible for the comparative smoothness of the Association's dues and subscription activities in recent years, and will be sorely missed by the Association and its members!

NEWSLETTER EDITOR: JOHN C. DAVIS
ASSISTANT EDITOR: KATHY REMARK

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Publisher's Policy on Missing Issues

Plenum Publishing Corp. has announced that it will no longer honor claims for non-receipt of issues past six months after the date of issue. The Association has pointed out in strong terms that the publisher's printing "schedule" makes it rather difficult for members to know within six months whether or not an issue is missing! However, if you have not received all recent issues, contact the Western Treasurer immediately and a claim will be filed in your behalf. At press time, the last issue of Mathematical Geology is Vol. 6, no. 2.

Co-chairman Named

Dr. Geoffrey W. Hill has been named co-chairman with Prof. J.C. Davis of Session 2, "Quantitative Methods for Future Exploration Strategy" at the 3rd I.A.M.G. General Assembly. Dr. Hill is Chief of the Division of Mathematical Statistics of C.S.I.R.O., the Australian national research organization. Persons wishing to contribute to the session may write to Dr. Hill at C.S.I.R.O. Division of Mathematical Statistics, Private Bag No. 1, Glen Osmond, South Australia, 5068, or contact Prof. Davis. The I.A.M.G. General Assembly will be held in conjunction with the International Geologic Congress at Sydney, Australia, August 16-25, 1976.

Distribution of Computer Programs Discontinued

The Kansas Geological Survey has announced that it has discontinued distribution of the Computer Contribution programs in magnetic tape and punched-card form, effective July 1, 1974. Maintenance of these programs and adaptation to various computer installations has become exceedingly difficult and time-consuming. The Computer Contribution publications, which contain listings of the programs, are still available and will continue to be distributed until stocks are exhausted.

Publications of Interest

"The correspondance analysis method and a FORTRAN IV program" by M. David and Y. Beauchemin has been published as Geocom Program 10. This factor analysis technique exploits the duality existing between R- and Q-mode analysis, as well as using weighting procedures to reduce scaling problems. Further information may be obtained from Geosystems, P.O. Box 1024, Westminster, London SW1P 2JL, England.

The "Proceedings of the Symposium on Interscience Applications in Mineral Science and Technology " held in Kosice, Czechoslovakia from June 5-9, 1972 has been published as an exclusive number of the MINERALIA SLOVACA. Articles in this volume cover the fields of stereology, mineral data handling and processing, modelling, image analysis, microanalytics, and the history of mineral science. This volume costs approximately $9.00 U.S. and can be ordered from: Slovart Bratislava, Leningradska 11, 896 2 Bratislava, Czechoslovakia.

Forthcoming Meetings

A one-week intensive course entitled "Economic Evaluation and Investment Decision Methods" (December 16-20, 1974) will be given at the Colorado School of Mines. The course covers the use of modern decision methods that may be used to evaluate the economic potential of both engineering projects and general investment opportunities. For information, contact: Dr. Frank Stermole, Colorado School of Mines, Golden, Colorado 80401.

13th International Symposium on the Application of Computers and Operations Research Techniques in the Mineral Industries (APCOM) will be held in October 1975 at the Technische Universitat Clausthal, West Germany. Technical sessions will cover exploration, geostatistics, reserve assessment, mine planning, mine system design, investment decision making, process modelling, and market and financial analysis. For information contact: Prof. Dr. F.L. Wilke, Technische Universitat Clausthal, D 3392 Clausthal-Zellerfeld, Erzstrasse 20, West Germany.

An International Conference on Automation in Cartography will be held at Washington, D.C. on December 9-12, 1974. The conference is co-sponsored by the American Congress on Surveying and Mapping and the U.S. Geological Survey. The meeting will include discussions of hardware and software, workshops, and tours of cartographic laboratories in the Washington area. For information, write: Dean J. Edson, ACSM Conference on Automation, 7106 Thrasher Road, McLean, Virginia 22101.

"Computers and Mineral Resources," the 3rd Chautauqua, will be held on the campus of Syracuse University October 26, 1974. The meeting is co-sponsored by the I.A.M.G. Seven speakers will discuss aspects of the use of computers for exploration and exploitation of mineral deposits. For information, contact: Dr. D.F. Merriam, Dept. of Geology, Syracuse University, Syracuse, New York 13210.

"AAPG Short Course on Computer Applications" will be given at the Northeastern Section meeting of the G.S.A. in Syracuse, New York, March 3-5, 1975. The course will include a "hands-on" workshop, emphasizing the practical application of computers and statistical methods to geologic problems. Instructors for the course are J.C. Davis, J.H. Doveton, and R.J. Sampson, all of the Kansas Geological Survey. The course is co-sponsored by the American Association of Petroleum Geologists and the Geological Society of America. For information about registration, fees, and accomodations, contact: Dr. D.F. Merriam, Dept. of Geology, Syracuse University, Syracuse, New York 13210. Inquiries about course contents can be directed to Dr. Davis.

U.K. Working Group on Mathematical Geology

A working group on Mathematical Geology has been formed in Great Britain by the Geological Information Group of the Geological Society of London. John Cubitt (I.G.S., London) is Chairman, Steve Henley (I.G.S., Edinburgh) is Secretary, and Peter Harvey (Nottingham), Richard Howarth (Imperial College, London), John Odell (Cambridge), Graham Lea (Geosystems, London), and William Oldroyd (Geosystems, London) are members of the organizing committee.

Objectives of the group are to: 1) organize and encourage lectures, meetings, seminars, and summer schools in mathematical geology, and to collect information on university courses in mathematical geology; 2) raise the status and acceptance of mathematical geology, to increase awareness of this field in relevant institutions, and to foster publication of reviews and information about advances in mathematical geology; 3) survey current research activity in the British Isles, identifying areas of mathematical geology for intensive research effort, and to initiate and stimulate research and publication of results; and 4) form liaisons with other institutions of similar outlook and aims, such as the I.A.M.G., Royal Statistical Society, and the Quantitative Methods Group of the Institute of British Geographers.

An open meeting will be cosponsored by the I.A.M.G. and the Geological Society of London. This meeting will be held at the Geological Society of London in Burlington House, Picadilly, on December 11th. The theme will be "An introduction to the analysis of geological data" and the emphasis of the meeting will be on potential contributions of mathematical geology to analysis of geological data. The meeting begins at 2 o'clock with an introduction by Prof. G. Craig, followed by talks by Dr. R. Howarth, Dr. M. Clarke, Dr. R. Till, and a summary by Prof. D. Merriam, Secretary-General of the I.A.M.G.

Members of both the I.A.M.G. and the Geological Society of London are invited to attend this meeting, as well as other interested persons from other organizations. Anyone interested in joining the working group on mathematical geology should contact either the Chairman or Secretary. It should be emphasized that this working group is not restricted to members of either of the sponsoring groups; indeed, it is hoped that the group will attract scientists from many disciplines.

Hungarian Section of the I.A.M.G.

Formed in early 1970, the Hungarian Section of the I.A.M.G. has been quite active in the past few years. In 1974 eleven papers were presented and discussed at a conference entitled "Mathematical and Computer Methods in Exploration," organized under joint auspices with the South-Transdanubian Section of the Hungarian Geological Society. Persons interested in affiliating with the Hungarian Section should contact: I. Dienes, Magyarhoni Foldtani Tarsulat, Levelcim, 1061 Budapest, Anker Koz 1-3, Hungary.

Brasilian Regional Organization

The Comissao Technica de Geomatematica has been approved by the Council of Directors of the Brasilian Geological Society as the Brasilian Regional Organization of the I.A.M.G. The Commission was established on March 16, 1974, and will hold its first executive session at the 28th Brasilian Geological Congress in Porto Alegre, 29 Oct.-5 Nov. 1974. Prof. Hernani A.F. Chaves is Acting President and Dr. Gilberto Amaral is Acting Technical Secretary. C.T.G. currently has 33 members, making it one of our largest Regional Organizations. Persons interested in affiliating with the Brasilian C.T.G. should contact: Prof. Hernani A.F. Chaves, Petrobras-Cenpes-Depro, Quadra 7 - Ilha do Fundao, Rio de Janeiro, G.B., Brasil 20.000.

About People

Dr. Geof Hill of the Division of Mathematical Statistics of C.S.I.R.O. will spend the spring semester on leave in the Department of Geology, Stanford University. He will spend the fall semester at the Institute for Mathematical Morphology in Fontainebleau, France.

Dr. D.J. Payne, Visiting Research Scientist with the Kansas Geological Survey, has returned to his permanent post as Lecturer in Mathematics at Nottingham University, England. During his stay at Kansas, Dr. Payne worked on the statistics of two-dimensional "time" series applied to geologic and geographic variables.

Ing. Ricardo A. Olea of Empresa Nacional del Petroleo, Chile, has been appointed Visiting Research Scientist with the Kansas Geological Survey for 1974-75. Ing. Olea has been active in the application of regionalized variable theory to petroleum exploration. While at Kansas, he will work on problems of automated interpretation of well logs.

Dr. Eric Dahlberg, Amoco Canada, has been appointed Visiting Professor in the Department of Geology at Syracuse University for the fall semester of 1974. Dr. Walther Schwarzacher, Queen's University, Belfast, will be Visiting Professor in the same department for the spring semester of 1975. Both visitors will teach, among other subjects, courses in geomathematics.

Dr. John C. Tipper has been appointed Research Associate in the Geologic Research Section of the Kansas Geological Survey. Dr. Tipper is a graduate of the University of Edinburgh and a post-doctoral fellow at the University of Bonn. At Kansas, he will work on geomathematical applications in stratigraphy and paleontology, and on remote sensing.

Our logo is "Shield of Geomantia," from Utriusque cosmi historia by Robert Fludd (1619). Geomancy, also known as the Art of Little Dots, was performed by throwing a handful of dirt on the ground, or by marking dots at random on a sheet of paper, and foretelling the future from their positions. The concept of divining from earth and the position of dots on a map suggests geomancy may be the true precursor of some aspects of mathematical geology.

New I.A.M.G. Journal

In cooperation with Pergamon Press, the Association will publish Computers and Geology. This new journal is to serve as a public medium for exchange of ideas between the geological and computer sciences. Computers and Geology will bring to its readers computer programs, algorithms, computer-aided instructional material, programming guides and applications, and other topics of interest to Earth scientists working with computers. The term Earth science is used in its broadest sense, encompassing geology, geophysics, geochemistry, oceanography, hydrology, and geography. Papers will be concerned with the computational aspects of all subjects ranging from file maintenance and data processing to the latest problem-solving techniques.

An international editorial board with diverse interests and background will insure that the contents of Computers and Geology will be of the highest quality. The publication is intended to serve workers in academia, industry, and government. Students, teachers, researchers, and practitioners should benefit from the ideas in the journal.

In addition to longer papers containing programs, algorithms, or discussion of techniques, short notes will contain timely material, book reviews of pertinent publications, and a forum for exchange of ideas. Papers on comparative results and computer graphics will be especially encouraged. Contributors should write to the Editor, Prof. D. F. Merriam, Dept. of Geology, Syracuse University, Syracuse, New York 13210 U.S.A.

Computers and Geology will appear quarterly; the first volume will contain approximately 400 pages. The list price for the new journal is $60.00 U.S. but a special 50% discount is available only to members of the I.A.M.G. when they subscribe through the Association. Member's orders should be sent directly to the Western Treasurer, enclosing a check or money order for $30.00 U.S. Organizations and individuals not members of the I.A.M.G. should write directly to Pergamon Press, Fairview Park, Elmsford, New York 10523 U.S.A.

New Members of the I.A.M.G.

L. Lindquist, Geological Survey of Sweden, Stockholm
R. Sinding-Larsen, Geological Survey of Norway, Trondheim
C. Huijbregts, Centre de Morphologie de Mathematique, France
P. Delfiner, Centre de Morphologie de Mathematique, France
D.L.B. Jupp, Macquarie University, Australia
I.A. Kafescioglu, American Univ. of Beirut, Lebanon
M. Poissonnet, Commissariat a l'Energie Atomique, France
J.E. Hazel, U.S. National Museum, Washington
R. Barakat, Harvard Univ., Massachusetts
N.H. Gray, Univ. Connecticut
R.W. Sherman, Atlantic Richfield Co., California
L. Schoonover, Atlas Dresser, Texas
G.W. Hill, C.S.I.R.O., Australia
M.R. Caetano, Rio Claro Univ., Brasil

Help!

Dr. Ismail A. Kafescioglu of the Geology Department, American University of Beirut, Beirut, Lebanon, urgently requests assistance in running an unweighted pair group Q-mode cluster analysis, using Jaccard coefficients, on a fossil life assemblage. Dr. Kafescioglu's research was interrupted at a critical point by student disruptions at the A.U.B. campus. I.A.M.G. members having access to a suitable computer program are asked to write directly to Dr. Kafescioglu.

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