

THE ASSOCIATION OF EXPLORATION GEOCHEMISTS



President:

G.J.S. Govett
Dept. of Geology
University of New Brunswick
Fredericton, New Brunswick E3B-5A3
CANADA

NEWSLETTER

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SPECIAL AUSTRALIAN ISSUE

Vice Presidents:

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

P.M.D. Bradshaw
Barringer Research, Ltd.
304 Carlingview Drive
Rexdale, Ontario M9W-5G2
CANADA

Secretary:

J. A. Coope
Newmont Mining Corp.
of Canada Limited,
P.O. Box 105, Commerce Crt,
Toronto, Ontario, M5L 1E3
CANADA

Treasurer:

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

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Australian Regional Councillor
J. F. Gilfillan

The sixth International Geochemical Exploration Symposium is to be held in Sydney, Australia in August this year. This is the first symposium to be held in the southern hemisphere, and it is the first to be held in conjunction with an International Geological Congress. Australia has the third largest national A.E.G. membership (after U.S.A. and Canada) and, as one of the major Mineral-producing countries of the world, is an appropriate host to an exploration geochemistry symposium. This special issue carries a message from the Australian Regional Councillor (J.F. Gilfillan), the Symposium programme, information on exploration geochemistry in Australia, as well as other Association news. Since this issue of the Newsletter will be available to non-A.E.G. members who attend the Sixth International Geochemical Exploration Symposium, there is a section giving general information on the Association.

The Australian Organizing Committee has worked for several years to ensure that the Sixth Symposium maintains the high scientific standards established by its predecessors, and also that the occasion will have memorable social events. I urge as many members as possible to attend this unique symposium -- and hope that many attending non-members will be sufficiently impressed by the meeting to join our Association.

See you in Australia!

G.J.S. Govett
President

6th INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUMA Message of Welcome from J. F. Gilfillan, Australian Regional Councillor

The Organising Committee for the 6th, International Geochemical Exploration Symposium to be held from August 19 to 24, 1976 in Sydney, join me to welcome A.E.G. members and visitors to Australia.

The Symposium is being held in conjunction with the 25th International Geological Congress. As you will know, the I.G.C. is organising many technical and social events during the period of the Congress, from August 16 to 25, 1976, and A.E.G. members should avail themselves fully of these facilities. Additionally, members wishing to travel on excursions will enjoy the variety of technical, semi-technical and scenic tours planned for the Congress.

The 6th I.G.E.S. has an excellent programme arranged with stimulating papers and something of interest to all explorationists. It is no accident, however, that there is some emphasis on subjects related to arid and tropical terrains. We hope that those working in these conditions will find this of particular relevance to their work and that those from other regions will find that the problems provoke their critical attention.

The I.G.E.S. committee is holding a special social function for members and their friends on Sunday, August 22nd. Numbers will be limited so you are urged to act promptly on arrival to secure your tickets from The A.E.G. Information Desk for a particularly pleasant and scenic day trip.

The closing sessions of the Symposium will take the form of a Workshop discussing the subject of Threshold. We are looking forward to stimulating and perhaps provoking short addresses by selected lead speakers on this topic after which the audience will be invited to participate. After four days of listening, we hope you will be in good voice to offer your opinions and share your experiences in matters relating to this important subject.

On arrival, A.E.G. members should register for the Congress then identify themselves at the A.E.G. Information Table. Speakers will be put into contact with the committee member responsible for the organisation of the sessions on the day of their address.

Please approach the committee, directly or through the officer on the Information Table, if you have any problems, if we can help you arrange meetings or special visits, or if there is anything extra we can do to make your stay in Sydney a happy and rewarding occasion. We look forward to meeting you all.

Programme for the 6th International Geochemical Exploration
Symposium -- 25th International Geological Congress, Sydney,
Australia

Thursday, 19 August

Opening Session

- 09:00 C. Butt. Opening remarks and notices
I.E. Newnham. Opening Address
G.J.S. Govett. Presidential Address: "World Mineral
Supplies -- The Role of Exploration Geochemistry"
- 10:30 T e a
- 11:00 M.A. Chaffee. Primary Geochemical Zoning of the
Kalamazoo Porphyry Copper Deposit, Arizona, U.S.A.,
and Applications to Geochemical Prospecting.
- 11:30 C. Unan. Distribution and variation of Major and
Trace Elements in Kizilkaya (Black Sea Coast) Porphyry
Copper Deposit.
- 12:00 M.D. Leggo. Contrasting Geochemical Expressions of
Copper Mineralization at Namosi, Fiji.
- 12:30 K.M. Scott and G.F. Taylor. Geochemistry of the Mammoth
Copper Deposit.
- 13:00 L u n c h
- 14:00 M.N. Cagatay and D.R. Boyle. Geochemical Prospecting
for Volcanogenic Sulphide Deposits in the Eastern Black
Sea Ore Province, Turkey.
- 14:30 H.J. Roesler, P. Beuge, J. Pilot, and G. Tischendorf.
Complex Geochemical Prospecting on Deposits of Solid
and Gaseous Mineral Resources.
- 15:00 D.D. Klemm and N. Neumann. Statistical Evaluation of
the Geological and Geochemical Parameters of the Formation
of Mercury and Antimony Deposits in Southern Tuscany (Italy).
- 15:30 T e a
- 16:00 O. Weiss. Airborne Geochemical Prospecting for Locating
Outcropping Mineralization.
- 16:30 B. Bolviken, F. Honey, S.R. Levine, R.J.P. Lyon, and
A. Prelat. Detection of Naturally Heavy-Metal Poisoned
Areas by Landsat-1 Digital Data.

Friday, 20 August

- 09:00 R.A. Cadigan and J.K. Felmlee. Radioactive-springs
Geochemical Data Related to Uranium Exploration.
- 09:30 K.J. Wenrich-Verbeek. Analysis of Uranium and Associated
Elements in Surface Waters and Stream Sediments as an
Exploration Technique for Uraniferous Deposits.
- 10:00 J.B. Cowart and J.K. Osmond. Uranium Isotopes in Ground-
Water as a Method of Prospecting for Sandstone-type Deposits.
- 10:30 T e a
- 11:00 D.L. Leach and K.P. Puchlik. Dispersion of Uranium and
Selected Trace Elements in Playa Basins.
- 11:30 M.F. Foy and J.E. Gingrich. A Stream Sediment Orientation
Programme for Uranium in the Alligator Rivers Province,
N.T., Australia.
- 12:00 G.H. Sherrington. Some Aspects of Natural Gamma Radiation
in Ore Search.
- 12:30 I. Friedman, T. Denton, A.A. Roberts and G.M. Reimer.
A Mobile Helium Sniffer for Petroleum, Uranium and Geo-
thermal Prospecting.
- 13:00 L u n c h
- 14:00 TO BE ANNOUNCED
- 14:30 S.B. Devine and H.W. Sears. Soil Hydrocarbon Geochemistry,
a Potential Petroleum Exploration Tool in the Cooper
Basin, Australia.
- 15:00 A.Z. Gedeon, E.H. Nickel, C.R.M. Butt, K.A. Gardner and
M.K. Hart. The Applicability of some Geochemical
Analytical Techniques in Determining "Total" Composition
of Some Lateritized Rocks.
- 15:30 T e a
- 16:00 O. Soeharto. Comparative Study of Low Grade Gold Ore
Analysis.
- 16:30 J.C. van Moort. Sequential Soil Analysis in Exploration
Geochemistry.

Monday, 23 August

- 09:00 H. Stigzelius. Recognition of Mineralized Areas by a Regional Geochemical Survey of the Till-Blanket in Northern Finland.
- 09:30 E.M. El Shazly, N. Barakat, E.A. Eissa, H.H. Emara, I.S. Ali, S. Shaltout and F.S. Sharaf. Geochemical Exploration Under Extremely Arid Conditions.
- 10:00 J.J. de Oliveria. Soil Studies for Geochemical Exploration in Dry Areas of the State of Bahia, Northeast Brazil.
- 10:30 T e a
- 11:00 E.H. Nickel and M.R. Thornber. Chemical Constraints on the Weathering of Serpentinites Containing Ni-Fe Sulphides.
- 11:30 P.G. Moeskops. Yilgarn Nickel Gossan Geochemistry -- A Review Including New Data and Considerations.
- 12:00 G.H.W. Friedrich and S.M. Christensen. Geochemical Dispersion Patterns Associated with the Lake Yindarlgooda Sulphide Mineralization, Western Australia.
- 12:30 B.H. Smith. Some Aspects of the Use of Geochemistry in the Search for Base-Metal Sulphides in Lateritic Terrain in Western Australia.
- 13:00 L u n c h
- 14:00 K. Bampton, A. Collins, K. Glasson and B. Guy. Geochemical Evidence of Concealed Mineralization in an Area North-West of Mount Isa.
- 14:30 R. Cox and R. Curtis. The Discovery of the Lady Loretta Zinc-Lead-Silver Deposit, North-West Queensland. A Geochemical Exploration Case History.
- 15:00 J.H. Rattigan, R.W. Gersteling, D.G. Tonkin. Exploration Geochemistry of the Stuart Shelf, South Australia.
- 15:30 T e a
- 16:00 J.R. Wilmshurst. The Recognition of Gossans and Related Rocks.
- 16:30 S.L. Schvartsev. The Geochemistry of Laterite Weathering Processes.

Tuesday, 24 August

- 09:00 H.L. Barnes and N.G. Lavery. Use of Primary Dispersion for Exploration of Mississippi-Valley Type Deposits.
- 09:30 I.G.L. Sinclair, Primary Dispersion Patterns Associated with the Zinc-Copper-Silver Deposit at Lac Brouillan, Province of Quebec.
- 10:00 W.R. Ryall, Anomalous Trace Elements in Pyrites in the Vicinity of Mineralized Zones at Woodlawn, N.S.W.
- 10:30 T e a
- 11:00 J.C. Antweiller and W. L. Campbell. Application of Gold Compositional Analyses to Mineral Exploration in the United States.
- 11:30 P.K. Secombe. Sulphur Isotope and Trace Metal Composition of Statiform Sulphides as an Ore Guide in the Canadian Shield.
- 12:00 J.R. Watterson, G.B. Cott, G.J. Neuerburg, H.W. Lakin and J.B. Cathrall. Tellurium Dispersion Patterns as Guides to Mineral Deposits.
- 12:30 G.H. Gale, J.A. Pearce and E. Schreibner. The Role of Greenstone Geochemistry in the Search for Massive Sulphide Deposits.
- 13:00 L u n c h
- 14:00 Workshop "Threshold - Fact or Fiction?"
- 15:30 T e a
- 16:00 Workshop continues.

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WORKSHOP "Threshold -- Fact or Fiction"

Tuesday, 24 August, 14:00 hours

It is often said that in any technical discussion, there will be as many opinions as there are geologists present. If that is so, try several hundred geochemists on "Threshold". This is the subject of a workshop discussion to be held at the 6th International Geochemical Exploration Symposium.

There is no subject more fundamental for the interpretation of field results than the determination of threshold. But what is "Threshold"? Is it something that makes a group of samples stand out to a field geologist who knows the local geology; should we apply more rigid mathematical treatment to our field data and introduce an assessment of the influence of geological factors; perhaps a more academic approach with advanced computations is of more importance than the geology; or is it just a statistical concept related to that group of samples which refuses to be smoothed out? What does the chemist who provides the data think about all this?

These are some of the areas we hope to explore at the workshop. Various topics will be introduced by lead speakers, but we will be looking to the professional exploration geologists and geochemists from all schools to express their views and share with us their experiences and, hopefully, to reach a consensus on this difficult question.

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Social Function

On Sunday, 22 August, a social outing has been arranged. Starting at 9:30 a.m. participants will be taken by bus along the northern beaches to Pittwater where they will board a launch for a cruise on Borken Bay and Hawkesbury River. Lunch and refreshments will be served aboard the launch. During the return bus trip to Sydney, delegates will have the opportunity of seeing some of Australia's unique animals at a Nature Reserve.

Full cost for the day will be \$15.00 per adult and \$10.00 per child. As only 100 can be accommodated, we suggest that you get your tickets early from the A.E.G. Information Desk.

Busses will pick up at the University of Sidney (9:00 a.m.) Boulevard Hotel (9:15 a.m.) and Wentworth Hotel (9:30 a.m.).

For further details contact any of the A.E.G. Symposium Committee.

Publications of Proceedings

The Proceedings of the Symposium will be published in a special issue of the Journal of Geochemical Exploration. There will be no additional charge to Journal subscribers. A proceedings issue will also be published separately by Elsevier in book form.

All papers presented will be published but normal refereeing procedures and standards will apply. Manuscripts must be prepared in the format of the Journal of Geochemical Exploration with short abstracts. Manuscript length will be limited to about 12 to 13 Journal pages and must be submitted to Dr. C.R.M. Butt as soon as possible and not later than August 20, 1976, if they are to be included. Dr. Butt's address is C.S.I.R.O. Minerals Research Laboratories, Private Bag, P.O. Wembley., W.A. 6014, Australia.

GENERAL TECHNICAL INFORMATION FOR VISITORS TO AUSTRALIASome Aspects of Geochemical Research in Australia

Geochemical research and study in Australia is being undertaken at several levels of effort and with varying practical and academic objectives. The three main sponsors of this work are geological surveys, universities and research organizations, and private companies and service companies. This brief summary is designed to give some other workers in geochemical exploration and research an indication of some areas where complementary study may be in progress. Visitors to the Symposium are invited to enquire at the Information Desk for a personal contact if they wish to pursue any subject which is of interest to them.

Geological Surveys(i) Bureau of Mineral Resources - Canberra

Analytical methods, ore formation, weathering, regional exploration, statistical evaluation, stream sediment and heavy mineral techniques, map compilation, computer applications, exploration in sedimentary basins.

Current projects:-Mineralisation at Tennant Creek, N.T.

- Surveys, Georgetown, Qld., Westmoreland, N.T.
- Geochemistry of Cullen Granite, N.T.
- Canning Basin, W.A.
- Georgina Basin, N.T./Qld.

(ii) Mines Department - Tasmania

The role of humus substance in weathering and in the development of metal dispersion patterns.

(iii) Mines Department - Victoria

Geochemistry of Antimony.

(iv) Geological Survey of N.S.W. - New South Wales

Base metals in the Lachlan Fold Belt, low-grade copper deposits, metallogenic maps.

Universities and Research Organizations(i) CSIRO - Minerals Research Laboratories, Perth, W.A.

Geochemical techniques for arid and lateritised terrain with particular reference to nickel sulphide deposits, hydromorphic dispersion in the Yilgarn, analytical methods, groundwater geochemistry particularly for U, Cu, & Zn, exploration techniques in the metamorphosed Proterozoics of the Hamersley Basin and Bangemall Groups.

(ii) CSIRO - Minerals Research Laboratories, Sydney, N.S.W.

Analytical methods, exploration application of Pb isotopic and U-Th-Pb systematics in ores, Strontium and lanthanide studies into origins of ores, pathfinder techniques for base metal exploration, primary dispersion, exploration methods for oil and gas based on the study of organic matter and the geochemistry of sediments; carbon, oxygen and sulphur isotope geochemistry of sulphide and fossil fuel deposits, base metal deposits of N.W. Qld. and related secondary dispersion, gossans and ironstones; geochemical discrimination of 'true' and 'false' anomalies, gossan and ironstone geochemistry, secondary dispersion related to base metal sulphides.

(iii) Royal Melbourne Institute of Technology - Victoria

Geochemistry of granites.

(iv) Queensland Institute of Technology - Brisbane

Gossan geochemistry, multivariate statistical methods, biogeochemistry, geobotany.

(v) University of Melbourne - Victoria

Distribution of Selenium and Tellurium in nickel sulphide exploration, Pd, Ir, and Au in nickel sulphide exploration, Tl, As, Sb, & Hg associated with base metal deposits, enrichment haloes in the McArthur River area, non-metallic minerals, halogens associated with ultramafics - W.A., precious metals and geochemistry at Mt Clifford, W.A.

(vi) University of Newcastle - New South Wales

Stable isotopes.

(vii) University of New England, Armidale, N.S.W.

Geochemistry of gold.

(viii) University of Papua New Guinea, Port Moresby

Porphyry copper exploration, kimberlite exploration.

(ix) James Cook University, Townsville, Qld.

Geochemical specialisation in granites in N.Qld. with particular reference to U, Sn, Cu, and Au, geochemistry of Mineralisation zones.

Companies and Service Companies

Apart from the widespread general utilisation of geochemical techniques exploration throughout Australia by field exploration crews, some companies are specialising in the development of particular methods, including:

- low level regional reconnaissance stream sediment surveys,
- computer applications,
- gossan textures and geochemistry
- analytical techniques,
- geochemical mapping,
- data presentation,
- geochemistry of uranium,
- energy dispersive XRF techniques,
- vapour geochemistry,
- sub-surface surveys.

Service companies offering consulting, contracting and/or analytical services are located in most major cities and some regional centres. Visitors to the Symposium wishing to make contact with some of these organisations should enquire at the Information Desk.

Open Days -- CSIRO Minerals Research Laboratory

Visitors to the International Geological Congress in Sydney can avail themselves of either an arranged excursion or an informal visit to the CSIRO Minerals Research Laboratories at North Ryde.

The Minerals Research Laboratories were formed in 1971 when several CSIRO Divisions doing research of interest to the mining industry were grouped together. Of the Divisions in this group, Mineralogy, Mineral Physics and Process Technology are located at North Ryde.

The Open Days are on August 12th (invitation only), 13th, 14th and 16th. Congress visitors are particularly welcome on Monday 16th and a special excursion has been arranged for Friday 20th.

Displays of particular interest to geochemists include studies of base metal mineralization and the effect of weathering in the Lachlan Fold Belt (N.S.W.) and the Carpentarian of northwest Queensland, rare-earth uranium mineralization in the Willyama Block, application of organic geochemistry to petroleum exploration and a selection of analytical techniques.

Other displays include structural analysis, palaeomagnetism, remote sensing, electromagnetic exploration techniques, coal characterization and a range of mineralogical techniques.

The laboratories are situated on Delhi Road, North Ryde, next-door to Channel 10 TV Station. For further information contact the A.E.G. Information Desk during the Congress.

Maps and Publications, Geological Survey of New South WalesMetallogenic Maps

Visitors to the Congress are invited to inspect the new series of Metallogenic Maps of New South Wales being prepared by the Geological Survey. These maps, on 1:250,000 scale, are on a geological tectonic base and provide data on the mineral deposits within the area covered. Each map is supplied with mine data sheets and interpretative notes.

A wide area of Eastern N.S.W. has now been covered with these maps which are available in published or dyeline-preliminary form. The programme is continuing to the west over the State.

Members interested to view and discuss these maps should contact John Hobbs of the A.E.G. Organising Committee directly or through the A.E.G. Information Table. The Geological Survey is located near the Wentworth Hotel at 8-18 Bent Street, Sydney. Maps will be on display at the Congress.

Mineral Deposits of New South Wales

A recent publication of interest to all economic geologists is the "Mineral Deposits of New South Wales" published by the Geological Survey of New South Wales and edited by N.L. Markham and H. Basden. The book discusses the tectonic framework of N.S.W. and its relationship to mineralisation.

OTHER ASSOCIATION NEWS AND BUSINESSGeneral News

(1) The permanent office of the Association is now established at the address given on page 1 of this Newsletter; there is a part-time secretary, Mrs. Ines Filicetti, in attendance to ensure that your correspondence is directed to the right person and is promptly answered. You are reminded that all correspondence should be addressed to the permanent office.

(2) E.V. Post has resigned as Secretary of the Association; as he announced at the Annual General Meeting in Fredericton in April, he took this step to allow a Toronto-based Councillor to act as Secretary during the early period of establishment of the permanent office. J.A. Coope has been elected by Council to complete the 1976-1977 term as Secretary; E.V. Post will serve as ordinary Councillor for the remainder of this year.

(3) The second draft of the articles of incorporation is now being reviewed by your Council, and it is expected that the final draft will be ready for approval in October of this year.

(4) Your free copy of the 1972-1975 geochemistry bibliography should be mailed to you this month.

Nominations for Council

It is time for you to consider nominations for Councillors for 1977-1979. There will be six vacancies on Council, and your nominations must be received by the Secretary by 1 November 1976. The conditions for nomination are given in By Law 39 (iv) of the Constitution and By Laws of the Association.

"... any six voting members may nominate any duly qualified Member for election as an Ordinary Councillor by delivering such nomination in writing to the Secretary together with the written undertaking of that Member to accept office and attend Meetings of Council if elected."

Membership Applications

You will find a membership application form attached to this Newsletter. This is for you to pass to a well-qualified colleague who is not now a member; also, you should lend him or her the last Newsletter (No. 18) which outlines some of the advantages of membership in the association. Remember, it is to your advantage for the Association to increase its membership.

Correction

The Postal Code for the Association Office shown on page 1 of Newsletter No. 18 was incorrectly given as M9Q 5L4; the correct Code is M9W 5L4.