THE ASSOCIATION OF EXPLORATION GEOCHEMISTS

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

NEWSLETTER

NO. 35

MARCH 1981

A MESSAGE FROM THE PRESIDENT

A discipline even newer than exploration geochemistry is environmental geochemistry. The latter field is of increasing importance because of mounting concern with disposal of nuclear wastes and, in the U.S., the recent comprehensive regulations governing disposal of toxic chemical wastes. Environmental and exploration geochemistry are closely related in many ways, and I believe, both would benefit by exchanges of ideas and information.

Both disciplines deal with dispersion of chemical components through earth materials away from a source. Experience in exploration geochemistry should be of value in identifying the processes and controls of metal dispersion from man-made sources. Conversely, the known time-frame and the limited volume of the source of many pollutants supply information not always available for ore bodies and other natural sources.

Background values are of prime importance in detecting and monitoring dispersion in both disciplines. The extensive worldwide surveys of exploration geochemistry furnish an unparallelled source of background data useful in environmental problems, whereas recent carefully designed surveys oriented environmentally, such as the USGS studies in Missouri and their nationwide reconnaissance surveys of soils, waters, and vegetation, allow a comparison of background values not available in exploration surveys. Background values and their regional variation are also of crucial significance in recognizing regional variations that may be related to health, as well as to mineral provinces.

Analytical methods of the two disciplines overlap. Methods for determination of many of the less common elements, such as Se and Cd, have been developed and used widely in environmental research and deserve attention by exploration geochemists.

A major focus of environmental geochemistry is to predict the dispersion of elements from a pollution source. For this reason, mathematical modeling of dispersion is, and will probably continue to be, widely used in environmetal sutdies. This modeling demands a quantitative understanding of flow, solubility, adsorption, and other phenomena that should prove useful in geochemical exploration.

Journals covering environmental geochemistry include Environmental Science and Technology (American Chemical Society) and Science of the Total Environment. For example, Environmental Science and Technology for 1980 includes papers on adsorption of Cu, Pb, and As on iron oxides, complexing and adsorption on humates, and resorption of trace metals during partial extraction procedures, Another interesting publication is Interface, the newsletter of the Society for Environmental Health and Geochemistry (U.S.). I find the $6/year membership in this society well worthwhile. Perhaps members from other countries can suggest other useful journals in environmental geochemistry.

I believe we have much to learn by cross-fertilization with related disciplines and encourage you to let me know of opportunities along this line.

See you in Vancouver!

Arthur W. Rose

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A MEMBERS' VIEWS IN THE CANADIAN PRESS

Every March brings mineral explorationists to the Annual Convention of the Prospectors and Developers Association at the Royal York Hotel in Toronto. This year was no exception with a registration of over 2000. The afternoon of the first day saw Ian Thomson, a member and our Treasurer, and Tony Barringer, another member, but weaving his geophysical hat, together with R.W. Hutchinson and C.G. Miller as panellists in the Plenary Session entitled, "Exploration Technology: Can it Meet the Mineral Demand?". The session was well attended and included Lawrence Welsh a reporter for the Toronto Globe and Mail, Canada's closest approximation to a national paper. His report was published in the Business Section, page 5, on Wednesday, March 11th, and is reproduced below in full. Clearly, the points which Thomson and Hutchinson made re the supply and training of economic geologists and geochemists were picked up. In light of discussions in the Newsletter on university courses this article is all the more relevant, and hopefully influential.

GLOBE AND MAIL, Wed. Mar. 11, 1981, B-5

More geochemists held needed to stay leader in development

By LAWRENCE WELSH

Canada needs more people trained as exploration geochemists if the country is to hold its position as a leading area for new minerals development, the annual convention of the Prospectors and Developers Association has been told.

Given the fact that many exploration areas in Canada are found at well worked over sites or are deeply buried orebodies, there is an overriding requirement for techniques capable of seeing through the surface to blind and buried deposits, according to Ian Thomson, a geochemist with the Ontario Geological Survey.

"The simple empirical method of sampling, analysis and looking for the high numbers has run its course and the real challenge of the 1980s is to move on to a fundamental understanding of geochemical processes," he said.

However, Canada faces a dilemma in the area of geochemical prospecting, in that the country is "simply very short of people qualified to do the work," Mr. Thomson warned.

Basically, he said, there are not enough properly trained applied exploration geochemists graduating from the universities. "In fact, there were only six graduates last year in the whole of North America."

Mr. Thomson said universities have been singularly reluctant to recognize exploration as a subject worthy of intellectual pursuit, reflecting the view of the academic world that exploration is only empirical and thus shallow.

"The few individuals who do involve themselves with the fundamental aspects of exploration geochemistry find very limited and grudging support from their institutions. Such a situation is counterproductive and detrimental to the national economy."

In addition, the opportunities for on-the-job training are few and far between and governnment agencies, long a focus for applied geochemical work, cannot satisfy the requirement. "Provincial agencies suffer either manpower constraints or have problems of mandate and policy direction that limit their involvement in exploration."

Finally, the industry itself has frequently been slow to capitalize on developments, but has instead been content to work with empirical techiques.

"Under this situation, people learn relatively little and only a few will graduate to the innovative, investigative level of exploration geochemistry."

At the same time, he said, mining companies lack the time and funds to carry out fundamental research in this area.

"Because of the very real concerns about confidentiality of information, privilege and competitive advantage, industry has only occasionally established positive dialogue with the universities and government agencies to effect investigative research," Mr. Thomson said.

R. W. Hutchinson, professor of geology at the University of Western Ontario, said the current geological technology too often fails to recognize its own need for improvement.

"Geological technology must be continually willing, indeed eager, to consider new ideas and to test their applicability to many types of ore deposits. Clearly this requires an open-minded approach and a willingness to change, reconsider older established or previously published geological interpretations," he said.

Describing current geological technology as too narrow and too introverted, Mr. Hutchinson said it is "much too concerned with detailed investigations of provable deposits themselves and too little concerned with their broader, external geological relationships."

He suggested the discipline should broaden its scope through close co-operation with other basic geologic efforts and by emphasizing the importance of time as a real dimension and of evolutionary changes in ore deposits.

THE PROFESSIONAL EXPLORATION GEOCHEMIST

With discussions on the training of geochemists again active it would seem relevant to draw members attention to an old Newsletter, No. 15, December 1975. Reproduced below is the report on Council action following a recommendation of the Constitution Committee. Members will note that many of these recommendations were incorporated into the By-Laws of the Association in 1977 and 1979.

"At the Council Meeting of the Association of Exploration Geochemists held in Vancouver on March 31, 1974 the Council accepted and approved a definition of the Professional Exploration Geochemist prepared by the Constitution Committee of the Association.

The formulation of this definition was prompted by the actions of local governments in the U.S.A., Canada, Australia and elsewhere to push through legislation requiring geologists and other geo-scientists, active in mineral exploration, to be registered by the local authorities before being able to practice in specific areas of jurisdiction. Such legislation was in answer to public pressure on anti-pollution and ecological matters and so affected not only the mining industry but employees in other industries as well.

Within the AEG, it was argued that a non-cooperative or indifferent attitude on the part of geochemists was not advisable in such situations because legislation would then be drafted and passed without consultation with those concerned. The net result is likely to be unacceptable to the professional, ineffective as a guarantee of quality work and performance and an unwarranted hindrance to exploration activity and development.

Since the AEG is concerned with the future of exploration geochemistry and the status of exploration geochemist, the Constitution Committee was asked to draft satisfactory qualifications of the Professional Exploration Geochemist that would be widely acceptable both to the legislators and the exploration geochemical and geological fraternities in all parts of the world.

The accompanying definition has been drafted following consultation in the Constitution Committee and in Council over the past 2 years. The draft was completed after an exhaustive study of legislation proposed and in effect in North America. As noted above, the draft was approved by Council in Vancouver and the definition is being made available to the membership through this Newsletter. The definition will be used by the Association as a reference in presenting the exploration geochemist's case to any regulatory body in any part of the world. It is also being made available to members of the Association who, individually, may be arguing their case with a regulatory body. In this way, it is designed to standardize qualifications of the Professional Exploration Geochemist worldwide - a prime requisite for the universal acceptance of the exploration geochemist as a professional.

It must be understood that the accompanying definition is a <u>reference only</u> and describes a standard which has the backing and approval of the Association of Exploration Geochemists. The AEG has no regulatory or licensing power and ligislators have the prerogative of accepting the AEG's recommendations or refusing them. Since the accompanying

definition has been worded to include similar phraseology, qualifications and experience contained in legislation controlling geologists which is either pending or in effect, it is likely that the definition will be favourably received by law-makers.

The members are urged to make full use of the accompanying definition of the Professional Exploration Geochemist in order to standardize an acceptable measure of qualification.

The Council of the Association of Exploration Geochemists has also accepted the Constitution Committee's recommendations that the AEG be prepared to assist regulatry bodies qualifying Professional Exploration Geochemists in the following manner:

(a) Offer to act on behalf of regulatory bodies as an arbiter regarding a particular candidate's professional stature.

(b) Assist in the formulation of a curriculum on which an examination on "principles and practice of applied geochemistry" might be based.

This definition of the Professional Exploration Geochemists will not be included in the Constitution of the Association but will form part of the records of the AEG. The adoption of the Professional Exploration Geochemist definition will in no way affect the present organization of the Association and the constitutional requirements for admission of members.

If a member of the Association wishes to have his qualifications and experience examined by Council to determine if he satisfies the requirements of Professional Exploration Geochemists he may voluntarily request such an examination by contacting the Secretary. The requirements for qualification as a Professional Exploration Geochemist state that the candidate should be favourably endorsed by three (3) referees who themselves qualify as Professional Exploration Geochemists. It is appreciated that this requirement cannot be fully enforced until a representative group of Professional Exploration Geochemists have been named. Until then, Council will accept as referees competent geologists and geochemists or other geoscientists who are active in fields involving exploration geochemistry and satisfy all other qualifications required.

It is emphasized, however, that the AEG has no licensing power and the decision of the AEG is in no way obligatory on other organizations unless the judgment of the Council has been officially recognized by these organizations.

To qualify as a PROFESSIONAL EXPLORATION GEOCHEMIST a person should:

(i) Produce evidence to the satisfaction of the Council that he has, at some time, successfully passed through a course of study, and obtained a degree, in pure or applied geological science at a University or School of Mining recognized by the Council.

(ii) Have been actively engaged, for at least five additional years, in practicing or teaching geology or geochemistry, of which four years must have involved work of a responsible nature, calling for independent judgement:

(a) in charge of and actively directing geochemical exploration programs, or

(b) as a consultant or advisor on geochemical exploration programs, or

(c) as a teacher holding an important academic position, supervising postgraduate students in exploration geochemistry.

(iii) Be actively practicing his profession and shall satisfy the Council that he is a fit and proper person to become a Professional Exploration Geochemist.

Supervised postgraduate studies leading to a M.Sc. degree in exploration geochemistry, mineral exploration or economic geology at a recognized University or School of Mining may be considered as geological or geochemical practice up to a maximum of one year.

Supervised postgraduate studies leading to a Ph.D. degree in exploration geochemistry, mineral exploration or economic geology at a recognized University or School of Mining may be considered as geological or geochemical practice up to a maximum of two years.

Graduates of recognised Universities or Schools of Mining in sciences other than the geological sciences who through involvement and experience in the field of exploration geochemistry meet the requirements of paragraphs (ii) and (iii) above may, following approval by Council, be judged professionally qualified without satisfying the academic qualifications outlined in paragraph (i).

(B) In order to be recognized, the candidate should be favourably endorsed by a minimum of three referees who have personal knowledge of the candidate and his work and who, themselves, satisfy the qualifications set out in (A) above.

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FUTURE MEETINGS

PRECIOUS METALS IN GEOCHEMICAL EXPLORATION - NORTHERN CORDILLERA

April 13-15, 1981, Vancouver

By the time you read this the Vancouver symposium will be about to start, being held, or be over! The pre-registration has been large, 450 persons by the end of the first week of March, and it looks as if it will be another successful meeting. I hope that we will have a Symposium Report for the June Newsletter. It is planned to publish some of the papers in the Journal. If there are copies of the abstracts booklet left over we will attempt to make them available to Association members, any news on this will be in the June Newsletter.

9TH INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM

May 12-14, 1982, Saskatoon

The second circular and call for papers was enclosed with the last Newsletter, No. 34. Please remember the November 30, 1981, deadline for extended abstracts, and the dates of May 12-14, 1982. for the symposium.

10TH INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM

September 4-9, 1983, Helsinki

Watch this section for news in upcoming Newsletters and note the dates of September 4-9, 1983.

INTERNATIONAL ASSOCIATION OF GEOCHEMISTRY AND COSMOCHEMISTRY SYMPOSIUM ON METHODS OF APPLIED GEOCHEMISTRY, September 25-October 2, 1981, Irkutsk

Please note the change in date for the IAGC's Second International Symposium on Methods of Applied Geochemistry. The meeting is now scheduled one week in advance of the first notification the Association received. For further details please write to:

P.V. Koval
664033 Irkutsk
POB 701
U.S.S.R.

AMS'81 September 7-11, 1981 Lyons

The First IASTED International Conference and Exhibition, and a Symposium entitled Applied Modelling and Simulation are being held in Lyons, France. The scope of the meeting is broad and includes topics of interest to geochemists. For further details please write to:

The Secretary, AMS'81
AMSE 16, Avenue de Grange Blanche
69160 Tassin-La-Demi-Lune
France

ANNUAL GENERAL MEETING - April 14, 1981

The next Annual General Meeting of the Association will be held in conjunction with the Vancouver Symposium. The meeting will be held immediately after the last technical session on Tuesday, April 14, 1981. The Agenda is as follows:

1. Minutes of the 1980 Annual General Meeting.
2. Matters arising.
3. Nomination of Scrutineers for Ordinary Councillor Ballot.
4. President's Report.
5. Secretary's Report.
6. Treasurer's Report.
7. Admission's Committee Report.
8. Introduction of 1981-82 Executive.
9. Announcement of Ordinary Councillor Election.
10. Any Other Business.
11. Adjournment.

The President A.W. Rose, will deliver his address immediately following the adjournment of the meeting.

FROM THE SECRETARY'S OFFICE - Bob Garrett

Now that the books are closed on 1980 two points are apparent. Firstly, the Association membership has grown significantly, and secondly, thanks are due to all of you who went out of their way to recruit new members. A full report is being prepared for presentation at the AGM in Vancouver.

With respect to 1981, membership dues are still coming in. We have received dues from over 75% of last years members. Dues reminder notices are enclosed with this Newsletter for those members from whom we have not yet received dues. If you already forwarded your dues fo the Association we thank you and please ignore the notice. For those who have not yet acted details of methods of payment useful to members outside of North America are in Newsletter No. 33 , on page 7.

I look forward to seeing as many of you as possible in Vancouver, and if you have any suggestions on how the Association can help you, and other members, please let me or any other Councillor know.

TWO NEW PUBLICATIONS

AUSTRALIAN GEOMATHEMATICS NEWSLETTER

A bi-monthly Bulleting of Australian News in Geomathematics (BANG) commenced circulation in February, 1981. It aims to bridge the commnunication gap between theorists and practioners, by percolating information about upcoming conferences, seminars, courses, workshops, new publications etc. BANG is sponsored by Australian mineral industrys companies and is mailed free of charge, upon request. If you are interested please send name and address to:

N.I. Fisher,
Editorial, BANG
P.O.Box 136,
North Ryde, N. S. W. 2113
Australia

DIRECTORY OF NORTH AMERICAN GEOSCIENTISTS ENGAGED IN MATHEMATICS, STATISTICS AND COMPUTER APPLICATIONS

This volume, prepared by the Mathematical Geologists of the U.S. (A regional organization of the International Association of Mathematical Geologists), lists information on some 200 scientists active in geoscience research in industry, government, and universities.

Copies are available at US $2.75 (U.S.A. and Canada) and at US $3.75 elsewhere to cover additional postal costs. Cheques or money orders should be made payable to "MGUS" and sent to:

J.B. Campbell,
Department of Geography,
Virginia Polytechnic Institute,
Blacksburg, Va. 24061,
U.S.A.

JOURNAL NEWS - Eion Cameron

Issues 14 (1) was published in med-February and issues 14 (2) is forecast fo be distributed on April 29. This will be the last issue of Volume 14, in order that some pages can be allocated to the publication of the proceedings of the Hannover Symposium. The latter will be published as Volume 15, in July.

Agreement has been reached with the organisers of the Precious Metals meeting to be held in Vancouver to publish a 200 page special issue of papers presented at the meeting.

The following is a list of forthcoming papers for the Journal. They are given in the order of their transmission form the editorial office to Elsevier.

Filipek, L.H. and Theobald, P.K. Sequential extraction techniques applied to a porphyry copper deposit in the Basin and Range Province.

Boyle, D.R. The analysis of fuorine in geochemical exploration.

Gascoyne, M. A simple method or uranium extraction from carbonate groundwater and its application to $^{234}U/^{238}U$ disequilibrium studies.

Hoffman, S.J. and Fletcher, W.K. Detailed lake sediment geochemistry of of anomalous lakes on the Nechako Plateau, Central British Columbia. Comparison of trace metal distributions in Capoose and Fish Lakes.

Roy, A. Application of cluster analysis in the interpretation of geochemical data from the Sargipalli lead-zinc mine area, Dundergarh District, Orissa (India).

Ryall, W.R., Scott, K.M., Taylor, G.F. and Moore, R.P. Mercury in stratabound copper mineralization in the Mammoth area, northwest Queensland.

Theobald, P.K. One man's view of a research gap. (Presidential Address).

Brooks, R.R., Holzbecher, J. and Ryan, D.E. Horsetails as indirect indicators of gold mineralization.

Gladwell, D., Thompson, M. and Wood, S. The determination of tin in soils and sediments by an atomic absorption-volatile hydride method.

Lahti, H.R. and Govett, G.J.S. Primary and secondary halos in weathered and oxidized rocks - an exploration study from Mykonos, Greece.

EMPLOYMENT OPPORTUNITY

THE UNIVERISTY OF GEORGIA

FACULTY POSITION IN ECONOMIC GEOLOGY

The Department of Geology, University of Georgia, Athens, has a tenure-track opening in economic geology. Rank and compensation are open through the Associate Professor level.

Duties include: (1) teaching courses in exploration geochemistry, (2) supervising M.S. and Ph.D. Candidates, and (3) developing a strong research program with significant field committment.

Teaching and research interests in one or more additional fields such as ore deposit mineralogy, reflected light microscopy, theoretical geochemistry of ore deposits, fluid-inclusion research, hydrogeochemistry, or environmental geochemistry are desirable.

Further details are available from : F. Donald Eckelmann, Head, Department of Geology, University of Georgia, Athens, Georgia 30602, U.S.A.

Applicants should submit a detailed curriculum vitae and arrange to have three letters of recommendation sent to Dr. Eckelmann. These letters would be particularly helpful if, in addition to providing other relevant information, they address the following points: (1) formal training and professional competance, (2) ability and promise as a teacher and researcher, and (3) quality and significance of professional publications.

The deadline for receipt of applications is May 1. The position will not be filled unless qualified persons are available. If necessary, the position will be re-opened with a new cut-off date announced for receipt of applications.

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