



THE ASSOCIATION OF EXPLORATION GEOCHEMISTS

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NEWSLETTER

NO. 45

SEPTEMBER 1983

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

With regret we record the death of N.H. Brundin on December 15, 1982, in Sweden, (see Obituaries on page 3).

Roy Cox has resigned as Chief Mineral Geologist from Robertson Research (Australia Pty. Limited). He will continue as an independent international consultant in economic and mining geology. His address is Roy Cox & Associates Pty., Ltd., 1 Brigalow Place, Westleigh, N.S.W. 2120, Australia. Telephone (02) 847729. Telex INTSY AA10101+ROYCOX.

With regret we record the death of L.C. Huff on July 17, 1983 in U.S.A. (see Obituaries on page 4).

Chester E. Nichols is now consulting out of Reno, Nevada after 15 years with Union Carbide. He is currently attempting to raise money for drilling a number of worthy gold and tungsten prospects and is renting Union Carbide's old office at 751 Ryland St., Reno, Nevada, 89502, USA. Telephone (702) 322-4223.

A MESSAGE FROM THE PRESIDENT - L. Graham Closs

The 10th International Geochemical Exploration Symposium held in Helsinki, Finland was an unqualified success. The inclusion of premeeting workshops (Till, Biogeochemistry, Hydrogeochemistry, Bulk Standards, and Threshold and Anomaly Interpretation) and panel discussions during the meeting (Involvement of geochemistry in aid programs and Status of geochemistry in mineral exploration) proved to be extremely well received additions to the standard oral presentations and poster sessions. Their inclusion in future symposia should be strongly considered. The chairman of the workshops have been contacted regarding preparation of a summary report of these meetings for distribution to the entire membership via the Newsletter. The proceedings of the symposia are being prepared for publication in the Journal of Geochemical Exploration in 1984. On behalf of the membership, I would like to express our sincere appreciation to Alf Bjorklund, Chairman, and his Scandinavian colleagues for organizing this excellent meeting enjoyed by some 400 attendees.

It is with considerable regret that I report to you that due to the current economic climate, Brazil will not be able to host the 12th IGES in 1987.

During the Helsinki meeting, AEG had an opportunity to meet with representatives of the cosponsoring organization, the Working Group on Geochemical Prospecting of the International Association of Geochemistry and Cosmochemistry, to discuss future possibilities for cooperative activities in exploration geochemistry. Four items were identified for immediate consideration: (1) Possible Second Joint Meeting - 12th IGES/IAGC meeting in 1987, (2) Preparation of a multilanguage glossary of exploration geochemistry, (3) Compilation of litho-geochemistry case histories to characterize the signature of various types of mineral deposits represented worldwide (G.J.S. Govett is AEG representative), and (4) Discussions on the preparation of geochemical field manuals for different environments. (A.W. Rose is AEG representative). Many of these topics you will recognize as already suggested or in progress with AEG. With this cooperative format, it is hoped that we can move forward in these areas at an accelerated rate.

Finally, the first Extraordinary General Meeting of AEG was convened at the 10th IGES in Helsinki. Its purpose was to vote on the 6 proposed By-Law changes circulated to the membership in April. All By-Law changes were passed unanimously. These changes represent housekeeping issues that will permit the Association to function more efficiently in the future.

Let me close by encouraging each of you to participate actively in any or all of the affairs of your association. We value your contribution. Thank you.

OBITUARIES

RESOLUTION: Presented at the opening luncheon meeting of the 10th International Geochemical Exploration Symposium, Monday August 29, 1983, in Helsinki, Finland.

Nils H. Brundin, September 15, 1909 to December 15, 1982

Shortly after returning from Indonesia where he had been participating in a workshop on biogeochemical mineral exploration in tropical rain-forest environments, Dr. Nils H. Brundin, one of the pioneers of geochemical exploration deceased. At the time of his death he was retired but still acting as a consultant for Geological Survey of Sweden and Swedish Geological.

The workshop was based on the results from an experimental geochemical exploration project, with emphasis on biogeochemical methods, initiated by him and executed in Northern Sumatra. By ending up with this project the circle was closed, since he started his career by initiating and performing biogeochemical experiments in Central Sweden in 1935. This was in the early days of exploration geochemistry.

At the time of his death the Association was in the process of proposing him for Honorary Membership, an award he did not have the opportunity to experience. The Honorary Membership was meant to be a recognition for his significant and fundamental contribution, over many years, to the field of exploration geochemistry.

Dr. Brundin studied geochemistry at Professor V.M. Goldschmidt's Institute in Gottingen in 1933. There he became acquainted with optical emission spectrography. After his studies he continued a couple of years with Boliden Mining Company in Sweden, where he realized that the application of geochemistry could solve many of the problems involved in the prospecting for ores if cheap and rapid multielement/emission spectrography was used for analysis.

With the results from the experiments in Central Sweden as a basis, he made, together with a Swedish colleague, a Swedish and U.S. patent application for geochemical exploration methods. The U.S. patent was granted in 1939.

Together with his friend and colleague Dr. Sven Palmqvist, he was employed by an English firm in 1937 for geochemical prospecting in Cornwall and Wales for a couple of years. During that period they got very promising results, and when returning to Sweden they succeeded to interest the well-known businessman, Dr. Axel Wenner-Gren, to establish the Swedish Prospecting Company in 1939.

The business idea of the company was exploitation of geochemical prospecting, mainly internationally. But due to difficulties during the Second World War and trying to commercialize the method at too early a stage, the company ceased to exist in 1944.

During the major parts of the forties and fifties Dr. Brundin was employed by Hoganas-Billesholms AB where he acted as chief of powder-metal-lurgical research and the development of extraction of vanadium from titaniferous ores, which have resulted in industrial exploitation.

Before he entered the geochemical exploration field again in 1964, he spent a period with the United Nations Technical Assistance Organization in prospecting for and industrial use of mineral resources in Northern Brazil and Egypt.

During his last period, from 1964 and till he retired in 1978, he was intimately involved in the development of methods for regional geochemical exploration, especially suitable for Scandinavian conditions. Two of these methods, the use of stream peat and heavy mineral concentrates from glacial till, are in operational use in a nationwide geochemical mapping program as well as for ores prospecting projects in Sweden.

To many of the younger exploration geochemists Dr. Brundin name may not be very well known since he was not a very active publisher of his scientific results. Despite that, he was a well-known professional in the Scandinavian countries and internationally.

To us, friends and colleagues, who had the opportunity to live, work and travel with him, and in privacy enjoy his company, Nils Herman was a gentleman in the ultimate meaning and an easy going fellow that we sincerely miss.

Jim Bergstrom:
on behalf of the
Association of Exploration Geochemists

Lyman C. Huff, October 15, 1914 to July 17, 1983

Lyman Huff passed away after a short illness at the age of 69.

After completing an undergraduate degree in Chemistry and a Ph.D program in Geology both at the University of Chicago, he joined the U.S. Geological Survey in 1941. It was not until 1946 when the geochemical prospecting program at the Survey was born that Lyman, along with Helen Canon and H.E. Hawkes became involved. They pioneered in getting this program off the ground in the United States as they were the nucleus around whom the research was built. Lyman chose to investigate heavy metals in surface and ground waters and two years later, 1948, developed a sensitive dithizone field test for water. The few reagents were easily portable and permitted on-site semi-quantitative analyses to be made simple and rapidly, to the complete surprise of the classical chemists who believed otherwise.

This led to his field test for heavy metals in solid and sediments using dithizone and dilute nitric acid as the hot digestant facilitated the tracing of heavy metal trains in sediments to mineralized sources.

Secondary dispersion patterns then commanded his attention. Choosing the Southwest and Western states as his field areas, he developed and documented the patterns over a wide variety of base metal veins as well as porphyry copper deposits. The phreatophyte Mesquite was shown to collect anomalous molybdenum through the alluvium in the Pima district, Arizona, using a portable kiln to ash the twig samples.

He taught for the United Nations at the Institute of Applied Geology Manila, for two years and was the keynote speaker at the AEG symposium in Tucson, 1979.

He retired in 1972 and enjoyed his later years between playing tennis and writing of novels of which he had completed two.

His many colleagues and friends will miss him for he was a thoroughly amiable, warm and generous person.

Harold Bloom

FUTURE MEETINGS

ASSOCIATION OF EXPLORATION GEOCHEMISTS REGIONAL SYMPOSIUM

"EXPLORATION FOR ORE DEPOSITS OF THE NORTH AMERICA CORDILLERA" Reno, Nevada
March 25 - 28th, 1984

Second Notice

The Symposium organizing committee believes that this will be the best meeting for exploration geologists in 1984. In addition to stimulating technical sessions, the Reno location provides for excellent field trips and exciting social programs. Please refer to the enclosed second circular for registration materials and details about this meeting.

NORTHWEST MINING ASSOCIATION CONVENTION - Spokane, Washington, November 28 - 30th, 1983

The theme of the 1983 NMA Convention will be "Domestic Mining - An Era of Change". A short course entitled "Five New Silver-Gold Mines" will be offered in addition to the technical sessions. Further details can be obtained from,

The NorthWest Mining Associations
633 Peyton Building
Spokane, Washinton 99201, USA
Telephone (509) 624-1158

ONTARIO GEOLOGICAL SURVEY - Seminar and Open House, December 6-7, 1983

The Ontario Geological Survey will hold a two-day Geoscience Research Seminar and Open-House on December 6 and 7th, 1983 in the Ontario Room, McDonald Block, Queen's Park, Toronto. The theme of the Seminar will be Archean Volcanism and Mineral Deposits. For further information please contact,

Wendy Paquette
Ontario Geological Survey
1124-77 Grenville Street,
Tornto, Ontario M5S 1BJ

Telephone (416) 965-1546

COMPUTER APPLICATIONS IN MINERAL EXPLORATION, TORONTO, January 10th-11th, 1984

This meeting, sponsored jointly by the Toronto Geological Discussion Group, the Mineral Deposits Division of the Geological Association of Canada, the Canadian Institute of Mining and Metallurgical (Toronto Branch), the Canadian Exploration Geophysical Society and the Association of Exploration Geochemists will be held at the Sheraton Centre, Toronto from January 10th to 11th, 1984. It is aimed directly at the practicing geologist, geophysicist and geochemist to demonstrate the use of computer techniques in exploration. Further details are given in a first circular included with this Newsletter.

RADIOACTIVE WASTE MANAGEMENT - A GEOSCIENTIFIC ASSESSMENT,
CANBERRA, AUSTRALIA, November 30th, 1983

The Australian Geoscience Council is sponsoring a one-day symposium on Radioactive Waste Management. This symposium is designed as an apolitical assessment by geoscientists of methods, and controls for the land-based storage of high and low level radioactive waste from the nuclear power industry. A series of invited papers have been arranged in order to present authoritative and scientific information on the nature and management of radioactive wastes, radiations protections standards, the OKLO reactors, high level waste disposal, SYNROC, and the environmental impact of uranium mining and milling and low level waste repositories. Group discussions and reporting of results of discussions to a plenary sessions are included in the program. For further particulars write to,

Symposium on Radioactive Waste Management
c/o Australian Academy of Science
Conference Secretariat
GPO Box 784
Canberra City, ACT 2601, Australia

PROSPECTING IN AREAS OF GLACIATED TERRAIN - GLASGOW, SCOTLAND,
May 17 - 18th, 1984

The sixth symposium in the series "Prospecting in Areas of Glaciated Terrain" sponsored by the Institution of Mining and Metallurgy will be held at Strathclyde University, Glasgow, Scotland on May 17 and 18th, 1983. A pre-symposium field trip to the Aberfeldy deposits is planned in addition to the technical sessions. For further details write to:

The Secretary
The Institution of Mining and Metallurgy
44 Portland Place
London, W1N 4BR, England

11TH INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM - TORONTO, CANADA,April 28th, - May 1st, 1985- F I R S T C I R C U L A R -

The organizing committee for this Symposium have planned a stimulating program on topical and general interest subjects including technical sessions on the Bedrock Environment, Surficial Environment and Environmental Geochemistry. Further details are given in the First Circular with this Newsletter.

11TH ANNUAL GEOSCIENCE FORUM - YELLOWKNIFE, NORTHWEST TERRITORIES, CANADADecember 8th, and 9th, 1983.

The 11TH Annual Geoscience forum organized by the Geoscience Forum Committee in co-operation with the NWT Chamber of Mines, Indian and Northern Affairs Canada and the G.S.C. will be held in the Explorer Hotel, Kati-mavik oom, Yellowknife, N.W.T. Further details are available from:

Carole Varty
Geoscience Forum Committee
Bag 9100, Yellowknife, NWT
Canada X1A 2R3

Telephone: (403) 920-8210

CALENDAR OF COMING EVENTS

To assist Members in completing their plans for attending various future exploration symposium and meetings a calendar of coming events will appear as a regular feature in the Newsletter.

1984

January 10-11, 1984

COMPUTER APPLICATIONS IN MINERAL EXPLORATION, Toronto, Canada, Sponsored by TGDG, GAC, CIMM, KEGS, and AEG (see Newsletter for further details).

February 22-23, 1984

APPLIED MINERALOGY IN THE MINERALS INDUSTRY (2nd International Congress), Los Angeles, California, U.S.A. (The Organizing Committee Chairman, ICAM 84, P.O.Box 310, Danbury, CT, 06810, U.S.A.)

March 4-7, 1984

PROSPECTORS AND DEVELOPERS ASSOCIATION 52nd ANNUAL CONVENTION, Toronto, Canada.

March 25-28, 1984

ASSOCIATION OF EXPLORATION GEOCHEMISTS REGIONAL SYMPOSIUM, Reno, Nevada, (see Newsletter for further details).

March 26-30, 1984

COMPUTER APPLICATIONS IN THE MINERAL INDUSTRIES (18th International Symp ium, London, U.K. Organized by the Institution of Mining and Metallurgy. (The Conference Office, Institution of Mining and Metallurgy, 44 Portland Place, London, W1N 4BR, U.K.)

March 26-30, 1984

RECENT ADVANCES IN MINERAL SCIENCE AND TECHNOLOGY (International Conference), Johannesburg, South Africa, Sponsored by the South African Council for Mineral Technology, (The Conference Secretary (C.25), Mintek, Private Bag X3015, Randburg, 2125 South Africa).

April 9-13, 1984

GEOLOGY, MINERAL AND ENERGY RESOURCES OF SOUTHEAST ASIA (GEOSEA V), Kuala Lumpur, Malaysia, Sponsored by Geological Society of Malaysia, AGID, (T.T. Khoo, Dept. of Geology, University of Malaysia, Kuala Lumpur 22-11, Malaysia).

April 15-19, 1984

CANADIAN INSTITUTION OF MINING AND METALLURGY, 86th Annual Meeting, Ottawa, Canada (Ste. 400 - 1130 Sherbrooke St., W., Montreal, Quebec, Canada M3A 2M8).

May 14-16, 1984

GEOLOGICAL ASSOCIATION OF CANADA, MINERALOGICAL ASSOCIATION OF CANADA (Joint Annual Meeting), London, Ontario, Canada. (N.D. MacRae, Department of Geology, University of Western Ontario, London, Ontario, Canada N6A 5B7).

May 17-18, 1984

PROSPECTING IN AREAS OF GLACIATED TERRAIN, Strathclyde University, Scotland.

June 23-26, 1984

PRACTICAL APPLICATIONS OF GROUNDWATER GEOCHEMISTRY (Workshop), Banff, Alberta, Canada. (Dr. E.I. Wallick, Alberta Research Council, 5th Floor Terrace Plaza, 4445 Calgary Trail South, Edmonton, Alberta, Canada T6H 5R7).

August 4-14, 1984

27th INTERNATIONAL GEOLOGICAL CONGRESS, Moscow, U.S.S.R. (N.A. Bogdanov, General Secretary, Organizing Committee of the 27th IGC Staromonetny per, 22, Moscow 109180, U.S.S.R.)

August 27-31, 1984

WATER MOVEMENT IN HEAVY CLAY SOILS (Meeting), Wageningen, Netherlands. (Dr. W.G. Sombroek, 1555, International Soil Museum, 9 Duivendaal, POB 353, 6700 A.J. Wageningen, The Netherlands)

September 10-14, 1984

TITANIUM (5th International Conference), Munich, F.R.G. (Deutsche Gesellschaft fur Metallkunde E.V., Adenaureallee 21, D-6370 Oberursel, F.R.G.)

September 10-14, 1984

HYDROCHEMICAL BALANCES OF FRESH WATER SYSTEMS (International Symposium), Stockholm/Uppsala, Sweden. Sponsored by Swedish Natural Science Research Council, Unesco, and IAHS, (International Symposium on Hydrochemical Balances of Fresh Water Systems, c/o Stockholm Convention Bureau, Joakobs Torg 3, 5-111 52 Stockholm, Sweden)

October 1-5, 1984

REMOTE SENSING OF ENVIRONMENT (18th International Symposium), Paris, France. (Environmental Research Institute of Michigan, P.O.Box 8618, Ann Arbor, MI 48107, U.S.A.)

November 5-8, 1984

GEOLOGICAL SOCIETY OF AMERICA (Annual Meeting), Reno, Nevada, U.S.A. (S.S. Beggs, Geological Society of America, P.O.Box 9140, 3300 Penrose Place, Boulder, CO 80301, U.S.A.)

November 19-23, 1984

12th WORLD MINING CONGRESS, New Delhi, India (Organizing Committee Institute of Engineers, 8 Gokhale Road, Calcutta 700 020, India.)

December 2-6, 1984

SOCIETY OF EXPLORATION GEOPHYSICISTS (54th Annual Meeting, Atlanta, Georgia, U.S.A. (3 Hyden, SEG, Box 3098, Tulsa, OK 74101, U.S.A.)

1985

April 1985

PROSPECTING IN AREAS OF DESERT TERRAIN (Conference), Rabat, Morocco. (Conference Office, IMM, 44 Portland Place, London W1N 4BR, U.K.)

April 21-25, 1985

CANADIAN INSTITUTION OF MINING AND METALLURGY, 87th Annual Meeting, Vancouver, Canada.

April 28 - May 1, 1985

11TH INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM, Toronto, Canada.

July 28 - August 2, 1985

8th INTERNATIONAL CLAY CONFERENCE, Denver, Colorado. Sponsored by AIPEA, (Dr. A.J. Herbillon, Groupe de Physico-Chimie Minerale et de Catalyse, Univ. Catholique de Louvain, Place Croix du Sud 1, B-1348 Louvain-la-Neuve, Belgium)

September 8-13, 1985

HYDROGEOLOGY IN THE SERVICE OF MAN

September 15-21, 1985

FIRST INTERNATIONAL CONFERENCE ON GEOMORPHOLOGY; Geomorphology, Resources, Environment and the Developing World (British Geomorphology and Research Group, University of Manchester, Manchester, England, M13 9PL, U.K.)

FROM THE SECRETARY'S OFFICE - R.E. Lett

One of the factors responsible for maintaining the strength and international reputation of our Association had been the excellence of AEG sponsored symposium and meetings. The success of the 10th IGES in Helsinki upheld this tradition and you will find further details of the meeting in the President's letter in this Newsletter. I am certain that all Members will join me in congratulating A. Bjorklund and his organizing Committee on the outstanding success of the Symposium. Planning for the 11th IGES to be held in Toronto, Canada in 1985 is already in progress and a first circular is distributed with this newsletter.

As you are well aware the next Association Regional Meeting will be held in Reno Nevada from March 25-28th, 1984 and will undoubtedly be very popular in view of the continued interest in precious metals exploration throughout the western United States and Canada. The Reno Meeting will also feature the Associations Annual General Meeting during which the new Executive will be introduced and six ordinary Councillors for the 1984-86 term are elected. Candidates for Council may be nominated by either a resolution passed by Council or by a written nomination from six Voting Members submitted to the Secretary before November 1st, 1983. A written nomination from voting Members must include a statement to the effect that the elected Member agrees to serve on Council and will attend Council Meetings. I would urge Members to give some thought to nominating Councillors and if they would like further details of the process to contact me through the Associations Rexdale Office.

Members may recall an open letter from Stan Hoffman on the topics of reviewing symposium papers which appeared in the June Newsletter. Unfortunately a reply from which should have accompanied the letter was omitted. To avoid confusion I have reprinted the original letter with the missing form and is distributed with this newsletter.

There is still continued interest from Members on the subject of translating Russian geochemical literature. I have included a second list of untranslated papers on precious metals geochemistry sent to me by Laurie Curtis and A. Sulkowski. In addition Howie McCarthy has asked me to include details of a 1982 U.S.G.S. publication listing roughly one thousand translation titles.

Several Members have complained of delays and problems in obtaining copies of the Geochemical Handbook ordered in March, Elsevier have written to me (and I assume other Members) about a delay in issuing Volume 1 due to reprinting. Although I have just received volume 2 and 3 there was a considerable time difference between the arrival time of the two volumes. Certainly let us know if you are still missing volumes you have ordered so that we can alert Elsevier to the problem, but do make some allowances for postal delays.

Please remember that payment of your 1984 Membership dues must be made by January 1st, so that the smooth running of your Association can be maintained. Although most of you were prompt in sending a contribution for 1983, a small number of Members have still to do so. If you are in this group you will shortly receive a letter urging you to make payments before the end of the year.

On the 1984 Dues Notice enclosed with this Newsletter you will find an explanation of the various methods of preferred payment. Probably the easiest and least expensive procedure is for the Association to handle cheques drawn on North American Banks and International Money Orders. We realise that this can be difficult for some members and therefore we will accept UNESCO Coupons and International Postal Orders, but please if you use this method and think that there may be additional handling charges include them with your payment. You may pay directly via bank transfer if this is more convenient, the association's account is with,

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

If you use the latter method, please still return your "Dues Notice" to us with a note of the originating bank, any draft number, they may provide and the date, this allows our Rexdale office to maintain an accurate record of which member has payed dues.

We have been informed that the latest issue of the journal, Vol.18, No. 3. will be distributed on October 3, 1983, this completes the 1982 subscription. Vol.19, No.1-3, the volume of the Saskatoon Symposium will be distributed on December 12, 1983.

TRANSLATIONS OF RUSSIAN PUBLICATIONS

TRANSLATIONS AVAILABLE THROUGH THE UNITED STATES GEOLOGICAL SURVEY

Open-file report No. 82-982 by M. Achafer, Constance J. Conte and Michael Fleischer comprises a list of published articles on mineralogy and geochemistry for which translations by U.S. Geological Survey Members are deposited at the USGS library in Reston, Virginia. The papers which are mainly Russian, are concerned with various phases of mineralogy and geochemistry and in particular describe new minerals. The report may be obtained from:

U.S. Geological Survey
Open-File Service Section
P.O. BOX 25425
Denver, Colorado 80225

Cost \$16.75 paper, \$3.80 microfiche.

A list of recent translations is available at any of the USGS libraries.

RUSSIAN PUBLICATIONS (Untranslated) ON GOLD AND SILVER GEOCHEMISTRY
AND EXPLORATION (GSC LIBRARY ACCESSION 1977-1982)

1. Krendelev F.P., Zhmodic S.M., Mironov A.G.-Discovery of native gold in the Vitvaters conglomerates by use of isotopes Au¹⁹⁵. Academy of Sciences of the USSR. Siberian Branch, Geology and Geophysics, 1979, August, No. 8 (236), P.149, (5 p.)
2. Krendelev F.P., Zhmodic S.M., Mironov A.G. - Experimental study of gold sorption by natural layered silicates and ferric hydroxides using radioisotopes Au¹⁹⁵. Geochemistry (Geokhimiia), 1978, June, No. 6, P. 891 (9p.).
3. Li L.V., Shokhina O.I., Utyuzhnikov G.P., Yushkov M.G. - Gold distribution in rocks surrounding gold-quartz vein type deposits. Geochemistry (Geokhimiia), 1979, June, No.6, p.941 (4 p.).
4. Mironov A.G., Geletiy V.F. - Experimental investigation of gold distribution in sulfides. Reports of the USSR Academy of Sciences (Doklady Akademii Nauk SSSR), 1979, v. 247, No.1, p.218 (5 p.).
5. Mironov A.G., Galetiy V.F. - Study of the gold distribution in synthetic pyrites using Au¹⁹⁵ radio-isotope. Reports of the USSR Academy of Sciences (Doklady Akademii Nauk SSSR), 1978, v. 241, No. 6, p. 1428 (4 p.).
6. Moiseenko V.G. - Behaviour of gold and silver during sedimentation, volcanism and metamorphism. Novosibirsk, Nauka Press, 1974, 102 p.
7. Nekrasov I.I., Gamianin G.N. - On the relationship between gold and cobalt mineralization and arsenic-bearing minerals. Reports of the USSR Academy of Sciences (Doklady Akademii Nauk SSSR), 1978, v. 243, No. 3, p. 752 (4 p.).
8. Nesterov N.V., Nesterova I.N., Pogrebniak Yu.F., Iatsenko A.S. - Hydrogeochemistry of gold in zones of oxidation above gold deposits. Reports of the USSR Academy of Sciences (Doklady Akademii Nauk SSSR), 1978, v. 240, No. 2, p.441 (4 p.).
9. Pliusnin A.M., Pogrebniak Yu.F., Tatiankina E.M. - Effect of permafrost on hydrogeochemistry and distribution of gold. Reports of the USSR Academy of Sciences (Doklady Akademii Nauk SSSR), 1979, v.247, No. 3, p.700 (3 p.).
10. Sakharova M.S., Lobacheva I.K. - Study of microgalvanic systems in gold-sulfides-bearing solutions and significance with regards to gold deposition. Geochemistry (Geokhimiia), 1978, December, No 12, p. 1836 (7 p.).
11. Vargunina N.F. - On the Mercury aureoles surrounding gold-silver deposits. Reports of the USSR Academy of Sciences (Doklady Akademii Nauk SSSR), 1979, v.247, No.4, p.943 (4 p.).
12. Vergasova L.P., Naboko S.I., Serafimova E.K., Starova G.L., Filatov S.K. - Formation of exhalative gold. Reports of the USSR Academy of Sciences (Doklady Akademii Nauk SSSR), 1982, V.264, No. 1, p. 201 (3 p.).

13. Yurgenson G.A., Tupyakov V.E., Shirokiy O.I. - Variations in composition and properties of vein quartz deposits as a reflection of ore zoning and genesis. Economic Geology of the USSR (Geologiya rudnykh mestorozhdenii), 1979, v. 21, No. 3, P. 56 (12 p.).

MICROCOMPUTER APPLICATIONS IN GEOCHEMISTRY - HAS YOUR GEOBYTE PASSED

A NEW THRESHOLD ?

With the increasing application of microcomputers for processing of geochemical data a suggestion has been made that Members may like to exchange comments on the relative advantages of different systems and availability of suitable software, through the Newsletter. If there is sufficient response from Members, to this idea a regular feature will be established in the Newsletter. Note that emphasis will be placed on micro or "desk-top" computer applications rather than those involving larger mini or mainframe computer systems. Please write with comments to:

The Secretary,
The Association of Exploration Geochemists,
P.O.Box 523,
Rexdale, Ontario
Canada M9W 5L4

CATALOGUE OF REMOTE SENSING PUBLICATIONS AND PRODUCTS

A new comprehensive catalogue of remote sensing products including current training progress, remote sensing publications, individual landsat images, mosaics and data tapes is available from Ryder Geosystems, Denver, Colorado. The first (spring) edition of this catalogue is available at no charge to Members. Subsequent catalogues which will be published on a quarterly series will cost \$2.50. This Catalogue can be obtained from,

Ryder Geosystems
445 Union, Ste. 304
Denver, Colorado 80228
U.S.A.

RECENT PAPERS ON EXPLORATION GEOCHEMISTRY

This list comprises titles that have appeared in major publications since the compilation presented in Newsletter 44. Journals routinely covered and abbreviations used are Journal of Geochemical Exploration (JGE), Economic Geology (EG), Geochimica et Cosmochimica Acta (GCA), the USGS Professional Papers (USGS PROF P), Circular (USGS Cir), and USGS Open File Report (USGS OFR), Bulletin of the Canadian Institute of Mining and Metallurgy (CIM Bull), Transactions of Institution of Mining and Metallurgy, Section B: Applied Earth Science (TRANS IMM). Publications less frequently cited are identified in full. Compiled by Donald D. Runnells and Sandra L. Jones, Department of Geological Sciences, University of Colorado, Boulder.

Back, W., and Letolle, R. (Eds.), 1983. Geochemistry of Groundwater. Developments in Water Science, 16. Elsevier Scientific Publishing Co., New York, 370 p.

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FIRST CIRCULAR

11th INTERNATIONAL GEOCHEMICAL EXPLORATION SYMPOSIUM

Toronto, Canada, April 28th - May 1st, 1985

The 11th IGES will be held in Toronto, Canada, April 28th - May 1st, 1985. A program of sessions on topical and general interest subjects is being planned along with pre- and post-symposium field excursions.

The organizing committee is particularly interested in soliciting quality papers for the following sessions:

Bedrock Environment: Productive vs. Barren Volcanic and Intrusive Terranes, Exploration in Sedimentary Basins.

Surficial Environment: Innovative Applications and Procedures using "Soils, Sediments and Waters" in both "Residual and Glaciated" Terranes.

Environmental Geochemistry: The Application of Regional Geochemical Data to studying the Long Range Transport of Air Pollutants and Agricultural and Epidemiological Studies.

New Laboratory and Data Analysis Techniques: New Innovative Applications.

Other sessions and poster presentations, along with several pre-symposium workshops, will be planned around papers submitted and topics of general interest.

It is hoped that field excursions to the following districts will be available:

The Hemlo gold camp, Northwestern Ontario
The Timmins - Kirkland Lake - Noranda gold and base-metal belt
Pennsylvania sedimentary copper and uranium occurrences
New Brunswick - Nova Scotia base-metals
New Brunswick - Nova Scotia tin-tungsten

The final availability of field excursions will depend on participation levels, and success in making arrangements with mining and exploration companies whose properties it is wished to visit.

The Toronto area has numerous attractions, both cultural and physical, including Niagara Falls. A spouses and visitors program will be planned to take advantage of the opportunities afforded by a visit to Toronto.

A first call for papers will be made in Spring, 1984. In the interim all inquiries should be directed to the Co-Chairmen of the Organizing Committee:

Facilities and Field Excursions

Dr. W.B. Coker
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