

# THE ASSOCIATION OF EXPLORATION GEOCHEMISTS



## President:

R. W. Boyle  
Geological Survey of Canada  
601 Booth Street  
Ottawa, Ontario K1A 0E8  
Canada

## NEWSLETTER NO. 17

MARCH 1976

## Vice Presidents:

C. F. Gleeson  
Lakeshore Drive  
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R. F. Horsnail  
AMAX Exploration, Inc.  
4704 Harlan Street  
Denver, Colorado 80212  
U.S.A.

This first newsletter of 1976 finds your Association active, with a total of 500 members world-wide, a vigorous and expanding journal recognized internationally, another International Geochemical Exploration Symposium in the making, and several matters of business that require members immediate attention: eg, dues for 1976, election of councillors, orders for Vancouver Symposium volumes, and arrangements for symposia to be held shortly.

## Secretary:

E. V. Post  
Skyline Labs, Inc.  
12090 West 50th Place  
Wheat Ridge, Colorado 80033  
U.S.A.

Your secretary apologizes for the delay in getting this newsletter to you. However, this is a NEWSletter, and it depends upon news not only from Council and officers of the Association, but from all members. You are urged to forward to the Secretary news of geochemical events in your part of the world that you feel will be of interest to your professional colleagues -- local meetings, workshops, symposia, etc. and the source of publications resulting therefrom -- academic programs either recently held or being planned -- field excursions -- research projects of note -- etc. etc.

## Treasurer:

F. N. Ward  
U. S. Geological Survey  
Branch of Exploration Research  
Building 25, Federal Center  
Denver, Colorado 80225  
U.S.A.

## MEMBERSHIP DUES - 1976

## Councillors:

### 1975-1976

H. Bloom  
P. M. D. Bradshaw  
E. M. Cameron  
I. Nichol (ex-officio)  
J. A. Hansuld  
P. K. Theobald

### 1975-1977

M. A. Chaffee  
J. A. Coope  
I. L. Elliott (ex-officio)  
G. J. S. Govett  
A. A. Levinson  
J. L. Walker

Membership dues for calendar year 1976 were established by Council at the December meeting as indicated on the enclosed pink page. The Association's operating budget has remained constant, and the dues increase reflects entirely the increased cost of publishing and distributing the Journal of Geochemical Exploration. As explained below by the Journal Editor, the subscription increase is largely offset by an increase in size and frequency of publication of the Journal. Several members have remitted dues in advance of this notice. Each will receive a separate statement of account shortly.

### JOURNAL OF GEOCHEMICAL EXPLORATION

The following notes concerning the Journal are derived from an editorial by the editor Dr. E. M. Cameron to be published in the first issue of the Journal for 1976: For 1976 and subsequent years, a minimum of six hundred pages and potential 800 pages will be published in six issues annually. This expansion will allow inclusion of a wider range of material of interest to readers, e.g. The Proceedings of the Symposium on Exploration Geochemistry in the Appalachians to be held in Fredericton, New Brunswick, Canada, in April, a special issue treating applied geochemistry in Scandinavia, and a special review issue entitled "Application of Geochemistry to the Search for Crude Oil and Natural Gas". In addition, translations of selected non-English language articles will be published, beginning with three Russian essays on electrochemistry.

### ELECTION OF COUNCILLORS

The terms of office for five councillors (H. Bloom, P.M.D. Bradshaw, E.M. Cameron, J.A. Hansuld, and P.K. Theobald) expire this spring. Twelve candidates have been nominated to fill these vacancies for a two-year term. A brief biographic note on each candidate (yellow pages) and a ballot (green page) are enclosed for your use in voting. Please return your ballot promptly so that results can be tallied before the Annual General Meeting in mid-April.

### AUSTRALIAN REGIONAL COUNCILLOR

Dr. J. E. Gilfillan, 1A Birriwa Place, Northwood, NSW 2066 has been elected to serve as the Association's Australian regional councillor. Dr. Gilfillan replaces Dr. Peter Donovan who is now employed with the United Nations in Yugoslavia. Council will endeavor to keep Dr. Gilfillan advised of all matters of Association business, and members in Australia should feel free to contact Dr. Gilfillan.

### FREDERICTON MEETING

*See special notice, last page!*

Plans are well along for the regional symposium on Exploration Geochemistry in the Appalachians which will be held April 22 and 23, 1976 at the University of New Brunswick, Fredericton, New Brunswick, Canada. Contact Dr. G.J.S. Govett, Geology Dept., for information.

The 2-day program will include some 15 papers on such diverse subjects as: Detection of Halos around Massive Sulfide Deposits, Geochemical Prospecting for Appalachian Porphyry Copper Deposits, Priority Rating Exploration Targets, Evaluation of Geochemical Techniques for Detection of Uranium Occurrences, Well Water Geochemistry, Biogeochemical Prospecting for Cu & Zn, The Usefulness of Concretionary Mn-Fe Oxides as a Sample Medium, Organic Stream Sediments in Regional Prospecting, Application of Regression Analysis of Trace Element Data from Stream Sediments, Use of Organic Stream Sediments, Use of Mercury in Geochemical Exploration for Mississippi Valley Type Deposits, and more!

In addition, welcoming addresses will be given by Dr. J. M. Anderson, President of the University of New Brunswick, and by the Hon. R. C. Boudreau, New Brunswick Minister of Natural Resources.

### ANNUAL GENERAL MEETING

Notice is hereby given that the Annual General Meeting of the Association of Exploration Geochemists will be held at 4:00 PM immediately following President R. W. Boyle's address at the Symposium on Exploration Geochemistry in the Appalachians, Friday, April 23, 1976, University of New Brunswick, Fredericton, New Brunswick, Canada. All members who can are urged to attend.

### SIXTH INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM - 1976

The Sixth International Geochemical Exploration Symposium will be held in conjunction with the 25th International Geological Congress in Sydney, Australia, 16-25 August, 1976. All technical sessions for the Symposium are being organized by the Association of Exploration Geochemists under the able direction of:

Dr. C.R.M. Butt  
Division of Mineralogy  
C.S.I.R.O.  
Private Bag, Post Office  
Wembly, W.A. 6014  
Australia

Although not indicated on the IGC circular, the A.E.G. Symposium Organizing Committee plans a social function for A.E.G. members and their friends during the weekend in the conference. Arrangements will be made on arrival at the conference.

A.E.G. members who have not yet made arrangements to attend the International Geological Congress and the Sixth International Geochemical Exploration Symposium should request registration information by airmail immediately from:

The Secretary-General  
25th International Geological Congress  
P.O. Box 1892  
Canberra City, A.C.T. 2601  
Australia

### OTHER FORTHCOMING CONFERENCES OF INTEREST

ANALYTICAL CHEMISTRY IN EXPLORATION, MINING, AND PROCESSING OF MATERIALS, sponsored by the International Union of Pure and Applied Geochemistry, at Rand Afrikaans University, Johannesburg, South Africa, August 23-27, 1976. Program includes 15 plenary lectures by experts from Western Europe, North America, and Australia, plus parallel sessions of research papers covering prospecting and mining,

metals, coal, instrumental analytical techniques, classical and modern chemical techniques, standard reference materials, automation, and computation. For information, write:

Conference Division, IUPAC  
Symposium CSIR  
P.O. Box 395  
Pretoria 0001  
Republic of South Africa

INTERNATIONAL CONFERENCE ON ATOMIC SPECTROSCOPY, Philadelphia, Pennsylvania, U.S.A., November 15-19, 1976 -- more specifically of interest to analysts involved with atomic absorption and emission spectroscopy. Their very successful "5th Conference" was held last August in Australia, and the forthcoming meeting promises to be well attended by those whose names appear often in A.A. literature.

THE PACIFIC CONFERENCE ON CHEMISTRY AND SPECTROSCOPY, to be held in Phoenix, Arizona, U.S.A., during the last week of October, appears to be attracting a good number of geochemical analysts. For information, write:

Mike Parsons  
Arizona State University  
Tempe, Arizona 85281  
U.S.A.  
telephone: (602)965-3321

EXPLORATION 77 - Ottawa, Canada, Chateau Laurier Hotel, October 16-20, 1977. An international symposium on the state-of-the-art of applying geophysics and geochemistry to the search for metallic ores, sponsored by the Canadian Geoscience Council. Approximately 24 review papers will be delivered in single-sessions by internationally known authorities, over three days, with evening discussion sessions. On the fourth day there will be a series of international exploration case-histories, and on the fifth day there will be a choice of local excursions. An exhibition of Canadian exploration equipment and services will be held in conjunction with the Symposium. The Proceedings will be published. The decision to plan the meeting around single sessions will place an upper limit on attendance.

This preliminary announcement will be followed in January, 1977 by a detailed notice, listing the program and inviting a response from those who hope to attend. A further notice calling for pre-registration and accommodation reservations will be issued in May/June, 1977. For further information, contact Dr. A. G. Darnley, Chairman, Organizing Committee, EXPLORATION 77, 601 Booth Street, Ottawa, Canada K1A-0E8.

CONFERENCES OF INTEREST RECENTLY HELD

INTERNATIONAL SYMPOSIUM ON THE GEOCHEMISTRY OF NATURAL WATERS, planned by the International Association of Geochemistry and Cosmochemistry, and the International Association of Hydrological Sciences, sponsored by the Canada Centre for Inland Waters and the U.S. Geological Survey, and held at the Canada Centre for Inland Waters, Burlington, Ontario, August 18-22, 1975. Formal sessions were divided into four groups: Analytical Methods, Interlaboratory Comparisons, Geochemical and Mathematical Models of Surface and Ground Water Systems, and Unpolluted Waters. The third and fourth sessions contained most of the items of interest to exploration geochemists.

Some 80 papers were presented. No proceedings were published; rather, authors were encouraged to submit their articles to appropriate journals. Several papers deserve specific comment: Earthquake prediction by hydrogeochemical methods by M. Dall'Aglio, The geochemistry of (eighty) thermal springs of Tuscany, Italy by A. Bencini, V. Duchi and M. Martini, Rates of transport of dissolved major elements in Mackenzie and Porcupine river watershed, N.W.T. and Yukon, Canada by G.J. Brunskill, P. Cambell and S.E. Elliott, The nature and behaviour of gases in natural waters by W. Dyck and I.R. Jonasson, On the geochemistry of natural water in mountain-folded humid areas by B.A. Kolotov, E.A. Kiseleva and V.Z. Rubeikin, Fluorine bearing waters in the natural water system, their hydrogeochemical and biogeochemical significance by S.R. Krainov, Chemical weathering and related controls in surface water chemistry in the Absaroka Mountains, Wyoming by W.R. Miller and J.I. Drever, In what forms do microelements exist in unpolluted surface waters by G.M. Varshal, I.S. Sirotkina, L.M. Intskirvely and I. Ya Koshcheeva.

The analytical geochemist would have found many talks to interest him. Methods for a number of metals, including Ti, Ba, Al, Pb, Hg, Cu, Fe, Mn, Cd; and also for Cl, F, N, P were described. Some interesting studies of dissolved organics in waters would also be of relevance to process study geochemists. A number of papers dealt with adsorption or desorption of metals from bottom sediments, usually estuarine, but little attention was given to similar work in fresh water lakes or streams.

Because no proceedings will be published, the best way to obtain copies of papers, other than to scan the literature, would be to write directly to the authors, using a copy of the Programme and Abstracts for information. (Editor's note: I suspect that Dr. I.R. Jonasson of the Geological Survey of Canada, Ottawa, K1A-0E8, could assist those interested in further details, if you were to write him directly.)

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PROSPECTING IN AREAS OF GLACIATED TERRAIN - 1975. The second symposium on "Prospecting in Areas of Glaciated Terrain", organized by the Institution of Mining and Metallurgy (London), and attended by some 80 participants, was held at the University of Edinburgh, Scotland, during September 1-3, 1975, and was followed by a three day field trip of the glacial geology and metalliferous mineralization of the Scottish Highlands.

Fourteen papers were presented during the six technical sessions, as follows: Use of mercury as a pathfinder for buried base-metal deposits in the Parkejaure area, Swedish Lapland by Y. Dugerdil, J. Ek and F.C. Jaffe, Copper-molybdenum porphyry mineralization in central British Columbia, Canada: an assessment of geochemical sampling media useful in areas of glaciated terrain by D.R. Boyle and A.G. Troup, Strategic and tactical geochemical exploration in glaciated terrain: illustrations from Northern Ireland by R.F. Horsnail, Geological, geophysical and geochemical investigations of the molybdenum-copper deposit at Langvatn, Setesdalsheiene, south-central Norway by F.M. Vokes, A. Sindre, P. Eidsvig and B. Bolviken, Superficial deposits of the Scottish Highlands and their influence on geochemical exploration by J.D. Peacock and U. McL. Michie, Geochemical exploration in a glacial ice-divide region: Riikonkoski copper ore deposit, Kittila, Finnish Lapland by Aimo Nurmi, Discovery of the Mallow copper-silver deposit, Co. Cork, Ireland by D.G. Wilbur and J.J. Royall, Regional geochemical mapping in Finland by L.K. Kauranne, Geochemical exploration in an area of glacial overburden at Arthrath, Aberdeenshire by R. Rice, Prospecting by use of lake sediments in areas of industrial heavy metal contamination by R.J. Allen and M.H. Timperley, Relation of lake-sediment composition to mineralization in different limnological environments in Canada by Ian Nichol, W.B. Coker, R.G. Jackson and R.A. Klassen, Application of geophysical, geochemical and deep overburden sampling techniques to exploration for fluorspar in glaciated terrain by J.E. Tilsley, Geochemical dispersion through till and peat from metalliferous mineralization in Sutherland, Scotland by R.T. Smith and M.J. Gallagher, Stratigraphy of till at Hitura open-pit, Nivala, western Finland, and its bearing on geochemical prospecting by M. Kokkola.

The papers were published prior to the symposium in "Prospecting in Areas of Glaciated Terrain, 1975", Editor M.J. Jones, available from the Institution of Mining and Metallurgy, 44 Portland Place, London, W1N 4BR, England at £12 (\$24.50). A report of discussions of the various papers will be prepared by Dr. M.J. Russell for publication in the November, 1975 or February, 1976, issue of the Applied Earth Science Section of the Transactions of the Institution of Mining and Metallurgy.

A symposium dinner was held at the Carleton Hotel, Edinburgh, preceded by a reception in the rooms of the historic Royal Society of Edinburgh. All who attended will long remember the rousing skirl of bagpipes and the warm Scottish hospitality.

Field trip participants were conveyed from Edinburgh to Wick by air, thence by bus through the Scottish Highlands to Aberdeen where the trip ended. In Caithness, uranium prospects were examined, followed by visits to peat and glacial deposits and a demonstration of the uses in prospecting of portable 4-channel gamma-ray spectrometers, radon monitors, and scintillation counters by members of the Institute of Geological Sciences. The uranium prospects in Caithness include undisturbed uraniferous phosphatic (fossil fish bed) horizons in Lower Devonian fluviatile flags, mudstones, and arkoses resting on Precambrian metamorphic rocks and intrusive Caledonian granites; and uranium mineralization in faults, shears, joints, and disturbed zones crossing the uraniferous phosphatic horizons.

The second day metalliferous mineralization near Lairg was examined and a moorland site was visited that is covered by till on which is developed an extensive peat deposit. Additionally the group visited a number of geological sites in the NW Highlands including the Precambrian Lewisian Gneiss, the Moine schists, the Moine Thrust, and other classical rock sequences and features. The mineralization at Lairg comprises molybdenite - pyrite - quartz veins developed in muscovite schists at the contacts of Lewisian rocks. Caledonian granites carry minor molybdenite and in places are cut by galena - barite and sphalerite - galena veins.

The third day visits were paid to sites at Lossiemouth, Huntly, Portsoy, New Pitsligo, and Strichen. These showed lead mineralization in upper Triassic rocks (Lossiemouth), lodgement till, deep decomposition in granite, basic rocks and Dalradian slates, and solifluction deposits. The mineralization at Lossiemouth is of considerable interest since it occurs in stratiform bodies in the Cherty Rock, a siliceous horizon a few meters thick, interbedded with Triassic sandstones. The minerals developed include galena, pyrite, calcite, quartz, and fluor-spar in the form of veinlets and impregnations. Similar mineralization occurs nearby in Lower Liassic shales and limestones, and some of the Triassic sandstones are cemented by barite and fluorspar.

At the end of the symposium in Edinburgh suggestions were advanced that a third symposium on Prospecting in Glacial Terrain be held, probably in Finland, in 1977.

The success of the symposium in Edinburgh and the field trip in the NW Highlands of Scotland was due in no small measure to the excellent organization worked out by Dr. S.H.U. Bowie and his colleagues of the Institute of Geological Sciences, London and Edinburgh and M.J. Jones, Secretary, Institute of Mining and Metallurgy, London. All delegates I am sure would wish to thank these two men and their colleagues for an excellent geological symposium and field trip.

R.W. Boyle  
Geological Survey of Canada

P.S. The first symposium on "Prospecting in areas of glacial terrain" was held in Trondheim, Norway, under the auspices of the Geological Survey of Norway, the Norwegian Ore Geological Symposium, and the Institute of Mining and Metallurgy, London. The publication resulting from this symposium, "Prospecting in areas of glacial terrain-1973," is available from the Institute of Mining and Metallurgy, 44 Portland Place, London, W1N 4BR, England.

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WORKSHOP ON GEOCHEMICAL EXPLORATION FOR URANIUM- From all reports, the workshop on geochemical exploration for uranium held last November 12-14, 1975, at the Colorado School of Mines, Golden, Colorado, U.S.A., under joint A.E.G.-C.S.M. sponsorship was quite successful.

Chairman Prof. Harold Bloom reports that forty nine registrants heard 10 prepared statements and participated in a day of case history presentation and discussion. From input at the workshop, it is quite apparent that many mining, petroleum and utility companies are interested in the applications of geochemistry to uranium exploration, and A.E.G. members can play a significant role in the search for nuclear fuels.

Although papers and discussions will not be published in their entirety, a summary of the proceedings is being prepared for distribution to A.E.G. members.

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COGEODATA. Dr. R. G. Garrett of the Geological Survey of Canada represented the A.E.G. at a meeting of the COGEODATA Working Group on Rock Geochemical Data, UNESCO, Paris, December 1-2, 1975. He reports:

The problems of geochemical data exchange on an international level were discussed. To cover the scope of the problem, the Working Group split into three sub-groups for part of the two day meeting; these sub-groups were called "Data", "Users" and "Systems", and studied problems of data availability, users' needs and data transmission.

Any network for data exchange requires an index, or directory. This should contain sufficient information on a data set to enable a potential user to assess the data's applicability to his area of interest. The Data and Users sub-groups later joined to develop a potential index document.

The Systems sub-group looked at the problems of data transfer either in a hard copy or machine processible form, but concentrating on the latter.

A variety of problems were highlighted, e.g. the differences between project problem-oriented data files and institutional compilation files, and also compilation bibliographic files where the file builder was not the data originator.



Two pilot projects were proposed, and members of the Working Group will work on these to assess strengths and weaknesses before any recommendations are promulgated. The first is an updated index of rock chemical data files where as large an international group as possible will be canvassed. This will be coordinated by Ph. Grandclaude of C.R.P.G., Nancy, France. The second pilot project would involve limited data exchange and active use of the exchanged data by groups in France, Switzerland, U.K., and possibly the U.S.A. and Canada.

No further meeting has yet been planned, but one will be held on completion of the pilot projects.

## I N S T R U C T I O N A L P R O G R A M S

### EXPLORATION GEOCHEMISTRY AT THE UNIVERSITY OF ORLEANS, FRANCE

Courses in exploration geochemistry, leading to a Masters in Applied Geology, are now being offered at the University of Orleans. The teaching unit was established in 1974 and consists of Dr. J. Trichet (pedology and geochemistry - mineral and organic), C. Granier (exploration geochemistry) and Barbier (case histories in exploration geochemistry). During the past academic year 20 students were enrolled.

In addition to the usual teaching functions, the students and members of the unit are engaged in a wide variety of research activities in many parts of the world which includes (1) work in the uranium exploration area near Cluff, Saskatchewan, Canada; (2) studies of the behaviour of the transition metals in soils developed in temperate climates; and (3) the analysis of tropical soils for gold in Upper-Volta. For further information on the work of the unit, or opportunities available, contact:

Prof. J. Trichet  
Laboratoire de Geologie  
Appliquee  
Universite d'ORLEANS  
45045 - ORLEANS, France

### UNDP/IAEA INTERREGIONAL TRAINING COURSE IN URANIUM GEOCHEMICAL PROSPECTING METHODS

Interest in geochemical exploration methods for uranium is growing rapidly. In order to assist its member states to introduce and utilize these methods, the International Atomic Energy Agency, in co-operation with the United Nations Development Programme and the Government of Austria, recently completed a six week Interregional Training Course in Geochemical Prospecting Methods for Uranium. Course Director, Arthur Y. Smith, Project Manager of the UNDP/IAEA Project Uranium Exploration in Northern Greece, reports:

The Training Course was held in Austria from September 8 to October 18, 1975. Twenty participants came from twenty countries from all parts of the world. The purpose of the course was to introduce to the participants, through lectures, practical field work, demonstrations and discussions, the various geochemical prospecting methods of use in uranium exploration. Methods covered included stream sediment and water sampling, heavy mineral sampling, determination of radon in water and soil-gas, soil sampling, gamma-ray spectrometry, geochemical analysis for uranium and computer processing of geochemical data.

A strong roster of lecturers and instructors was assembled for the Course, headed by Dr. R. W. Boyle of the Geological Survey of Canada and President of the Association of Exploration Geochemists, who gave a series of lectures on the Geochemistry of Uranium and its Associated Elements. The geology of Austria, and the uranium resources of Austria were discussed by Drs. Manfred Schmidt and H. Holtzer and Mr. A. Matura of the Geological Survey of Austria who set the scene for the field programme. Geochemical exploration philosophy was outlined by Mr. Mohamad Tauchid, geochemist and Acting Project Manager UNDP/IAEA Uranium Exploration Project in S.W. Turkey.

A three week period of field work was held at Forstau and Mulbach in the Salzburg district where stream sediment, water, heavy mineral, soil and radon surveys were carried out over known uranium bearing zones in the district. This programme of field work and demonstrations interspersed with lectures and discussions, allowed the participants to become acquainted with various aspects of organizing and carrying out geochemical surveys for uranium. Samples collected during this period provided material for the later sections of the course on analysis, data processing and interpretation.

Lectures were held during the field period on various topics in uranium geochemistry, along with several case histories of IAEA large scale uranium projects. During the final week, Dr. Ian Nichol, Professor of Applied Geochemistry at Queen's University, Canada, introduced the subject of computer data processing and statistical methods of interpretation. The close social contacts between participants and the instructors, Dr. A. Armour-Brown, geochemist of the IAEA Greek Project, Dr. L. Hahn, geochemist of the Geological Survey of the Federal Republic of Germany, and Dr. Pualo Baretto of the IAEA, Vienna, resulted in the development of a spirit of friendship which greatly helped the exchange of ideas.

On their return to Vienna, the participants were given a four day session on analytical methods for uranium and other elements during which Dr. Otto Suschny, Chief Chemist of the IAEA laboratories, Seibersdorf, outlined the various analytical methods for uranium. Participants had the opportunity to use the fluorimetric method on a number of their own samples.

The final week was devoted to computer processing and interpretation of the data collected during the field programme. Mr. D. Georgiou, Systems Analyst with the IAEA Greek project, described the data processing system developed for the project in Greece which was used for the training course data. Several lively discussions took place on data interpretation and statistical analysis which served to consolidate the ideas covered during the course. It is intended to prepare a case history report on the findings of the course surveys, which will be presented at the IAEA Symposium on Uranium Exploration Methods to be held in Mexico City, 29 March to 2 April, 1976.

Contributed by: Mr. A.Y. Smith, UNDP, International Atomic Energy Commission, Nuclear Research Centre, "Democritus", Aghia Paraskevi Attikis, Athens, Greece.

NEW MEMBERS

Applications for membership in the Association from the following individuals have been recommended for acceptance by the Admissions Committee and approved by Council. The Bylaws provide that if, after a minimum of 60 days have elapsed following the submission of a candidate's name to the voting membership in the newsletter, no signed letters have been received objecting to the admission of the candidate, he will be declared elected.

Member

R. Beeson	Pretoria, South Africa - Geochemist, South African Geological Survey
C.N. Clark	Oklahoma City, Oklahoma, U.S.A. - Sr. Geologist, Kerr McGee Corporation
W.B. Coker	Ottawa, Ontario, Canada - Geochemist, Geological Survey of Canada (transfer from Student to Full Membership)
M.T. Jones	South Australia - Geologist, Broken Hill Pty, Ltd. (on student leave)
R.H. Kern	Rwanda, Africa - Project Manager, U.N.D.P.
W. McManus	Belem, Brasil - Sr. Chemist, DOCEGO
R.C. Moores, II	Tucson, Arizona, U.S.A. - Exploration Geologist, Continental Oil Company
D.E. Nutter	Calgary, Alberta, Canada - Exploration Geologist, Great Plains Development
M.J. Potts	Dallas, Texas, U.S.A. - Staff Scientist, Texas Instruments
K.S.P. Rao	India - Lecturer in Geochemistry, Osmania University
G.G. Santos	Philippines - Researcher, Philippine Atomic Energy Commission
S.S. Sepponen	Albuquerque, New Mexico, U.S.A. - Sr. Geologist, Union Carbide Corporation
A.E. Soregaroli	Ottawa, Ontario, Canada - Geologist, Geological Survey of Canada
T. Suhanda	Bandung, Indonesia - Geologist, Geological Survey of Indonesia
G.F. Taylor	N.S.W., Australia - Research Scientist, C.S.I.R.O.
H.M. Uriarte	Makati, Philippines - Chief Geologist, Philippine Iron Mines

NEW MEMBERSMember (continued)

- D.J. Villard                      Kingston, Ontario, Canada - Geologist, Lynx-Canadian  
Exploration (transfer from Affiliate to Full Membership)
- J.R. Wilmshurst                  N.S.W., Australia - Sr. Research Scientist, C.S.I.R.O.

Affiliate

- J.A. Arias                         Santiago, Chile - Geologist, Chilean Geological Survey
- R.R. Bell                          Exton, Pennsylvania, U.S.A. - Geologist, Foote Mineral  
Company
- S.M. Fallis                        Athens, Georgia, U.S.A. - Geologist, Continental Oil  
Company
- E.C. Gentzler, III                Casper, Wyoming, U.S.A. - Exploration Geologist,  
Cleveland Cliffs Iron Company
- H.G. McClernan                  Butte, Montana, U.S.A. - Consulting Geologist

Student

- J.M. Chisholm                    Graduate student - University of N.S.W., Kensington,  
Australia
- J.A. Criswell                     Student - Colorado School of Mines, Golden, Colorado, U.S.A.
- G.L. Dunbar                      Graduate student - Imperial College, London
- M.O. Fadel                        Graduate student - Imperial College, London
- J. Gerardi                        Student - Aachen, Germany
- R.C. Karlson                     Graduate student, Colorado School of Mines, Golden, Colorado,  
U.S.A.
- L.A.M. Martins                  Graduate student - Imperial College, London
- W.C. Mbonu                       Graduate student - Royal School of Mines, London
- A. Pwa                             Graduate student - University of New Brunswick, Canada
- P.L. Shrestha                    Graduate student - University College, Cardiff, Wales

VANCOUVER SYMPOSIUM VOLUME

As has been announced in previous newsletters, members of the Association of Exploration Geochemists may purchase copies of the Proceedings of the 5th International Geochemical Exploration Symposium (Vancouver) at a special members' price of U.S.\$25.00 until one year after publication -- until the end of April, 1976 -- only through the A.E.G. Secretary's office. After that date, the cost will be U.S.\$67.50. Act Now! From recent experience, it takes as much as three months for delivery from the publisher after we place orders, so please be patient!

Several members have advised the Secretary that they have not yet received Vancouver Symposium volumes that they have ordered. We are working with the publisher to resolve these problems of non-delivery, and hope to have all of these resolved shortly.

## PUBLICATIONS

Dr. H. E. Hawkes is preparing a new compilation of the Bibliography of Geochemical Exploration, for publication by the Association this summer, covering the period January, 1972 to December, 1975. This follows after the first Bibliography covering the period January, 1965 to December, 1971, which was published by the Association, and is available through the Secretary at U.S.\$6.00 prepaid.

Council has agreed that the Association will publish jointly with Dr. A. J. Sinclair, Professor at the University of British Columbia, Canada, his book on the Application of Probability Graphs in Mineral Exploration.

Members will be advised of the availability of both of the above publications in subsequent newsletters.

## MEMBERSHIP CERTIFICATES

A relatively small percentage of the Association's membership have advised the Secretary of their interest in membership certificates. If more interest is received, and design and printing costs meet the estimates received, Council determined that certificates could be provided postpaid at U.S.\$5.00 each.

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## LAST MINUTE NOTICE

REGISTRATION MATERIALS AND FINAL PROGRAM FOR THE FREDERICTON SYMPOSIUM ON EXPLORATION GEOCHEMISTRY IN THE APPALACHIANS HAVE BEEN DELAYED IN THE MAILS -- CONSEQUENTLY A COPY OF EACH OF THESE FORMS IS INCLUDED WITH THIS NEWSLETTER TO ALL NORTH AMERICAN MEMBERS. PLEASE USE THESE FORMS AND RETURN YOUR REGISTRATION IMMEDIATELY TO DR. GOVETT TO INSURE ACCOMMODATIONS AND FIELD TRIP REGISTRATION.

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Also, remember to mail your Council election ballot and dues to the Secretary in the enclosed envelope.

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