



THE ASSOCIATION OF EXPLORATION GEOCHEMISTS

P.O. Box 523, (Metropolitan Toronto), Rexdale, Ontario, M9W 5L4 Canada

President:

A.W. Rose
Dept. of Geosciences
Pennsylvania State University
University Park, Pennsylvania 16802
U.S.A.

NEWSLETTER NO. 33

Vice Presidents:

G.R. Webber
Dept. of Geology
McGill University
Montreal, Quebec H3C 3G1
Canada

SEPTEMBER 1980

K.A. Lovstrom

AMAX Exploration Inc.
P.O. Box C, Belmar Sta.
Denver, Colorado 80226
U.S.A.

PERSONAL COLUMN

Information on Association Members is received from around the world. To keep your fellow members informed of your latest moves send a brief summary to the Rexdale Association office.

Secretary:

R.G. Garrett
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario K1A 0E8
Canada

It is with regret that we have to record the sudden death of Edgar Muceniekas at work on August 29th, aged 58 years. He had been an active supporter of the Association since 1973 and will be missed by his colleagues at CRA Exploration and friends in Australia and around the world.

Treasurer:

I. Thomson
Ontario Geological Survey
77 Grenville Street
Toronto, Ontario M5S 1B3
Canada

Robert L. Moxham formerly with the International Atomic Energy Agency in Santiago, Chile, has returned to the USA where he has established a consultancy business in applied geochemistry and mineral exploration. New address is 108A Poplar Drive, Delmar, New York, 12054, U.S.A.

Councillors:

1980-81
R.C. Armstrong
P.M.D. Bradshaw
R.H. Carpenter
L.G. Closs
W.B. Coker
E.H.W. Hornbrook

Graham Sylvester has recently left C.R.A. Exploration in Canberra to become Australian Manager for Noranda Australia in Perth, he may be contacted through Noranda Australia Ltd., at: P.O.Box 179, Subiaco, Western Australia, 6008.

1980-82

G.H. Allcott
L.A. Clark
W.K. Fletcher
S.J. Hoffman
S.E. Kesler
P.K. Theobald

Dr. Harry V. Warren, Emeritus Professor at the University of British Columbia and the newest Honorary Member of AEG, Visited the Denver area in late September and presented several lectures at the U.S. Geological Survey and the Geology Department, Colorado School of Mines. His themes were Biogeochemistry in Mineral Exploration and Geochemistry in Health. Dr. Warren was a pioneer in these fields of applied geochemistry and his addressess stimulated great interest and much discussion. His visit was jointly sponsored by the Branch of Exploration Research, USGS and the Exploration Geochemistry Group, Geology Department, Colorado School of Mines.

Australian Regional Councillor:
J.F. Gilfillan

Canadian Regional Councillor:
V. Friedrich

Southern Africa Regional Councillor:
G.L. Coetzee

EDITORIAL --- President Art Rose

Several years ago the Research and Education Committee under the direction of Al Levinson considered the question of educational programs for exploration geochemists. We did not produce a recommendation largely because of the very different organization of Universities in different parts of the world, but there was a degree of consensus amongst the members. My own vocation as a teacher leads me back to this question, and I would like to suggest some thoughts on the subject for your consideration.

Several end-member approaches to educating exploration geochemists can be distinguished. I suspect a large fraction of Association members were educated as geologists, and then added their knowledge of geochemistry largely through "on the job training". Another route is education at the graduate level, specifically as an exploration geochemist, at a school like Imperial College. A third route is education as a general geochemist followed by "on the job training" in exploration. An additional pathway is from chemistry to geochemistry and exploration.

My own background is basically as a general geochemist (route 3) preceeded by degrees in geology (route 1) and succeeded by work in exploration. All these experiences were valuable, but I think the key factor in allowing me to make a contribution to the profession was an excellent background in basic science and geochemistry. Therefore, I would like to promote more such background for exploration geochemists.

Specifically the following topics seem desirable in the education of future exploration geochemists:

1. Basic geochemistry, including distribution of elements in isotopes, and the natural processes governing element and isotope distribution: and understanding of aqueous geochemistry is important.
2. Geology, a good basic background including mineralogy and crystallography, petrography and petrology, structural geology, geomorphology and surface processes, and field geology.
3. Economic geology, covering types of mineral deposits and processes forming them, as well as economic aspects.
4. Chemistry, including general qualitative and quantitative analysis.
5. Instrumental chemical analysis.
6. Physical Chemistry, including thermodynamics and kinetics in order to understand chemical processes at a relatively fundamental level.
7. Physics, including mechanics, heat, optics, electricity, magnetism, nuclear, and modern aspects.
8. Mathematics through to differential equations and matrix algebra, to allow an understanding of physics and physical chemistry, and the manipulation of large data sets.
9. Basic statistics and probability to lay the groundwork for the statistical treatment of data and probability in exploration planning.
10. Computer programming.

On top of these basic disciplines should be added material on general mineral exploration and geochemical and geophysical exploration; and at the graduate level a thesis project to furnish some first hand experience in planning, chemical analysis and interpretation of data. However, I tend to go relatively lightly on the specifics of exploration; if a choice has to be made I believe the applied aspects are more easily learnt outside the college than the basics. On the other hand a significant purpose of some of this applied material is to promote an appreciation of, and interest in, applications, which tend to be lacking in many U.S. University geology programs. A key factor in this regard is summer jobs in exploration, these furnish important experience, motivation and perspective.

Much more could be said on this topic, but perhaps the above is enough to place several questions before you. Do you agree with my emphasis on the basic background? Or is a heavier dose of exploration desirable with a concomitant cutting of these basics? Do employers need and want new recruits who can jump into the midst of exploration, or can they use them at a less responsible level for a year or so while they learn applied techniques? Or perhaps more to the point, which type of background should the majority of exploration geochemists receive since not all employers have the same requirements? And finally, what can the Association do to promote better education? I would be interested in your comments and suggestions, either directly to me, or as letters or short articles for publication in the Newsletter.

ADMISSIONS COMMITTEE REPORT

The following persons have been accepted for Membership in the Association by Council. The Association is pleased to welcome the new members.

VOTING MEMBERS

Ballinger, T.A.	Resident geochemist, Geopeko Ltd., Perth, W.A. Australia.
Frizzo, S.J.	Geochemist, C.P.R.M. Belem, Brasil.
Jones, R.L.	Exploration geochemist, Geopeko Ltd., Hermit Park, Q'ld., Australia.
Kamilli, R.J.	Assistant resident geologist, Henderson Mine, Climax Moly Co., Empire, Colorado, USA.
Rugless, C.S.	Geochemist, Broken Hill, NSW. Australia.

AFFILIATE MEMBERS

Bottrill, T.A.	Senior research geologist, Riocanex, Toronto, Ont. Canada.
Gravel, J.L.A.	Assistant geochemist, BP Minerals Ltd., Vancouver, B.C. Canada.
Hecht, C.	Geochemist, DNPM, Brasilia, Brasil.
Hernan, P.	Exploration geochemists, Empresa Nacional Adaro, Madrid, Spain.
Moreton, L.C.	Geochemist, CPRM, Goiania, Goias, Brasil.
Mostert, J.S.	Assistant consulting geologist, Anglo-Transvaal Investment Co.Ltd., Marshalltown, South Africa.

AFFILIATE MEMBERS (con't)

Simpson, S.D. Laboratory manager, Bondar-Clegg & Co.Ltd., Whitehorse, Yukon, Canada.

Trechter, J.E. Laboratory manager, TSL Laboratories, Spokane, Washington, USA.

FUTURE MEETINGSPRECIOUS METALS IN GEOCHEMICAL EXPLORATION - NORTHERN CORDILLERA,

APRIL 13-15, 1981, Vancouver

The Organizing Committee has had several meetings, both as an AEG group and jointly with the Geological Association of Canada co-sponsors. The time to next April is already down to six months and there is much to do. You will find a second announcement and call for papers enclosed with the Newsletter.

9th INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM, MAY 12-14, 1982, Saskatoon

Plans are proceeding for the 1982 biennial symposium to be held in Saskatoon, Saskatchewan, Canada. The theme of the meeting is, "Geochemical Prospecting for Energy Sources", and in addition general sessions are planned. There has been a good response to the first circular, particularly with reference to the field trips, especially those to the Athabasca Basin and Yellowknife - Pine Point areas. A call for papers will be made early in the new year. Those desiring additional information, or wanting to be placed on the mailing list, should write to:

Dr. V.J. Sopuck
Organizing Committee, 9th I.G.E.S.
P.O.Box 432, Sub. P.O. 6
Saskatoon, Saskatchewan, S7N 0W0
Canada

WORKSHOP IN ADVANCED GEOLOGICAL REMOTE SENSING TECHNIQUES

NOVEMBER 17-21, 1981, EROS Data Centre, Sioux Falls, U.S.A.

The U.S.G.S. EROS Data Centre is holding a workshop designed to introduce participants to multi-level data bases, and analytical and interpretive methods applied to topographic, geophysical and geochemical problems. Anyone interested should write to:

Charles M. Trautwein
Applications Branch
EROS Data Centre
Sioux Falls, South Dakota, 57198 U.S.A.

INTERNATIONAL AMAZON EXPLORATION SYMPOSIUM, MARCH, 1981, Puerto Ayacucho

The Symposium Amazonia, originally scheduled for this November, has been postponed until next March. The meeting will focus on the ore deposits of the Amazon Basin, and geochemical and geophysical exploration methods appropriate to their search in tropical lateritic environments. For further information write to:

Symposium Amazonia
Ministerio de Energia y Minas
Direccion de Geologia
Torre Norte - Piso 19
Dentro Simon Bolivar
Caracas, Venezuela

PROCEEDINGS OF THE EIGHTH INTERNATIONAL GEOCHEMICAL SYMPOSIUM - Hannover

The proceedings will be published in 1981 as a special issue of the Journal of Geochemical Exploration and, subsequently, in hardcover.

The review and editing of the papers presented at the meeting has been handled by the Organising Committee in Hannover, led by Heinz Gundlach. They have received considerable assistance in North America from Art Rose and Peter Donovan. Unfortunately, because of other commitments for their time and language difficulties, it has become impossible for the Hannover Committee to complete the editing of the proceedings. This task has recently been assumed by a group in North America comprising Art Rose, Peter Donovan, Herb Hawkes, Brian Hitchon, Bob Garrett and Eion Cameron. Authors are requested to excuse a moderate hiatus in the processing of their works. Every effort will be made to publish the proceedings at an early date.

Prior to the selection of papers for the meeting it was decided that the economic limit on the size of the publication was 600 pages, i.e. the approximate size of the proceedings of the previous IGES. In order to obtain as wide a representation as possible at the meeting, the Hannover Organizing Committee decided to accept more papers for oral presentation than could be published. Thus it will be necessary for the newly formed editorial group to turn down a substantial number of manuscripts or to suggest that they be published elsewhere.

Authors who have any questions about the review or editing of their manuscripts should direct these to Art Rose or myself, not to Hannover.

Eion Cameron

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CALIFORNIA SUPERIOR COURT

The Association has received a letter from a Judge of the California Superior Court making an enquiry as to Members who would be willing to act as lecturers and consultants and/or testify in a court of law as an expert witness.

This item is probably of interest only to Members working in the western U.S.A. If you wish to follow the matter up you should write directly to:

Robert L. Shaw
Judge of Superior Court
P.O.Box 6819
Ventura, California, 93006 U.S.A.

CANADIANS IN INTERNATIONAL PROGRAMS

The Association has received a request from the Canadian International Development Agency (CIDA) to help in identifying Canadians interested in employ by the United Nations and its Specialized Agencies for assignments in developing countries sponsored by the U.N.

Job descriptions and vacancy notices are received and reviewed on a regular basis by the Human Resources Directorate of CIDA. Any Canadian interested should contact:

Berchmans Arseneau
Head, Natural Resources Unit
Human Resources Directorate
CIDA
200 Promenade du Portage
Hull, Quebec, K1A 0G4 CANADA

AUTHORS, DO YOU NEED A PUBLISHER ?

The McGraw-Hill Book Company has contacted the Association to find out if any of our members have publishing plans. McGraw-Hill are interested in reference books for practicing scientists and engineers where the emphasis will be on applications rather than theoretical research. Should you be interested in following this up you should contact:

Sonia Sheldon,
Editor, Science and Technology
Professional and Reference Book Division,
McGraw-Hill Book Company
1221 Avenue of the Americas
New York, N.Y. 10020, U.S.A.

LIBRARY EXCHANGES

Occasionally the Association receives requests to enter into library exchange programs with institutes interested in our publications. This year two such requests have been received, in January from the State Public Scientific-Technical Library, Novosibirsk, U.S.S.R., and last month from the National Geological Library, Beijing, People's Republic of China.

The Association is unable to enter into these exchanges as we have no library or means by which our membership could benefit. However, it seems that some of our members' home institution libraries could be in a position to enter into exchanges.

The Novosibirsk request was very specific, the Journal, Volume 6 onwards, and the Bibliography, we informed them of the ways of obtaining these but have heard nothing further.

The Beijing request was for more general publications and could be of interest to many libraries as their exchange publications include Acta Geologica Sinica, The Bulletin of the Chinese Academy of Geological Sciences, the Geological Review, and irregularly published Professional Papers.

For any members interested in following these opportunities up the institutions addresses are:

The National Geological Library
Kam Kia Ko
Fu Wai
Beijing
People's Republic of China

Mme. M. I. Kersanova
Deputy Head Librarian
State Public Scientific-Technical Library
15 Vaskhod
Novosibirsk - 630200 U.S.S.R.

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FROM THE SECRETARY'S OFFICE

Well it's that time of year again, you will see enclosed with this Newsletter your 1981 Dues Notice. In order to check the information we have on file we have used the computer file used to maintain the membership list to print the notices. Your assistance in correcting these, if necessary, when returning your dues is very much appreciated. We are still compiling telephone numbers, if yours is not listed, and you have no objection we would like to have it in the records. Also some of you have paid already, thank you, but please return the dues notice with corrections, if any.

You will note that we have listed those of the AEG Special Volumes that are in stock, if you need any of these now would be a good time to order and so only have to send in a single cheque or money order.

On the Dues Notice you will see various methods of preferred payment. It is easiest, and least expensive, for the Association to handle cheques drawn on N.American banks and International Money Orders. However, this is often difficult for the membership and we can handle UNESCO coupons and International Postal Orders. If for some reason you think there may be additional handling charges please include them with your payment, otherwise the Association may only finally receive a small part of your dues payment. If it helps some members to pay directly through a bank the Association's account is with:

The Canadian Imperial Bank of Commerce
Rexdale and Islington Branch,
2267 Islington Ave.,
Rexdale, Ontario M9W 3W7 Canada

Branch Transit No. 9822

Deposit Account No. US\$ 02-00018

If you pay this way through your bank please still return your Dues Notice to us with a note of the originating bank, any draft number they may provide and date. This allows the Toronto office to match the payments to the members correctly and so save a lot of confusion.

As you have all heard before the plea is for you to pay your 1981 dues promptly. Our annual big bill for the upcoming 1981 journal issues with Elsevier comes early in the year. We have kept dues constant now for 6 years, and we hope to continue to do so with a growing membership as described in the last Newsletter (No.32). Occasionally we encounter cash flow problems at the beginning of the year due to the lag between receipts of dues and our commitments. Please help your Association.

In order to carry out elections for 1981-83 Councillors the voting papers will have to be mailed in the next Newsletter with the Notice of the Annual General Meeting in Vancouver. We will need some eight nominees for our next election. You will see the nomination procedure outlined in section 4.04 of the By-Laws, briefly, any six Voting Members can nominate a Voting Member, who should signify his willingness to serve, or Council can nominate Voting Members who are willing to let their names stand. If you wish to nominate anyone please organize the nomination and forward it to the Secretary as soon as possible.

JOURNAL NEWS

The Editor of our Journal, Eion Cameron, has provided the Newsletter with a list of forthcoming papers in the Journal. These are listed in order of their transmittal from the Editor to Elsevier. They will probably appear in this same order, as listed below.

- Sinclair, A.J. and Tessari, O.J. Vein geochemistry, an exploration tool in Keno Hill camp, Yukon Territory, Canada.
- Dyck, W. and Da Silva, F.G. The use of ping-pong balls and latex tubing for sampling the helium content of lake sediments.
- Culbert, R.R. and Leighton, D.G. Low energy gamma spectrometry in the geochemical exploration for uranium.
- Chaffee, M.A.; Hill, R.H.; Sutley, S.J. and Watterson, J.R. Regional geochemical studies in the Patagonia Mountains, Santa Cruz County, Arizona.
- Lovering, T.G. Jasperoid float and stream cobbles as tools in geochemical exploration for hydrothermal ore deposits.
- Whitney, Philip R. Heavy metals and manganese oxides in the Genesee watershed, New York State; effects of geology and land use.
- Erdman, James A. and Harrach, George H. Uranium in big sagebrush from Western U.S. and evidence of possible mineralization in the Owyhee Mountains of Idaho.
- Odegard, M. The use of inductively coupled argon plasma (ICAP) atomic emission spectroscopy in the analysis of stream sediments.

BIBLIOGRAPHY

RECENT PAPERS ON EXPLORATION GEOCHEMISTRY

This list comprises titles that have appeared in major publications since the compilation presented in Newsletter No. 32. Journals routinely covered and abbreviations used are as follows: Economic Geology (EG); Geochimica et Cosmochimica Acta (GCA); the USGS Circular (USGS CIR); and Open File Report (USGS OFR); Geological Survey of Canada Papers (GSC Paper) and Open File Report (GSC OFR); Bulletin of the Canadian Institute of Mining and Metallurgy (CIM Bull); Transactions of Institute of Mining and Metallurgy, Section B: Applied Earth Sciences, (Trans IMM). Publications less frequently cited are identified in full. Compiled by L. Graham Closs, Colorado School of Mines, Member AEG Bibliography Committee.

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- Davies, J.F. 1980. K-Rb patterns in an Archean "porphyry-type" copper deposits, Timmins, Ontario, Canada. EG 75 (5): 760-764.
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- Domenico, J.A. and Viets, J.G. 1980. The design of mobile laboratories used in geochemical exploration. USGS OFR 80-301. 25 p.
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