



# THE ASSOCIATION OF EXPLORATION GEOCHEMISTS NEWSLETTER

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

No. 58

January 1987

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## President's Message - Glenn Allcott

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The New Year will bring special opportunities to think about the future, to reaffirm the goals that we have set, and to celebrate the challenges we have met.

I am impressed by the complexity of the issues that face the mineral industry and the way the Association is trying to respond to these issues. This past year, the Association has experienced some decline in membership but, despite this, we are moving ahead with plans for some very important meetings which will encourage communication and education among our members.

We continue to need an influx of new ideas through new membership and, in order to accomplish this objective, we have established a Membership Committee to look into ways of increasing the Association's membership. This year, I am looking forward to an increase in our membership. To that end, I am confident that we all can count on each member to pitch in and redouble his/her interest and involvement in the Association's activities.

On behalf of the Association, have a wonderful New Year!

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## Election of Ordinary Councillors

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Ten nominations for Council have been made to fill five vacancies which will arise at the next Annual General Meeting in April, 1987. Ballots have been prepared and distributed with this Newsletter to the Voting Membership. It is important that Voting Members cast their ballots as soon as received and return them to the Association's Rexdale office by April 1st, 1987 where the ballots will be transferred, by the Secretary, to the Association's Auditor for counting. Results of the vote will be announced at the Annual General Meeting.

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## Personal Column

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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 office and please indicate that this information is intended for the Newsletter.

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**Steven J. Maione**, formerly Exploration Manager of Unocal Geothermal Japan Ltd., has been appointed Senior Geologist, Unocal Geothermal Division, Santa Rosa, California. He may be contacted at 1903 Knolls Drive Santa Rosa, CA U.S.A. 95405

**Alf Bjorklund** has resigned from his position as Head of the Department of Geochemistry, Geological Survey of Finland. He is now an Associate Professor at Abo Akademi, Domkyrkotorget, Finland. He may be contacted at  
Department of Geology  
Abo Akademi  
Domkyrkotorget  
20 500 Abo  
Finland  
Tel. (21)-657509

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**Dr. A. Armour-Brown** wishes to inform members that his correct address is  
1 Lyndewode Road  
Cambridge, England CB1 2HL  
Tel. 0223-353586

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## Newsletter Advertising

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A limited number of professional-card format adverts suitable for consultants and service organizations will be accepted for publication in the Newsletter. These adverts may be either 3" x 1" (\$50.00 Cdn. per insertion) or 3" x 2" (\$100.00 Cdn. per insertion) with the stipulation that the adverts are accepted on a first-come, first-served basis, must be camera-ready, and must be pre-paid. Announcements of employment opportunities and requests for employment will be published at no cost in the Newsletter.

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## Secretary's Notes

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This year will be a challenging one for the Association. As your President remarked in his Message, in 1987 there will be a major effort to tackle the problem of declining membership and a vigorous campaign to attract new members. Despite careful planning, the membership decline has had an adverse effect on the Association's revenues and, consequently, there is an urgent need for a prompt return of your 1987 membership dues. Keep in mind that if you do not return your dues before the end of January, you may experience delay in receiving the Journal.

You will see that this Newsletter also contains a ballot for election of Ordinary Councillors to serve during the 1987-89 term and a biography of each of the candidates. Voting members should complete the ballot (if they wish to vote) and return it to the Association's office as soon as possible. Remember that the deadline for acceptance of ballots is April 1st, 1987.

I would like to thank Mark Fedikow for his excellent suggestion that, in order to simplify preparation of the Exploration Geochemistry Bibliography updates, members submit a list of their own references detailing pub-

lished accounts of their own research. I would suggest that this information is sent either to the Association's Rexdale office or directly to Dr. Graham Closs, Geology Department, Colorado School of Mines, Golden, Colorado, U.S.A. 80401.

Finally, on behalf of Ines Filicette and myself, I would like to wish you all a successful and prosperous New Year.

*Ray Lett*

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### Letters to the Editor

Dear Mr. Lett:

This letter is prompted by a recent incident in St. Joe's geochemical exploration for gold. I'm addressing it to you as it may be of particular interest; however, I think it would be appropriate to publish it as a "letter to the editor" in the AEG Newsletter.

During a routine cross-check between two respected commercial laboratories, severe discrepancies in geochemical gold values became apparent. The samples in question came from a "Carlin-type" gold prospect in northern

Nevada, and in fact we're still working out the assay difficulties.

What became apparent in discussions with the analytical chemists involved is that there appears to be no professional organization catering to the needs of analytical problems.

As a working explorationist, I am completely dependent on the availability of reliable commercial geochemical analyses. This is particularly true for gold exploration. This would seem to me to be an area where the Association could make a real contribution toward improving the practice of our craft.

Perhaps a start would be encouraging brief scientific notes from working analytical chemists in the Journal, and sponsoring a session specifically on analytical at the next AEG symposium.

I'd be happy to do some of the legwork in organizing such. I'd be interested to hear your thoughts.

**Peter D. Tillman, Senior  
Geologist  
St. Joe American Corporation  
2002 North Forbes Boulevard  
Tucson, Arizona U.S.A. 85705  
602-622-4766**

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## From the Treasurer's Office

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As it is time again to pay membership dues, I would like to review some of the Association's guidelines. All dues must be paid in American dollars at a rate of \$42.50 for voting and associate members. The Association still occasionally receives cheques for \$42.50 Canadian and these cheques will be returned. There are a few members every year who submit cheques drawn on overseas banks with no North American affiliation. The banks charges the Association up to \$10.00 to process these cheques. It would therefore be appreciated if money orders could be sent instead.

It becomes apparent from the confusion about payment that we could consider an alternate method of dues collection. The option of maintaining a VISA credit card account has been investigated. Due to the fact that the Association's financial operations are

based in Canada, members would find that their VISA accounts were charged with an amount in local currency equivalent to an amount in Canadian funds, at rate of exchange set by VISA. This has been discussed several times in Council but no decision has been made, primarily because there is very little feedback from members about the potential usefulness of this system. If you believe an option to pay dues by credit card would be more simple for YOU, please drop a note to my attention or include a comment with your dues payment.

The Association's Councillors were recently made aware of changes to the American tax laws which precludes deducting membership fees after 1986. A letter has been distributed to all American members offering them the opportunity to pay up to 3 years membership dues to allow them to take

advantage of the tax deductions. Any other members who also feel this would be beneficial to them are welcome to pay in advance this year only. Any members who have already submitted their dues for 1987 without knowledge of this option may send in additional payments, although they should be clearly marked as to which membership year they are intended for.

The Association has operated with a deficit last year and this year. This is primarily due to undertaking new projects such as the Distinguished Lecturer tour, publishing Special Volume 12 (Writing Geochemical Reports) and generally higher operating expenses. Your support of the Association will be appreciated so that we can continue to expand these and other programs.

*L. Bloom*

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# Computer Software Pool

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Computer programmes that are currently available through the AEG are listed below. This list is updated and replaces the list that occurred in Newsletter #56 which had several errors in it (our apologies.) In the future, the program lists will be provided once a year and any new additions will be listed as they are made available.

The programmes that were originally supplied as hardcopy paper format (Newsletter #50) have been discontinued in favour of programmes that have been written for the IBM-PC (DOS) microcomputers. Below is a description of the routines that are currently available from the Ontario Geological Survey through the Association of Exploration Geochemists. These routines have recently been adapted for the IBM-PC microcomputers and are available on one 5.25" double sided double density (DSDD 360 Kb) diskette. The cost for the disk plus postage is \$15.00 Cdn. (\$12.00 U.S.). The cost can be reduced to \$5.00 Cdn. (\$4.00 U.S.) if you send us your disk.

Only the source code is provided. Any routines required for plotting must be supplied by the user. The plotting routines used in the programmes are the Industry Standard Plotting Package (ISPP) routines as such as those used by Calcomp. These programmes have been developed using the IBM Professional Fortran compiler Version 1.18 and make use of Fortran 77 features.

The programmes that are available are:

1: BOUNDARY.FOR: a programme which calculates the following:

a:  $\text{Na}_2\text{O}+\text{K}_2\text{O}$  - FeO (Total) - MgO values for the AFM ternary diagram.

b: Al - Fe+Ti - Mg cation values for the Hensen classification scheme.

c:  $\text{Al}_2\text{O}_3$  - MgO - CaO values for the ACM ternary diagram.

d:  $\text{SiO}_2$  &  $\text{Na}_2\text{O}+\text{K}_2\text{O}$  values for the silica-alkalies diagram.

The programme uses the following subroutines which can be adapted for other purposes.

AFMBND: subroutine that draws AFM calc-alkaline - tholeiite boundary

curve. This curve is defined by Irvine & Baragar (1971).

JENBND: subroutine that draws Jensen boundary curves as defined by Jensen (1976).

ALKBND: subroutine that draws  $\text{SiO}_2$  vs.  $\text{Na}_2\text{O}+\text{K}_2\text{O}$  boundary as shown by Irvine & Baragar (1971).

TRIANG: subroutine that draws the ternary diagram outline. Uses ISPP standard plotting routines.

TRI: subroutine that converts ternary values into x-y cartesian coordinates for plotting purposes.

CHEM: subroutine that calculates and adjusts various chemical components ( $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{Fe}_2\text{O}_3$ , FeO, MgO, CaO,  $\text{Na}_2\text{O}$ ,  $\text{K}_2\text{O}$ ,  $\text{TiO}_2$ ,  $\text{P}_2\text{O}_5$ ,  $\text{CO}_2$ ,  $\text{S}$ ,  $\text{H}_2\text{O}^+$ ,  $\text{H}_2\text{O}^-$ ) as read in from the main programme.

BARTH: subroutine that calculates the BARTH-NIGGLI normative mineral calculation necessary for the Irvine & Baragar rock classification scheme.

IRVBAR: subroutine that calculates volcanic rock names according to Irvine & Baragar (1971).

JENSEN: subroutine that calculates rock names according to the classification of Jensen (1976).

2: JENSEN.BAS: A BASIC programme that calculates volcanic rock names based on the major element chemistry (the same as SUBROUTINE JENSEN above).

3: EQUAL.FOR: A FORTRAN 77 programme that plots linear and planar data on an equal-area projection using ISPP plotting procedures.

These programmes were developed primarily for plotting lithogeochemical data, however they can be adapted to be used with other chemical components or solely for volcanic rock classification purposes.

## References

Irvine, T.N.; Baragar, W.R.A.  
1971: A Guide to the chemical classification of the Common Volcanic Rocks Can. Jour. Earth Sc. vol. 8, p. 523-546.

Jensen, L.S.

1976: A new cation plot for classify Subalkalic Volcanic Rocks, Ontario Div. Mines, Misc. Pap. 66, 22p.

The Association of Exploration Geochemists or anyone else affiliated with the authorship or distribution of the computer programmes assumes no responsibility for any problems or errors that arise from the use of any of the programmes. All users assume use of the programmes entirely at their own risk.

Please note that all orders for software must be accompanied by a cheque or money order payable to:  
The Association of Exploration Geochemists  
P.O. Box 523  
Rexdale, Ontario  
Canada, M9W 5L4

For further information, requests, or submissions, contact:

Eric Grunsky  
Ontario Geological Survey  
911-77 Grenville St.  
Toronto, Ontario  
Canada M7A 1W4  
(416) 965-7046

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## Annual General Meeting 1987

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The Annual General Meeting of the Association of Exploration Geochemists will be held on Saturday, April 25th, 1987 immediately following the last Technical Session in the BRGM Main Conference Room, Orleans, France.

AGM Agenda:

1. Minutes of the 1986 AGM
2. Matters Arising
3. President's Report
4. Secretary's Report
5. Treasurer's Report
6. Admissions Committee Report
7. Introduction of the 1987-88 Executive
8. Announcement of Ordinary Coucillors Elections
9. Any Other Business
10. Adjournment

# Future Meetings

**12th International Geochemical Exploration Symposium  
4th Symposium on Methods of Geochemical Prospecting (12th I.G.E.S. - 4th S.M.G.P.).  
Orleans, France,  
April 23rd-26th, 1987**

## Third Circular

Sponsored by the Association of Exploration Geochemists and the International Association of Geochemistry and Cosmochemistry working group, the Bureau de Recherches Geologiques et

Minieres (BRGM) will host the 12th I.G.E.S.-4th S.M.G.P. at Orleans La Sources, France, from April 23rd to 26th, 1987.

A Third Circular has been mailed by the Organizing Committee to all Association Members. Please note that the deadline for Pre-Registration is March 1st, 1987. If you did not receive a Third Circular, please contact: The Organizing Committee, 12th I.G.E.S. - 4th S.M.G.P. BRGM B.P. 6009 45060 Orleans Cedex 02 France

**EXPLORATION '87,  
Third Decennial International Conference on Geophysical and Geochemical Exploration for Minerals and Groundwater,  
Toronto, Ontario, Canada  
Sept. 27th to Oct. 1st, 1987**

The theme of EXPLORATION '87 is centered on geophysical and geochemical methods and their roles in modern exploration for mineral, groundwater and geothermal resources; recent advances in methodology, instrumentation, field procedures, data processing and interpretation as well as on trends for the future. Emphasis will be placed on the presentation of case histories and on the

application of these sciences in developing countries.

This theme will be elaborated through lectures, seminars an exhibition, poster sessions and in field schools. Post conference visits to instrument manufacturers, geoscience laboratories and service companies will be provided for those interested. For more information contact: EXPLORATION '87 c/o 222 Snidercroft Road Concord, Ontario Canada L4K 1B5 Telephone: (416) 669-2280 Telex: 06-964570 Fax: (416) 669-5132

**Short Course  
Exploration Geochemistry:  
Design and Interpretation of Soil Surveys  
Denver, Colorado  
February 20-22, 1987**

A Society of Economic Geologists short course will be held jointly with the Association of Exploration Geochemists from February 20th to February 22nd, 1987 in Denver, Colorado immediately prior to the 1987 Winter meeting of SEG with the AIME.

The course is designed to update practising exploration geologists on design, implementation and interpretation of soil geochemical surveys including choice of appropriate analytical and statistical methods. Case studies will be used as worked examples

to illustrate both the problems that can arise, and the benefits of a systematic approach to anomaly definition and rating based on sound understanding of geochemical processes in surficial media.

Instructors will be W.K. Fletcher, S. Hoffman, M.B. Mehrtens, A.J. Sinclair and I. Thomson. The basic registration fee of \$320.00 U.S. includes all course fees, Volume 3 of Reviews in Economic Geology, coffee and lunches on the meeting days. Registrations are still being accepted but separate arrangements must be made for accommodations in Denver.

For information and registration forms, contact: Lois Elms, Western Experience, 2369 Carriage Circle, Occaside, CA 92056, 619-722-0027.

## Executive

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**G.L. Coetzee**

**Brazilian Regional Councillor**  
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