

Economic Geology Research and Exploration in Central and Eastern Europe

Ferenc Molnár¹ and Jeffrey W. Hedenquist²

¹*Department of Mineralogy, Eötvös Loránd University, Budapest, Hungary*

²*Mineral Resources Department, Geological Survey of Japan, Tsukuba, Japan*

Representatives of government organizations, universities and exploration companies from seven countries of Central and Eastern Europe attended a short-course entitled "Origin of and Exploration for Epithermal Gold Deposits", held in Budapest during early September 1995, following the SGA Biennial meeting in Prague. The short-course was organized by the Department of Mineralogy of Eötvös Loránd University, and IGCP 356 (Plate tectonic aspects of Alpine metallogeny in the Carpatho-Balkan region) provided support to some of the participants. We took the opportunity of having about 40 economic geologists and students from the Carpatho-Balkan region to ask them some questions about research and exploration activities in their countries.

Here we summarize the responses to our short questionnaire; to some extent we have integrated these answers with our own comments where we had first-hand experience. The following comments are unlikely to fully represent the conditions in these countries, which are experiencing a period of rapid change; nevertheless, we hope that SGA members not familiar with this region will benefit from our brief summary. Participants were from Bulgaria (government institute), Croatia (university),

Hungary (government institute, domestic and international companies, university), Romania (government company), Slovakia (government and international companies, government institute, university), Ukraine (government institute), and Yugoslavia (university). About half of the professionals provided written responses.

Mining in Central and Eastern Europe has a long history, dating to Roman times. Archaeological studies also indicate Bronze Age mining in some areas. During Medieval times, this region was the main producer of precious metals (up to 2500 kg Au and 10000 kg Ag of annual production during the 13th-15th centuries in the Hungarian Kingdom) until the findings of the "Conquistadors" in Latin America. From the 18th Century the principal mining academy (Schemnitz Bergakademie) was located at Banska Stiavnica, in the midst of the Au-Ag-Pb-Zn-Cu mines of the region (Figure 1). A large number of ore minerals were first identified from these deposits, notably many tellurides (e.g., petzite, stützite, sylvanite, krennerite, nagyagite) and semseyite. We summarize here the more recent activity, particularly the changes occurred over the past five years.

(Go to page 5)

Contents

Exploration in Central and Eastern Europe	1
Presidential address	2
News of the Society	3
News presentation	3
SGA Meeting in Prague, August 1995	4
New and lost members	4
SGA on Internet	6
Gold in the Czech Republic	7
Announcements	9
How to obtain the older proceedings	9
SGA Membership Application Form	10
Next activities	11
Next Biennial SGA Meeting	12

4th Biennial SGA Meeting



August 11-13
1997

Turku, Finland

Research and exploration
- where do they meet?

(see pag. 12 for details)

NEW!!!

Strongly
reduced price
for
student
members:
38 DM!
(ca. 29 US\$)

(see pag 3 for details)

The SGA is 30 years sold

3rd Biennial SGA Meeting Presidential address, Prague, August 1995

Z. Johan, SGA President 1994-1996

The SGA is thirty years old, and this is a birthday that should be remembered. In June 1965, a small group of scientists met at Heidelberg, where they decided to create the Society for Geology Applied to Mineral Deposits, and to start the publication of *Mineralium Deposita*. The SGA was scheduled to be formally established at the I.G.C. in Prague in 1968, but the constituent assembly had to be postponed due to interruption by Soviet tanks. What a symbolic event - this Biennial Meeting held today, 30 years later, in the same town!

I would like to stress the importance of the Biennial SGA Meeting. We have met at Nancy, then Granada, and now Prague. We all agree that this series of meetings must continue. Our Biennial Meeting is an event that is recognized and appreciated by the international scientific community. We need to earn this recognition. We must ensure that the scientific level is not only maintained, but also improved. This will demand a strong commitment from the organizers of our future Biennial Meetings.

I am sure that our Meeting will demonstrate that, despite the current economic situation which remains unfavorable to mineral raw materials, the metallogeny and on a wider scale, all aspects of economic geology, still have an important role to play within the Earth Sciences, and that they deserve attention not only from scientists, but also from all those who are responsible for the future of our respective countries and the well-being of our planet Earth.

Should we abandon, in view of the present circumstances, all studies concerning the origin of mineralizations, their distribution and their exploration, just because some metal prices are low? Most certainly not! This would challenge the independence not only of fundamental research, but also of applied research. However, research must react according to mining operators' needs. Although we must respond to environmental problems linked to mining in general, we cannot transform ourselves into a learned environmental Society.

The political development over the last five years has resulted in a scientific boom of countries in Central Europe and the ex-Soviet Union. The SGA must play a role in the integration of scientists from these countries into European science. We must find a way for scientists from Central and Eastern European countries to become members of our Society. Another concern is the need for a rejuvenation of the SGA. We need to make ourselves known to the young people in our domain, and also make the SGA attractive to them. Young scientists should benefit from specific conditions, enabling them to join the SGA at a special membership rate. The first goal of the Society to be achieved was the publication of its journal *Mineralium Deposita*. A new format was introduced in 1994 by the editor, D. Rickard. Several thematic issues have been brought to light in this journal, and according to our knowledge, were received with interest. *Mineralium Deposita* is not only a mean of communication within our Society, but also its showcase. We now, however, feel the need for other communication means, such as the just born SGA News and the SGA homepage in Internet. Finally, I would like to mention the fruitful collaboration with the SEG. We have agreed that each time an occasion arises, we should mutually sponsor our meetings, workshops and field trips.

This support should also mean offering reduced inscription rates for members of the SEG and SGA. We hope that this "twinning" will contribute to a better mixing of people and ideas between North America and Europe.

On behalf of SGA, I would like to thank the organizers of this Meeting, particularly the Czech Geological Survey and the Secretary of our Biennial Meeting, Jan Pasava, as well as the Czech and foreign sponsors who made this scientific gathering possible. ♦



President Z. Johan (first from left) addressing the participants to the 3rd Biennial SGA Meeting at the Rudolph's Gallery in Prague's Castle during the official dinner. Follow, from left to right, Mr. Karel Dyba, Czech Republic Minister for Economy, Mr. Jan Pasava, Czech Geological Survey and Secretary General of the 3rd Biennial Meeting SGA and Lida Pasavova.

SGA News

N.° 1 June 1996

Editors

L. Fontboté and M. Chiaradia
Département de Minéralogie, Université de
Genève, Rue des Marais 13,
CH-1211 Genève 4 SWITZERLAND

Collaborators

R. Moritz, R. Marschik, F. Lieben,
K. Requia, S. Carrasquero, D. Leach

SGA News is a publication of SGA (Society of Geology Applied to Mineral Deposits) and appears twice a year. Articles of SGA News can be read also in the SGA homepage on Internet:
<http://www.immr.tu-clausthal.de/sga.html>
maintained by Bernd Lehmann and Jan Heinhorst, Institut für Mineralogie, TU Clausthal, Adolph-Roemer str. 2a, D-38678 Clausthal-Zellerfeld; Fax: +49 5323 72 2321; e-mail: heinhorst@immr.tu-clausthal.de

Printed by:
UNIVERSITY OF GENEVA

Information for contributors

Items for publication may be sent to:
SGA News (see address below)
Manuscripts should be sent in computer diskette in Macintosh or DOS formats using Microsoft Word or WordPerfect. Please send always a paper copy and indicate the format you are using.

Deadline for Nr. 2 of SGA News:
30 SEPTEMBER 1996

SGA News - Mailbox:

Département de Minéralogie, Université de
Genève
Rue des Marais 13
CH-1211 Genève 4
Switzerland
e-mail: SGANEWS@sc2a.unige.ch
Fax: +41 22 320 57 32

NEWS OF THE SOCIETY

New: SGA student membership for only 38 DM (about 29 USD)!

The category "SGA Student Member" with a strongly subsidized fee of only 38 DM (about 29 USD) has been created. This category is reserved to students (certificate required) and may be maintained for a maximum of four years before obtaining a Ph.D. degree.

After this change, the different types of SGA membership and the current fees are as follows:

Regular Member 98.00 DM,
Junior Member* (up to 4 years after last academic degree, Ms.Sc., Ph.D.)
68.00 DM,
Senior Member* (after retirement) 68.00 DM,
Student Member* (max. 4 year, up to Ph.D.) 38.00 DM,
Corporate Member 294.00 DM.
*Certificate required

All categories include the annual subscription to MINERALIUM DEPOSITA and SGA NEWS (corporate members, three copies). SGA members can benefit from reduced fees in SGA-sponsored congresses and are eligible for grants to attend many SGA-sponsored events. In addition they may apply for subsidies for publication of color plates in MINERALIUM DEPOSITA.

Elections

- New councillors were elected on January 16, 1996 (see Council composition in p. 4). We thank all members which have left the Council after years of serving the Society (J. Aichler, G.C. Amstutz, M. Boni, H. Etminan, P. Fenoll Hach-Ali, J. Guha, I. Plimer, J.C. Touray, M.J. Viljoen). We would like to especially acknowledge the work of Prof. G. C. Amstutz, who has been without interruption at the SGA Council since its foundation, in 1965, and of Prof. P. Fenoll Hach-Ali Chairperson of the Second SGA Biennial Meeting (Granada, 1993).
- Prof. D. Klemm was elected "Honorary SGA Member" by the general assembly in Prague in recognition to the high services to the Society as editor of MINERALIUM DEPOSITA from 1980 to 1992.

Other news of the Council

- SGA members with accepted manuscripts may apply for support to publish free color plates in MINERALIUM DEPOSITA. Also English correction may be provided for free. Funds for these two initiatives have been approved for 1996 and 1997.
- Several travel grants, mainly to junior participants with accepted contributions, were provided to attend the "International SEG Field Conference on Carbonate-Hosted Lead-Zinc Deposits, St. Louis, USA, June 3-6, 1995" (co-sponsored by SGA), the Field Meeting "Rare metal and palaeogenetic granitoids of Transbaikalia and related mineralization, Transbaikalia, 1-15 August 1995" (co-sponsored by SGA), and the Third Biennial SGA Meeting held in Prague (28-31 August 1995).
- A revised version of SGA statutes is being prepared. Your comments and announcements are welcome!
- A new Membership directory is being prepared.
- Membership Fees can be now paid with Credit Card.
- The nominating committee was appointed to prepare the next Council elections (to be held at the end of 1997). The committee consists of E. Stumpff, P. Hergig, D. Rickard, and M. Pagel.
- Proposals for possible locations for the 5th Biennial SGA Meeting (1999) will be examined by the Council in November 1996.
- The next Council meeting will be in Freiberg, Germany on November 4th-5th, 1996.

Future activities

- SGA will sponsor the Symposium in honour to Frank Vokes "Formation and metamorphism of massive sulphide deposits", Trondheim, Norway, March 17, 1997 (see pages 9 and 11).
- SGA will co-sponsor the SEG Field Conference in Portugal, Southern Iberian Peninsula, Neves-Corvo, May 11-14, 1997 (see pages 8 and 11).

SGA NEWS - PRESENTATION

The Council of the Society for Geology Applied to Mineral Deposits (SGA) decided during the Prague Meeting in August 1995 to launch a SGA newsletter. In Prague, it was discussed if the SGA newsletter should be distributed as an Internet homepage or as a more traditional printed version. The final decision was to do both! In your hands now is the first issue of SGA NEWS. The Ore Deposit Group at the University of Geneva, Switzerland, will serve as editor for the first 4 issues of the SGA NEWS. The Internet homepage will be maintained by the Ore Deposit Group at the University of Clausthal, Germany (see page 6).

The objective of the SGA NEWS and the WWW homepage is to serve the goal of the SGA, "support and promote the application of scientific knowledge to the study and development of mineral resources, geomaterials, and the environmental aspects related to mineral deposits" by improving communication among SGA members. The 25th Anniversary Conference of SGA, held in 1991 in Nancy, France, led to the successful Biennial SGA Meetings (Granada, 1993; Prague 1995) and marked a significant increase in activities of the Society. This increase in SGA activities is reflected in the number and quality of events organized and co-sponsored by SGA (commonly in close cooperation with IAGOD and SEG), the increasing impact of our scientific journal MINERALIUM DEPOSITA, and the growth in membership with greater international representation. This growth and diversity of SGA activities and membership clearly underscore the need for faster and more efficient communication channels for all SGA members.

To achieve in this goal, the editors of SGA NEWS and SGA Homepage, rely on the collaboration of all SGA members. In page 4, you will find details on how to send SGA NEWS announcements, comments, criticisms, etc. In fact, we have to admit that, even before this first issue of the SGA News was prepared, we received our first well-taken comment from Heikki Papunen, Chairman of the next Biennial Meeting, to be held in Turku, Finland, August 11-13, 1997. He E-mailed us some weeks ago "...I am wondering if the newsletter is coming so late, is it still a newsletter?..." Well, Heikki, you are right and we are late. We apologize for this. We will try to do it better in the future!

However, SGA NEWS will be distributed only twice a year, and even if we try to keep SGA NEWS simple and brief (8 to 12 pages), in some areas or topics, we will be always late. For this reason, we envisage SGA news as a complement to and kind of advertisement for the SGA Homepage (<http://www.immr.tu-clausthal.de/sga.html>). The electronic format of the Internet homepage allows for more flexible and timely distribution of SGA news and announcements.

The present issue of SGA NEWS contains two articles on exploration and precious metals in Central and Eastern Europe. The inclusion of these articles in the first issue of SGA NEWS is consistent with the interest of SGA in this region, which was demonstrated by holding our last Biennial meeting in Prague in 1995.

We wish you much fun reading SGA NEWS and the SGA homepage!

Lluís Fontboté and Massimo Chiaradia (SGA News Editors)

- SGA will co-sponsor the 10th Quadrennial IAGOD Symposium, Broken Hill, Australia, August 1998 (see pages 9 and 11).

(A complete list of future SGA-sponsored events is given in page 11)

Your suggestions and ideas for any topic of interest to SGA are welcome! They can be addressed to any Council member or to

Dr. Maurice Pagel
SGA Executive Secretary
CREGU

B. P. 23
54501 - Vandœuvre -lès-Nancy Cedex
France

FAX: +33 83 440029

E-mail: pagel@cregu.cnrs-nancy.fr

THIRD BIENNIAL SGA MEETING WAS HELD IN PRAGUE (AUGUST 1995)

The Third Biennial SGA Meeting was held in Prague, Czech Republic, from 28 to 31 August 1995. It was a great success with 253 accepted contributions and more than 300 participants from 41 countries. Four of the 12 sessions were organized in cooperation with other Societies and Institutions. They were: Organics and Mineral Deposits (in cooperation with RTZ Mining and exploration Ltd, UK); Organics and mineral deposits (IGCP 357); Metamorphism and Mineralization (IAGOD/WGOM); and Mineralization in Black Shales (SEG). Other sessions were devoted to metallogeny in the evolution of orogenic belts, gold and precious metal deposits, submarine hydrothermal processes and mineralization, sediment-hosted mineral deposits, vein and shear zone deposits, granitoid-related deposits, and deposits of industrial minerals.

One of the keys of the success of the meeting was the excellent field trip offered in cooperation with the Czech IAGOD National Group to different ore districts in the Bohemian Massif, Krusne Hory Mts (Erzgebirge), Bohemia, Slovakia, and the Polish Kufperschiefer (the latter was a special SEG field trip). The organizing committee, the Czech Geological Survey, and all the sponsoring institutions from industry, academy, and state are to be strongly congratulated.

Proceeding: Pasava, J., Kršbek, B., & Zák, K., eds. (1995) Mineral Deposits: From their origins to their environmental impact. Proceedings of the third biennial SGA Meeting, Prague, Czech Republic, 28-31 August 1995 Balkema, Rotterdam, 1018 p., US\$ 105.

ISBN 90 5410550 X, Balkema, P.O. Box 1675, NL 3000 BR Rotterdam, The Netherlands; Fax +31 10 4135947

SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS (SGA)

SGA COUNCIL 1996

Executive Committee

1996-President	Z. Johan (France)
1996-Vice-President	B. Lehmann (Germany)
1996-President Elect	E.F. Stumpfl (Austria)
1996-Vice-President Elect	J. Pasava (Czech Republic)
Executive Secretary	M. Pagel (France)
Treasurer	P. Herzig (Germany)
Chief Editor	D. Rickard (United Kingdom)

Regional Vice-Presidents (1996-1997)

N. America	D. Leach (U.S.A.)
S. America	W. Vivallo (Chile)
Asia	H. Shimazaki (Japan)
Australia	P. Seccombe (Australia)
S. Africa	H. Frimmel (South Africa)

Councillors: term ending on December 31, 1997

L. Fontboté (Switzerland)
K. Sunblad (Sweden)
J. Boulègue (France)
J.F. Sureau (France)
O. Thalhammer (Austria)
B. Stribny (Germany)

Councillors: term ending on December 31, 1999

C. Ayora (Spain)
A. Björlykke (Norway)
C. Gasparrini (U.S.A.)
P. Lattanzi (Italy)
C. Marignac (France)
S. Scott (Canada)

Ex officio Members, SEG

President	B. Skinner (U.S.A.)
Executive Secretary	T.A. Thoms (U.S.A.)

SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS

Report of the Executive Secretary about membership

28 Regular Members, 1 Corporate Member, 10 Junior Members and 2 Student Members applied for membership from September 1995 to March 1996.

LIST OF NEW SGA MEMBERS (September 1995 - March 1996)

Regular Members

David Ian CHALMERS, Geological Consultant, Kalamunda, Australia
Fritz BARTHEL, B.G.R., Hannover, Germany
Victor ZAYKOV, Institute of Mineralogy, Miass, Cheliabinsk district, Russia
Richard GOLDFARB, US Geological Survey, Denver, USA
Clive BOULTER, University of Southampton, U.K.
Georges EKOSSE, University of Botswana, Gaborone, Botswana
Anthony CHRISTIE, Inst. Geological and Nuclear Sciences, Lower Hutt, New Zealand
Cesar MUNOZ, Lima, Peru
Mohammed BOUABDELLAH, Oudja, Morocco
Arezki ZERROUKI, ORGM, Boumerdes, Algeria
Iuri BOGDANOV, St Petersburg, Russia
Jamal AUJJAR, Sciences Faculty, Oudja, Morocco
Xiaoming SUN, Zhongzhan University, Guangzhou, P.R. China
Chris STANLEY, Natural History Museum, London, U.K.
Barbara STEFANINI, Paul Sabatier University, Toulouse, France
Lad PALINSKAS, University of Zagreb, Zagreb, Croatia
Thomas SEIFERT, Freiberg University, Freiberg, Germany
Hyo-Taek CHON, Seoul National University, Seoul, Korea
Ivan JURKOVIC, Zagreb University, Zagreb, Croatia
Odin CHRISTENSEN, Newmont Exploration Limited, Denver, USA
Joseph KOWALIK, Lima, Peru
Valentina BASKINA, IGEM, Moscow, Russia
Tatiana EVSTIGNEVA, IGEM, Moscow, Russia
Horst KAMPE, GeoForschungsZentrum, Potsdam, Germany
Oskar KORTAN, Wien, Austria
Natalia PATYK-KARA, IGEM, Moscow, Russia
Gérard SUSTRAC, BRGM, Orléans, France
Frank MELCHER, Montanuniversität, Leoben, Austria

Corporate Member

CIA Minera San Ignacio de Morococha S.A., Lima, Peru

Junior members

Ulrich SCHWARZ-SCHAMPERER, Technische Universität Freiberg, Freiberg, Germany
Klaus MEDER, North Compania Minera S.A., Lima, Peru
Robert MARSCHIK, Geneva University, Switzerland
Luis CHERIF, Heidelberg University, Germany
Samira MAKHOUKHI, Sciences Faculty, Beni Mellal, Morocco
Thomas PFEIFFER, B.G.R., Hannover, Germany
Georg LOTH, Munchen University, Germany
Sven PETERSEN, Freiberg University, Freiberg, Germany
Isabel FANLO GONZALES, Facultad de Ciencias, Zaragoza, Spain
Mohammad YADZI, Charles University, Praha, Czech Republic

Student members

Karin REQUIA, Geneva University, Switzerland
Sten LITTMANN, Freiberg University, Germany

"LOST" MEMBERS (can you help us with the address of these "lost members?")

Charles A. Beckmann
Eckert Buhlmann
Sergio Castro-Reino
Gratian Cioffica
Kelly J. Cluer
Ariane Giannoni
Andong Jiang
Ian J. Lawyer
Willem Lodder
Rene Okitaudti-Lokoho
Walter C. Riese
Shrinivas Viladkar
Quinyi Yu

SGA NEWS - MAILBOX

Département de Minéralogie, Rue des Maraîchers 13
CH-1211 Genève 4, SWITZERLAND

Fax: +41 22 320 57 32
e-mail: SGANEWS@sc2a.unige.ch

We expect your letters with comments, news, criticisms, ...

from 1: EXPLORATION IN CENTRAL AND EASTERN EUROPE

Bulgaria

Production of Au and Cu from epithermal and porphyry deposits has increased over the past five years, whereas Pb and Zn production has decreased, with overall metal production corresponding to less than half of that during peak mining activity. The closure of several mines is imminent due to unprofitability, whereas the Elastite and Assarel open pit porphyry Cu mines (Figure 1) are likely to remain open.

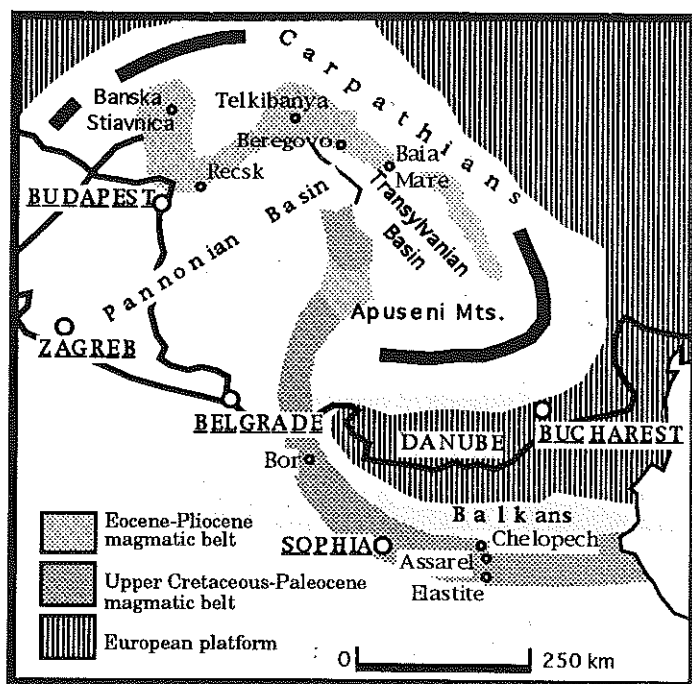


Figure 1: Sketch-map of the Carpatho-Balkan region indicating the location of the deposits mentioned in the text.

Exploration by domestic groups is limited compared with five years ago, with expenditures at less than half of previous levels.

At present Bulgaria is revising its exploration and mining laws, with discussion before the Parliament. However, it is not clear when the new laws will be introduced. As a result, there are no foreign companies officially exploring in the country, though there are several companies conducting preliminary investigations. Nevertheless, an Irish group has recently entered into a joint-venture agreement with the state mining company at the Chelopech high-sulfidation Au-Cu deposit.

A group of Bulgarian researchers is actively studying the deposits of the region, particularly epithermal gold deposits, including fieldwork in Turkey. However, funding for study is very limited, leading to a stagnation of the research.

Croatia

Mining in Croatia and adjacent areas has ceased or is severely curtailed. There are no epithermal or porphyry deposits. Mineralization in the country consists largely of bauxite resources and some sediment-hosted Fe deposits. There is very little production of natural resources and exploration activities are minimal, though a legal framework for foreign participation in the country does exist.

Funding for research in economic geology is very poor at the moment and many economic geologists have emigrated.

Hungary

There was intensive exploration in this country during the 1970s and 1980s. This led, for example, to extensive drilling and underground work in the Recsk porphyry Cu-Au deposit, which underlies the Lahóca high-sulfidation Cu-Au deposit in the Mátra Mountains. Following this period, the government curtailed exploration expenditure, and work was continued only by few domestic companies. However, after establishment of new mining laws three years ago, consistent with EU standards, several international companies began working in the country, some in joint-venture investigations. Much of the exploration effort is now focused in the Tertiary volcanic arc of the Carpathians, particularly on epithermal gold mineralizations.

The principal exploration activities are located at Recsk (Figure 1), with mapping and drilling aimed to target shallow disseminated Au mineralization. This activity is a joint-venture between domestic and Australian companies. The other area that is attracting the greatest interest, not only for the quality of its wines, is that of the Tokaj Mountains, which is the location of the Telkibánya low-sulfidation epithermal vein deposit (Figure 1), one of the most important Au producers in the Hungarian Kingdom from the 13th to the 15th century. In this deposit there are many areas of alteration, dominated by silicification and steam-heated acid alteration, indicating little erosion and shallow paleodepths.

Present mining activity is restricted to uranium for use in nuclear powers stations, and to a small underground Mn mine. There is extensive industrial mineral production of dolomite, illite, kaolinite, bentonite, and diatomite, plus quarrying of perlite (the fifth largest in the world), glass sand, and rock.

Funding for mapping and research by the Geological Institute is continually decreasing, though there are some co-operative efforts planned with the U.S. Geological Survey to study the potential for Carlin-type mineralization in the country, while there is an existing co-operative program with the USGS on ore-deposit modeling. University funding from the Ministry of Education for post-graduate students and research has been decreased by the present Government from previous levels of investment. Assistance for research and training from the World Bank and the EU began three years ago, but is now declining. Research on epithermal and other ore deposit environment is being pursued vigorously by some isolated researchers. The Academy of Sciences has a very active K-Ar dating laboratory, and provides rock and alteration ages to many groups in several countries of the region.

Romania

The Carpathians extend in a tight arc through north-western Romania, with their volcanic portion hosting most of the epithermal deposits of the country. There are many mines still in production, including Au-Ag and Cu-Pb-Zn veins. Exploration by a government company is now reassessing old mining districts and prospects, principally for Au-Ag, both in the Oas-Gutii Mountains (the Baia Mare district) and the western part of the Apuseni Mountains (Figure 1).

At present there is no formal exploration by international companies in Romania. The laws pertaining to mining activities have yet to be modified to allow foreign investment, though BRGM has some involvement in the country.

Research on ore deposits at the Ph.D. level is being conducted

in the country, also by people working in exploration. Some of these individuals are associated with foreign universities.

Slovakia

Five years ago mining focused on Pb-Zn veins in Banská Stiavnica (Figure 1), and some Cu and Sb, but following privatization, most activities were stopped. The majority of mining is now conducted by state-owned companies, and beside coal and iron ore, operations include magnesite, talc, and bentonite and one mine producing 400 kg of Au per year. There is little state-sponsored exploration apart from that for coal. The only exception is one locality explored for Au. Efforts are also being directed towards industrial minerals. Several foreign companies have recently begun exploration in the country, some in joint-venture operations. The existing mining laws allow foreign investment, and are in the process of being modified to be compatible with EU standards.

Government funding for geological mapping, and study of water resources, environmental problems and other investigations, as well as for research, is continually decreasing, though the Geological Institute and the Academy of Science maintain active programs in the study of ore deposits and metallogenic modeling. State-funded activities are increasing in the area of reclamation of old mines and tailings.

Ukraine

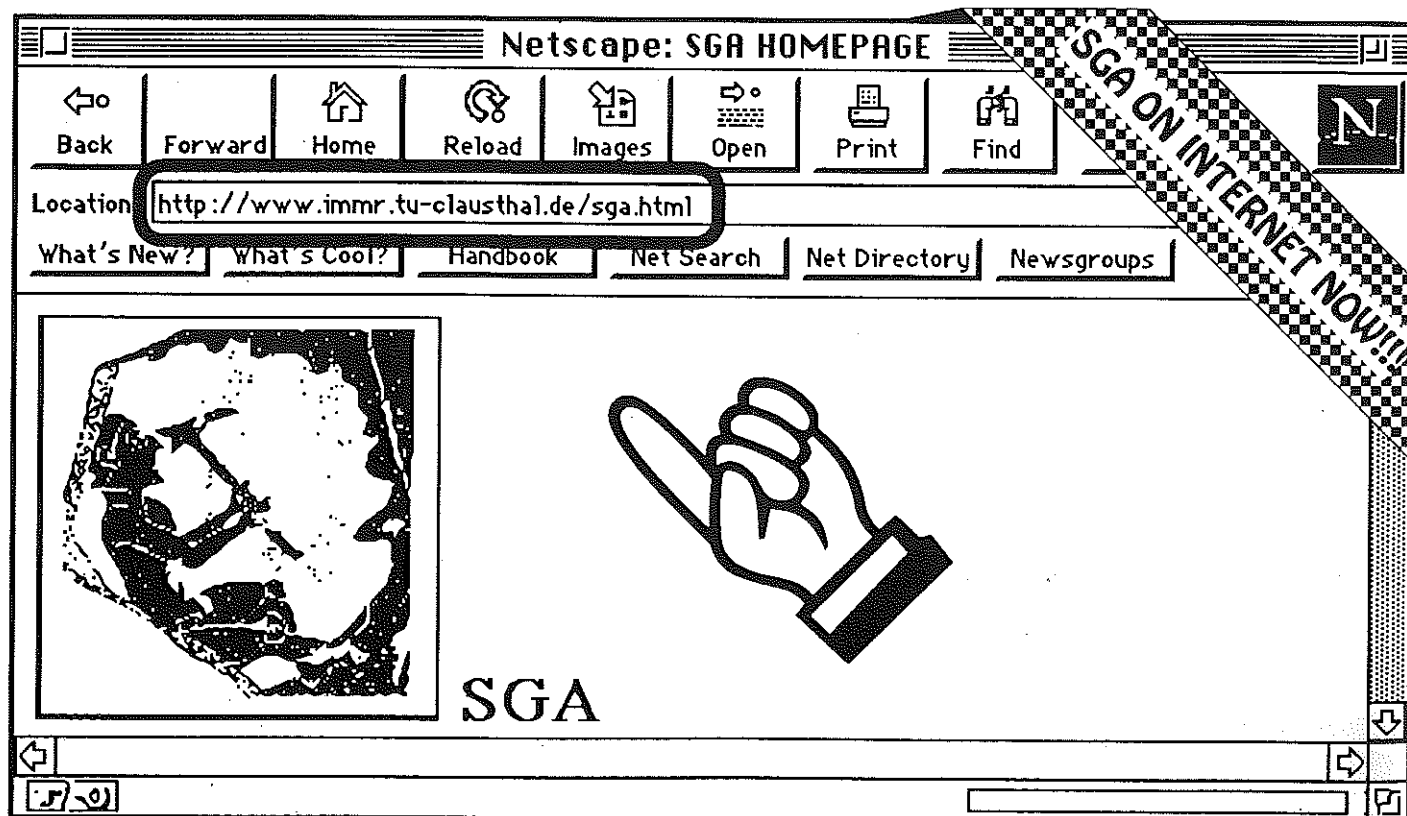
State companies in the Ukraine are now mining Fe, Mn, Ti, kaolin and coal, and also produce petroleum. There is no foreign exploration or mining involvement in the country, and at present there are no laws to allow such activities. Government-sponsored research has decreased greatly since 1992, although study on and exploration for Au, Hg, Pb-Zn, U, and fluorite deposits continue. There is significant potential for low-sulfidation epithermal Au mineralization in the Beregovo district, near Hungary (Figure 1).

Yugoslavia

There is a tremendous number of Cu and Au deposits and prospects in the northern Balkan volcanic arc, notably the Bor high-sulfidation epithermal deposit (underlain by a porphyry deposit), accompanied by other porphyry and epithermal deposits in the district (Figure 1). The Yugoslavian portion of the Carpatho-Balkan volcanic arc continues northward into Romania, and eastward into Bulgaria; the belt constitutes one of the world's major Cu (and Au) provinces, with significant potential for exploration.

SGA HOMEPAGE ON INTERNET!!!

The SGA has now a homepage on INTERNET (connection is still under experiment). From this homepage you can get information about biennial scientific meetings in Europe, world wide field trips and workshops, membership application form for the SGA and authors and titles of this year contributions to Mineralium Deposita.



Gold in the Czech Republic

Petr Morávek

AUREA: Geology, Mineral Resources, Consulting

1 máje 296, 254 01 Jílové u Prahy

Czech Republic

The territory of the Czech Republic is made up of several geological units of the Bohemian Massif, which represents the easternmost segment of the Variscan belt in Western and Central Europe. The presence of gold deposits is one of the characteristic features of the metallogeny in the Bohemian Massif. Gold has been mined here since the Celtic period and up to present times; the period of the 13-14th century was the most prosperous. Total historical production is estimated at about 100 tons of gold.

An extensive geological exploration undertaken during the last 15 years resulted in discoveries of new gold deposits, new types of gold mineralization and provided the data necessary for developing new metallogenic theories. The total gold potential of the Czech part of the Bohemian Massif has been estimated to approximately 400 tons. The newly explored deposits represent a good basis for the renaissance of economically significant gold mining in the Czech Republic. However, possible future mining activities must be carried out in accordance with relatively strict legal and environmental regulations and must overcome certain barriers and suspects of the population, resulting from the insensitive approach of mining toward the environment during the past regime.

The outstanding position of gold in the metallogeny of the Bohemian Massif is illustrated by a multitude of primary deposits and occurrences, as well as by placer accumulations of gold. Most of them are situated along the boundary separating the slightly metamorphosed Upper Proterozoic volcano-sedimentary complex of the Bohemicum from the highly metamorphosed rocks of the Moldanubicum. Other important gold-bearing zones are also situated within the crystalline rocks of the Moldanubicum, as well as in Devonian volcano-sedimentary units in the Jeseníky Mts.

The origin of gold deposits can be explained in terms of four metallogenic models:

-volcanogenic model for lithologically controlled pre-metamorphic Au-base metal mineralization, resulting from the

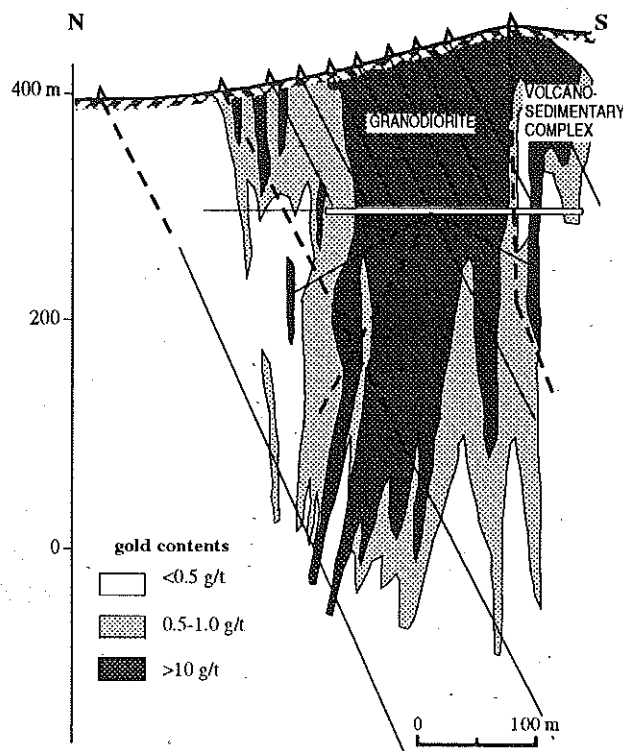


Figure 1: Mokrsko West deposit: distribution of gold in the cross section (after Morávek, 1990).

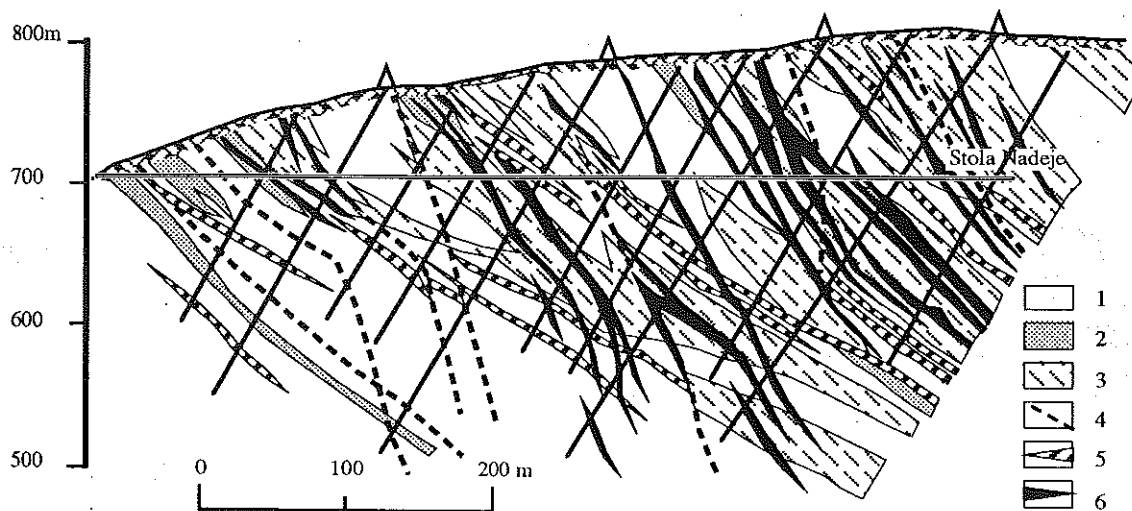


Figure 2: Kasperské Hory deposit: cross section of the Main ore zone (after Puncochár, 1992). Legend: 1-biotite paragneiss, 2-quartzite paragneiss, 3-migmatitic paragneiss, 4-shears, faults, 5-stratiform scheelite mineralization, 6-gold-quartz lodes.

submarine-hydrothermal processes associated with the Paleozoic and/or Upper Proterozoic volcanism (Zlaté Hory a.o.);

-porphyry model for the Petrůvka Hora deposit near Vacíkov, spatially related to porphyritic granodiorite intrusions into volcano-sedimentary rocks of Cambrian age of the Bohemium. This deposit is geochemically characterized by the association Au-Ag-Bi-Cu-Mo-Te-W;

-metamorphic-hydrothermal/metamorphic-plutonic model for Early Variscan gold-quartz mineralization of vein and stockwork type, characterized by a high gold fineness and the Au-As-Bi-Mo-Te-W association. Deposits of this type are hosted by "greenstone-granite" rocks (Jílové, Mokrsko a.o.), as well as by crystalline rocks of the Moldanubicum (Kasperské Hory a.o.). Gold mobilization mainly from Upper Proterozoic volcano-sedimentary sources is attributed to heat flow associated with Early Variscan granitoid intrusions or regional metamorphic events;

-hydrothermal model for late Variscan gold-quartz mineralization with a low gold fineness (Au-Ag-As association - Roudny deposit a.o.) and gold-antimony deposits (Krásná Hora a.o.) of vein or stockwork type. These deposits, related to regional tectonic zones, occur within the geological units consolidated by metamorphic processes and/or granitoid bodies.

The most important discoveries of the past exploration, funded by the State budget of the Czech Republic, are represented by two deposits of low grade/large tonnage type, situated in the central part of the Bohemian Massif (the Mokrsko deposit containing up to 90 t of gold for open-pit mining, Figure 1, and

the Petrůvka Hora deposit with 30 tons of gold). Past exploration also included the re-evaluation of the Kasperské Hory district (Figure 2), with estimation of the resources to up to 80 tons of gold (plus interesting resources of scheelite). These deposits attracted actually foreign mining companies such as RTZ, Greenwich Resources, and TVX Gold, which currently evaluate their reserves. These deposits, which were visited on the occasion of the Third Biennial SGA Meeting held in Prague during August 24-26 1995, are an example of the possibility for discovering economically interesting mineralization in regions up to now poorly explored. New exploration will certainly complement existing data and stimulate new scientific research on the metallogenic processes in the Central and Western European Variscides.

References

- Braux Ch, Morávek P, Janatka J, Bonnemaison M. (1991): Comparaison entre les gîtes aurifères du socle varisque français et du massif de Bohême. *Chron.rech.min.*, No. 504, 21-39.
- Morávek P et al (1992): Gold in the Bohemian Massif (in Czech, English summary). *Czech Geol. Survey Publ.*, Prague, 245 p.
- Morávek P and Pouba Z (1987): Precambrian and Phanerozoic history of gold mineralization in the Bohemian Massif. *Econ. Geol.*, Vol. 82, 2098-2114, New Haven.
- Morávek P, Pertold Z, Puncochár M, Studnicná B and Zachariás J (1995): Gold deposits of the central and SW part of the Bohemian Massif. *Excursion Guide. Third Biennial SGA Meeting, Prague, 24-26 August 1995. Czech Geol. Survey Publ.* Prague, 104 p.

ANNOUNCEMENT

SEG NEVES CORVO FIELD CONFERENCE 1997 - CO-SPONSORED BY SGA

The Neves Corvo Field Conference will be held at the Rectory of the University of Lisbon, Portugal, May 11-14, 1997, with pre- and post-meeting field trips. This is the first field conference outside North America to be sponsored by the Society of Economic Geologists (SEG), and is co-sponsored by the Institution of Mining and Metallurgy (IMM), the Society for Geology Applied to Mineral Deposits (SGA), Departamento de Geologia da Faculdade de Ciências da Universidade de Lisboa (GEOFCUL), Instituto Geológico e Mineiro (IGM), Instituto de Ciência Aplicada e Tecnologia (ICAT) and Sociedade Mineira de Neves Corvo (SOMINCOR). The three-day meeting at the University of Lisbon will focus on the geology and genesis of massive sulfide deposits and present-day oceanic equivalents. A full-day symposium is dedicated to the presentation of the results of a major research investigation, funded by SOMINCOR, on the geology and genesis of the Neves Corvo massive sulfide deposits. This research covers a broad spectrum ranging from regional geology through mine geology to detailed petrologic and geochemical investigations relating to the Neves Corvo deposits. Invited keynote speakers include: Jim Franklin (Ottawa—SEG), Michael Russell (Glasgow-IMM) and Peter Herzig (Freiberg-SGA). The conference is expected to attract international participation and will provide an excellent opportunity for discussion on the newest developments relating to massive sulfide deposits, particularly with respect to the relationships between modern, submarine hydrothermal processes and their fossil counterparts, the VMS deposits. Three field trips are planned. A three-day field trip, including an underground visit to the Neves Corvo Mine, will be held both pre- and post-meeting. Space on this trip is limited to 120 persons (six groups of twenty each). Two other field trips will accommodate another 120 participants. One in Portugal will focus on regional geology and will visit the Aljustrel Mine. The other trip will be held in Spain with visits to Rio Tinto and Aznalcóllar. Additional field trips will also be available. People interested in participating in field trips are advised to contact the organizers as soon as possible. At this time, the organizers are issuing a request for expressions of interest and call for papers. Abstracts are solicited for both oral and poster presentations on topics directly related to massive sulfide geology and genesis, and present-day submarine hydrothermal activity. All abstracts should be submitted in English, the official language of the conference.

PLEASE CONTACT:

European Address:
Fernando J.A.S. Barriga
Edifício C2, Piso 5, Campo Grande 1700 Lisboa, Portugal
Phone +351-1-750-0066 • Fax +351-1-759-9380
E-mail Fernando.Barriga@cc.fc.ul.pt

<http://NevesCorvo.geo.fc.ul.pt>
NevesCorvo@fc.ul.pt

North American Address:
Geoffrey G. Snow
c/o Society of Economic Geologists
5808 South Rapp Street, Suite 209
Littleton, CO 80120, U.S.A
Phone +1(303) 797-0332 • Fax +1(303) 797-0417

Organizing Committee:
F. J. A. S. Barriga (GeoFCUL), R. W. Hutchinson (Colorado School of Mines, SEG), G. Snow (SEG), D. Richards (RTZ, IMM), P. Herzig (Freiberg, SGA), A. Ribeiro (GeoFCUL), D. Carvalho (IGM), P. Carvalho (SOMINCOR), A. Ferreira (SOMINCOR)

Technical Session Committee:
J. M. R. S. Relvas (GeoFCUL), M. A. Gonçalves (GeoFCUL), M. Gaspar (GeoFCUL)

Field Trip Technical Committee:
F. J. A. S. Barriga (GeoFCUL), A. Mateus (GeoFCUL)

Field Trip Leaders:
J. T. Oliveira (IGM, Univ. Porto), V. Oliveira (IGM), P. Carvalho, A. Ferreira (SOMINCOR), J. B. Silva (GeoFCUL), J. C. Leitão (Pirites Alentejanas), R. Sáez, G. Ruiz de Almodóvar, M. Toscano & E. Pascual (University of Huelva)

ANNOUNCEMENTS

INTERNATIONAL CONFERENCE ON CATHODOLUMINESCENCE AND RELATED TECHNIQUES IN GEOSCIENCES AND GEOMATERIALS, Nancy France

SGA-SPONSORED

2-4 September 1996

Dr. Maurice Pagel, Secretary General, Cregu, B.P. 23, F-54501 Vandoeuvre-les-Nancy, France; phone: 33-83441900; fax: 33-83440020; e-mail: pagel@cregu.cnrs-nancy.fr

From the program:

Application of cathodoluminescence to economic geology (O.C. KOPP); Cathodoluminescence petrography of the phosphate grains in the Lower Jurassic (Aalenian) ironstones of Lorraine, France (M. KARRAKUS, R. D. HAGNI and A. C. SPRENG); Application of cathodoluminescence to skarn-related W-Mo (REE) metallization, R. SCHEEPERS and C.M. SMIT; Fluid inclusion chronology in authigenic or microfissured minerals: the use of cathodoluminescence (M.C. BOIRON and M. CATHELINEAU); Cathodoluminescence microcharacterisation of silicon dioxide polymorphs (M.A. STEVENS KALCEFF and M.R. PHILLIPS); The role of brittle deformation in sandstone diagenesis as revealed by scanned cathodoluminescence imaging (K. L. MILLIKEN); Use of cathodoluminescence for U-Pb zircon dating by ion microprobe (SHRIMP); some examples from high-pressure rocks of the western Alps (D. RUBATTO and D. GEBAUER); The significance of cathodoluminescence on gemstone recognition (J. PONTALHO and F. BRANDSTÄTTER); Systems of the interacting luminescence centers in natural diamonds: laser-induced time-resolved spectroscopy (G. PANCZER, M. GAFT and A. MARFUNIN); Silica cements in central Australian silcretes (H. B. WÄJTHE, J. GÖTZE and H. WOPFNER); Luminescence and geochemical composition of sphalerite: an example from the Alpine lead-zinc deposits, Austria/Slovenia (S. ZEEH and J. KUHLMANN)

FRANK M. VOKES 70 YEAR ANNIVERSARY SYMPOSIUM: FORMATION AND METAMORPHISM OF MASSIVE SULPHIDES, Trondheim, Norway

SGA-SPONSORED

17-19 March 1997

Frank M. Vokes Symposium, Tore Prestvik, Dept. of Geology and Mineral Resources Engineering, NTNU, N-7033 Trondheim-NTH, Norway; phone: +47 735 94 806; fax: +47 735 94 814; e-mail: torepr@geologi.unit.no

From the program:

- Primary setting and depositional processes
- Metamorphic and deformational processes
- Metallogeny of the Caledonian-Appalachian belt
- Volcanic-hosted massive sulphides vs. Besshi and Sedex type deposits.

10TH QUADRIENNIAL IAGOD SYMPOSIUM, Broken Hill, Australia

SGA-CO-SPONSORED

August 1998

The proposed program of the Quadrennial IAGOD Symposium comprises pre-symposium excursions, a scientific and social program, intra-symposium field trips, post-symposium excursions, trade exhibitions and rock, core, map and publication display. The program presents an opportunity for delegates to visit many of the famous, large and unusual ore deposits of Australia and the Pacific Rim. And the last chance to visit the Broken Hill deposit.

Pre- and post-symposium field trips (provisional list)

1/ Kalgoorlie, W.A. (Au, Ni); 2/ Kimberleys, W.A. (Pb-Zn MVT, diamonds); 3/ Pilbara, W.A. (Fe, Au); 4/ Olympic Dam / Kanmantoo, S.A. (Cu-U, Cu, Pb-Zn); 5/ Western Tasmania (Pb-Zn, Cu-Au, Au, Sn); 6/ Central Victoria (Au); 7/ Parkes / Cobar, N.S.W. (Cu-Au, Au, Pb-Zn); 8/ Broken Hill, N.S.W. (Pb-

Zn-Ag); 9/ Mt. Isa, Qld (Cu, Pb-Zn); 10/ Hapney opal, Qld (opal); 11/ Drummond Basin, Qld (Au); 12/ Epithermal Au of Papua New Guinea; 13/ Epithermal systems of New Zealand

Intra Symposium Field Trips

a/ Broken Hill (Pb-Zn-Ag, W); b/ Broken Hill (stratigraphy, structure); c/ Olary Block (U, Cu, barite, Fe); d/ Cobar (Pb-Zn); e/ Cobar (Cu-Zn); f/ Cobar (Au); g/ White Cliffs (opal)

YOU CAN PRE-REGISTER NOW

Please indicate also the number of the excursion you are interested in.

CONVENOR

Prof. Ian Plimer, School of Earth Sciences, The University of Melbourne, Parkville Vic. 3052, Australia
ian_plimer@muwayf.unimelb.edu.au
fax +61-3-93447630
tel +61-3-93446520

HOW TO OBTAIN THE PROCEEDINGS OF THE BIENNIAL SGA MEETINGS?

Pagel, M. & Leroy, J.L. (eds.) (1991) Source, transport and deposition of metals proceedings of the 25 years SGA anniversary meeting, Nancy, 30 August - 3 September 1991, Balkema, Rotterdam. 841 p. (ISBN 90-5410 020 6). Ordering to: Balkema, P.O. Box 1675, NL 3000 BR Rotterdam, The Netherlands; Fax +31 10 4135947

Fenoll Hach-Ali, P., Torres-Ruiz, J. & Gervilla, F. (eds.) (1993) Current research in geology applied to ore deposits. Proceedings of the second biennial SGA meeting, Granada, 9-11 September 1993, University of Granada, 785 p. (ISBN 84-338-1772-8). Ordering to: Prof. Puri Fenoll Hach Ali Dep. Mineralogía y Petrología Fac. Ciencias Av. Severo Ochoa E 18071 GRANADA, Spain fax +34 58 243368, (7,000 pts).

Pasava, J., Kríbek, B., & Zák, K., eds. (1995) Mineral Deposits: From their origins to their environmental impact. Proceedings of the third biennial SGA Meeting, Prague, Czech Republic, 28-31 August 1995 Balkema, Rotterdam, 1018 p., US\$ 105. (ISBN 90 5410550 X). Ordering to: Balkema, P.O. Box 1675, NL 3000 BR Rotterdam, The Netherlands; Fax +31 10 4135947

EPITHERMAL GOLD DEPOSITS: STYLES, CHARACTERISTICS, AND EXPLORATION

A WALL POSTER BY J.W. HEDENQUIST, E. IZAWA, A. ARRIBAS, JR., AND N.C. WHITE
SOCIETY OF RESOURCE GEOLOGY, SPECIAL PUBLICATION 1, 1996.

A brief summary of the two end-member styles of epithermal gold deposits, low sulfidation and high sulfidation. For students of economic geology, and explorers of epithermal ore deposits. Full color, with 40 diagrams, 21 photographs, 4 tables; BO in size (1.5 x 1.0 m). Poster accompanied by booklet with text and captions translated to Spanish, French, Japanese and Chinese; also available in B4 pamphlet form, in color, for use in the field. Copies of poster or B4 pamphlet may be ordered from the address below; the cost is US\$30 each, which includes translation booklet and airmail postage in a mailing tube; US\$25 each for orders of 5 or more; inquire about cost for bulk orders and student discount. Payment may be made by VISA or MasterCard; please send your mailing address plus credit card name, card number and expiration date. Allow 6-8 weeks for processing.

The Society of Resource Geology, Nogizaka Bldg., 6-41, Akasaka 9-chome, Minato-ku, Tokyo 107, Japan.
Fax +81(3)3475-0824; E-mail cj90117@sinet.ad.jp

SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS

SGA Membership Application Form

I would like to become a member of the Society for Geology Applied to Mineral Deposits (SGA) and to receive my personal copy of Mineralium Deposita. Current fees are: i) Regular Member 98.00 DM, ii) Junior Member* (up to 4 years after last academic degree, Ms. Sc., Ph.D.) and Senior Member* (after retirement) 68.00 DM, iii) Student Member* (max. 4 years, up to Ph. D., 38.00 DM, iv) Corporate Member 294.00 DM. They include the annual subscription to Mineralium Deposita (corporate members, three copies). Do not send money now: you will be invoiced.

*Certificate required

Surname/Corporation

First name

Title

Mailing address

.....

.....

.....

Tel: Fax

E-mail

Date of birth..... Nationality.....

Degrees obtained from Universities or Colleges

.....

Present position

.....

Membership of other scientific societies

.....

Are you a member of the Society of Economic Geologists? (If yes, no sponsors are necessary) ☐ Yes ☐ No

☐ Regular Member

☐ Junior Member (up to 4 years after last academic degree, Ms. Sc., Ph.D.)*

Date of degree.....

☐ Senior Member (after retirement)*

☐ Student Member (max. 4 years, up to Ph. D.)*

☐ Corporate Member

*Certificate required

Signature

Place and date

Two SGA Sponsors*

Name, place, date, signature

SPONSOR 1

.....

SPONSOR 2

.....

*If you have difficulty in finding sponsors, send this form to the Executive Secretary and your application will still be considered.

Send the Membership Application Form to:

Dr. Maurice Pagel

SGA Executive Secretary

CREGU, B.P. 23,

F-5401 Vandoeuvre-lès-Nancy Cedex, France

Tel.: +33 83 44 19 00

Fax: +33 83 44 00 29

e-mail: pagel@cregu.cnrs-nancy.fr

Join the SGA now...



The Society of Geology Applied to Mineral Deposits was established in 1965 by an international group of economic geologists. Its Journal MINERALIUM DEPOSITA is now recognized as a premier international mineral deposits journal.

GOALS

- The promotion of science of mineral deposit geology
- Personal contact of its members in order to exchange knowledge and experience
- Cooperation with other scientific societies, especially with SEG and IAGOD
- Organization of scientific meetings, field trips, workshops. For these events, SGA members have reduced registration fees and in certain cases may apply for travel grants
- Publication of MINERALIUM DEPOSITA and scientific volumes

MEMBERSHIP

Membership in SGA is open to all persons interested in economic geology, mineral resources, industrial minerals and environmental aspects related to mineral deposits. Members have reduced registration fees in SGA-sponsored events and in certain cases are eligible for travel grants. Subsidies for publication of color plates in MINERALIUM DEPOSITA also may be applied. Current membership fees are listed on the left-side column of this page.

MINERALIUM DEPOSITA

Editor: David Rickard, Department of Geology, University of Wales, Cardiff CF 1 3YE, UK.

There are two types of submission:

- Regular manuscripts for publication as Scientific Papers
- Fast Track manuscripts for publication as Mineral Deposit Letters

**..and receive MINERALIUM
DEPOSITA and SGA News!!!**

Additional information in the SGA homepage
on Internet:

<http://www.immr.tu-clausthal.de/sga.html>

⇒⇒⇒ FORTHCOMING EVENTS ⇒⇒⇒

1996

July 25-August 2

IGCP 361 (East Asian Activated Zones), IGCP 354 (Economic superaccumulations of metals in the lithosphere) & IAGOD FIELD MEETING IN MONGOLIA- Prof. O. Gerel, Mongolian Technical University, P.O. 46, Ulaanbaatar, Mongolia; phone: +976-1-324500; fax: +976-1-324121

August 4-14

30th INTERNATIONAL GEOLOGICAL CONGRESS Beijing, China.- Symposium 9-6: Organic matter-related mineral deposits / Fluorite and barite deposits, organized by IAGOD COFAB and IGCP 357. Preparatory Commit. for 30th IGC, Baiwanzhuang Rd 26, Fuchengnenwai, 100037 Beijing, P.R. China; phone: 86-1-832-3188; telex: 222721 CAGS CN; fax: 86-1-831-0894

August 18-31

IGCP 336 (Intraplate Magmatism and Metallogeny).- INTERNATIONAL FIELD CONFERENCE AND SYMPOSIUM ON LAYERED MAFIC COMPLEXES AND RELATED ORE DEPOSITS OF NORTHERN FENNOSCANDIA.- Rovaniemi, Finland (Symposium) plus field trips to Finland, Norway and Russia. - Prof. Heikki Papunen, Department of Geology, University of Turku, Fin-20500 Turku, Finland; fax: +358-21-633 5480; e-mail: papunen@utu.fi

September 2-4

SGA-SPONSORED

INTERNATIONAL CONFERENCE ON CATHODOLUMINESCENCE AND RELATED TECHNIQUES IN GEOSCIENCES AND GEOMATERIALS Nancy France.- Dr. Maurice Pagel, Secretary General, Cregu, B.P. 23, F-54501 Vandoeuvre les Nancy, France; phone: 33-83441900; fax: 33-83440020; e-mail: pagel@cregu.cnrs-nancy.fr (see page 9)

September 4-11

AGE AND ISOTOPES OF SOUTH AMERICAN METALLOGENIC PROVINCES, Final Meeting of IGCP Project 342, Salvador, Bahia, Brazil. Technical Sessions and Field trips to Serrinha-Itapicuru greenstone belt; Fazenda Brasileiro gold mine; Serra de Jacobina gold conglomerates, Chapada Diamantina, etc. During and following Brazilian Geological Congress (Sept. 1-6). - Aroldo Misi, IGEO, Univ. Fed. Da Bahia, Rua Caetano Moura, 123, Federação Salvador, Bahia 40210-340, Brazil; phone: +55-71-2356789; fax: +55-71-2473004; e-mail: misi@ufba.br, or M. Zentilli, IGCP 342 Leader, Department of Earth Sciences, Dalhousie University, Halifax, B3H-3J5, Canada; phone: +1-902-494-3873; fax: +1-902-494-3873; e-mail: marcos.zentilli@dal.ca

September 17-19

THIRD INTERNATIONAL SYMPOSIUM ON ANDEAN GEODYNAMICS, IGCP 345 (Lithospheric evolution of the Andes), St. Malo, France - Organized by the Institut Français de Recherche Scientifique pour le Développement en Coopération (ORSTOM, Paris, France) and by Géoscience Rennes (CNRS, Université de Rennes 1, France). Correspondence: Denis Gapais and Pierrick Roperch, Géosciences Rennes, Université de Rennes 1, 35042 Rennes Cedex, France; fax: +33 99 28 60 90 (67 80); e-mail: ISAG96@seth.univ-rennes1.fr

September 18-20

SIXTH INTERNATIONAL CONFERENCE ENVIROSOFT 96, Development and application of Computer Techniques to Environmental Studies, Como, Italy - Sue Owen, Conference Secretary, ENVIROSOFT 96, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO40 7AA, UK; phone: +44-1703-293223; fax: +44-1703-292853; e-mail: CMI@uk.ac.rl.lib, Ing. e-mail: CMIlib.r.ac.uk

September 26-27

78TH ANNUAL MEETING OF THE GDMB: "Deutsche Rohstoff-und Metalltage", Regensburg, Germany - GDMB Postfach 10 54, 38668 Clausthal-Zellerfeld; phone: 0 53 23 / 937 90; fax: 0 53 23 / 937 937

September 26-28

MESOZOIC GEOLOGY OF THE EASTERN AUSTRALIAN PLATE, Sheraton Brisbane Hotel and Towers, Brisbane, Queensland,

Australia. Excursions are being planned to complement the conference themes: Mesozoic-related gold deposits in eastern Australia, gemstones.- Natalie O'Sullivan, Event Organizer, P.O. Box 1280, Milton Queensland 4064, Australia; phone: +61-7-3369-0477; fax: +61-7-3369-1512

1997

March 17-19

SGA-SPONSORED

FRANK M. VOKES 70 YEAR ANNIVERSARY SYMPOSIUM: Formation and metamorphism of massive sulphides, Trondheim, Norway - Norwegian University of Science and Technology (NTNU). Enquiries: Frank M. Vokes Symposium, Tore Prestvik, Dept. of Geology and Mineral Resources Engineering, NTNU, N-7033 Trondheim-NTH, Norway; phone: +47 735 94 806; fax: +47 735 94 814; e-mail: torepr@geologi.unit.no (see page 9)

March 23-27

EUG 9 (EUROPEAN UNION OF GEOSCIENCES), Strasbourg, France - Contact address: EUG 9 Office, EOPG, 5 rue René Descartes, 67084 Strasbourg Cedex, France; phone: +33 88 41 63 93 (45 01 91); fax: +33 88 60 38 87; e-mail: eug@eopg.u-strasbg.fr

May 11-14

SGA-CO-SPONSORED

NEVES CORVO FIELD CONFERENCE (Massive sulphides Geology and genesis, and present day submarine hydrothermal activity), Lisbon, Portugal. - European address: Fernando J.A.S. Barriga, GEOFCUL, Edifício C2, Piso 5, Campo Grande, 1700 Lisboa, Portugal; phone: +351-1-750-0066; fax: +351-1-759-9380; e-mail: Neves.Corvo@fc.ul.pt. North American address: Geoffrey Snow, Barranca Resources, c/o SEG Office, 5808 Rapp Street 209, Littleton, Colorado, 80120 USA; phone + (303) 797-0332; fax: + (303) 797-0417. Information available also on internet: http://NevesCorvo.geo.fc.ul.pt (see page 8)

August 11-13

SGA-SPONSORED

4TH BIENNIAL SGA MEETING (Research and Exploration - Where do we meet?), Turku Finland. - Congress Office/SGA Meeting 1997, University of Turku, Lemminkäisenkatu 14-18 B, FIN-20520 Turku, Finland; phone: +358-21-333 6342; fax: +358-21-333 6410 (after 1 October 1996: +358-2-); e-mail: cescon@utu.fi (see page 12)

1998

August

SGA-CO-SPONSORED

10TH QUADRIENNIAL IAGOD SYMPOSIUM, Broken Hill, Australia.- Prof. I. Plimer, Dept. of Geology, University of Melbourne, Parkville, Vic 3052, Australia; phone: +61-3-344-6520; fax: 61-3-344-7761; e-mail: ian_plimer@muwayf.unimelb.edu.au (see page 9)

???

IAGOD/CODMUR 8TH INTERNATIONAL PLATINUM SYMPOSIUM, Johannesburg, South Africa.- Dr. C.A. Lee, P.O. Box 68108, Bryanston 2021, South Africa; phone: 27-11-411-2253; fax: 27-11-692-3693

WISH TO ADVERTISE FORTHCOMING EVENTS?

Send your announcements to:

SGA News, Département de Minéralogie, Université de Genève, Rue des Maraîchers 13, CH-1211 Genève 4, SWITZERLAND

Fax: +41 22 320 57 32

e-mail: SGANEWS@sc2a.unige.ch

(See the Impressum on page 2 for details concerning the format of the documents to be sent)

4th BIENNIAL SGA MEETING



RESEARCH AND EXPLORATION - WHERE DO THEY MEET?



TURKU, Finland - 11-13 August 1997

The Society for Geology Applied to Mineral Deposits (SGA), established in 1965, is an international association of economic geologists. The Society promotes the science of mineral deposit geology, edits the Journal, Mineralium Deposita, and organizes biennial scientific meetings in Europe, world-wide field trips and workshops.

The 4th Biennial SGA Meeting will be held in Turku, Finland, August 11-13, 1997, at the Rantasipi Congress Hotel, Pispalantie 7, FIN-20540 Turku, Finland. The official language will be English.

Under the general theme "Research and exploration - where do they meet?" the organizers would like to bring together economic geology scholars and professional exploration geologists to discuss current issues on ore geology and exploration in order to bridge the gap between the basic and applied sciences. Prospective participants are kindly invited to offer papers for oral and poster presentations. The venue of the meeting is the Rantasipi Congress Hotel in Turku, the oldest city and former capital of Finland. Turku is centrally located in northern Europe; with three universities, the town has a long academic tradition. You can get to Turku by several daily nonstop flights from Stockholm, Helsinki and Hamburg, by four daily ferry connections from Stockholm, by train or bus from Helsinki and by a direct bus connection from Helsinki airport. Present exploration activity is high in Finland and Sweden and both countries can boast, world-class mineral deposits and numerous historical and present-day mining camps. Seven pre- and post-meeting Field trips will be organized. The participants will visit classic mining districts and new deposit types in Finland, Sweden and northwestern Russia.

Tentative session topics

- 1) Black schists and associated mineral deposits
- 2) Gold and precious metal deposits
- 3) Submarine hydrothermal processes and mineralizations
- 4) Mineral deposits in mafic-ultramafic rocks
- 5) Mineral deposits in sedimentary environment
- 6) Deposits of industrial minerals
- 7) Diamond deposits and exploration
- 8) Metamorphism and ore deposits (IAGOD/WGOM)
- 9) Mineral deposit modelling in exploration
- 10) Environmental aspects of mineral deposits
- 11) Open session

Co-Sponsors

Geological Survey of Finland (GSF)
 Outokumpu Metals and Resources (OMR)
 Geological Society of Finland (GSoc.F)
 Geological Society of Sweden (GSoc.S)
 Society of Economic Geologists (SEG)
 University of Turku (UT)

Organizing Committee

Dr. H. Papunen, Chairman, UT; Dr. R. Salminen, Secretary General, GSF; Dr. P. Nurmi, Field Trip Coordinator, GSoc.F; Dr. K. Sundblad, Field Trip Coordinator, GSoc.S; Ms. S. Autio, Abstract Committee, GSF; Dr. O. Eklund, Social Programme Committee, UT; Mr. M. Isohanni, OMR; Dr. M. Mäkelä, GSF; Dr. Z. Johan, SGA; Dr. A. Arribas, SEG; Ms. M.-L. Porsanger, Congress Office, UT

Field trips

Both pre- (A) and post-meeting (B) field trips have been planned:

A1. Metallogeny of Archean greenstone belts in eastern Finland and northwestern Russia including visits to gold, base metal, phosphorus and diamond deposits (5 days)

A2. Base metal deposits in the Skellefte area, Sweden and western Finland

A3, B3. Gold and base metal deposits in southwestern Finland (2 days)

A4. Black schists and associated mineral deposits in Finland (2 days)

B1. Deposits of Lapland including Kemi chromitite, Aitik Cu-Au, Kiruna Fe, Saattopora Au, Pahtavaara Au and Keivitsa Ni-Cu-PGE deposits (5 days)

B2. Ore deposits of the Bergslagen area, Sweden (4 days)

B3. = A3

B4. Ore deposits of the Kola Peninsula, northwestern Russia (5 days)

Social programme

The participants will be offered a varied social programme including an Ice-breaking Party and the Congress Banquet.

Second Circular

The Second Circular will be distributed in October 1996. Please make sure you receive the Second Circular by returning the attached pre-registration form to the Congress Office as soon as possible.

Important dates

August 31, 1996

Pre-registration, response to the First Circular

October 1996

Second Circular

January 31, 1997

Submission of extended abstracts

February 15, 1997

Acceptance of abstracts

April 30, 1997

Return of camera-ready abstracts

May 15, 1997

Final registration and payment of fees for registration and field trips

Correspondence

Congress Office/SGA Meeting 1997, University of Turku, Lemminkäisenkatu 14-18 B, FIN-20520 Turku, Finland; Tel. +358-21-333 6342; Fax +358-21-333 6410 (after 1 October 1996 +358-2-); e-mail: cescon@utu.fi



4th BIENNIAL SGA MEETING PRE-REGISTRATION FORM (Please type or use BLOCK letters)

Name

I intend to attend the Meeting

Mailing address

☐ to take part in field trips no.

☐ to submit a paper

☐ to present a poster

Country

Tel Fax

I am interested in sessions

E-mail

Preliminary title of the paper / poster

- I am
- ☐ SGA Member
 - ☐ SGA Junior Member
 - ☐ SGA Student Member
 - ☐ Student

Date Signature

Mail to the above address



LAST-MINUTE ANNOUNCEMENTS

8 - 10 (noon) July, 1996, Brest, France

SHORT COURSE: PRESENTLY-FORMING HYDROTHERMAL DEPOSITS IN THE OCEANS AND ANCIENT ORES ON LAND: A COMPARISON OF MODERN AND ANCIENT MASSIVE SULFIDES AND RELATED DEPOSITS FROM A GEOLOGICAL AND GEOCHEMICAL POINT OF VIEW. -

Presented by: Steven Scott (Director of the Marine Geology Research Laboratory and Professor of Ore Deposits Geology, University of Toronto, Canada and Invited Professor of the "Université de Bretagne Occidentale")

Université de Bretagne Occidentale - Brest, Les Séminaires de l'Ecole Doctorale des Sciences de la Mer, Faculté des Sciences et Techniques, 6 av. Le Gorgeu

Contact: Mme Gisèle Quentel, Dépt. des Sciences de la Terre, UBO-UFR Sciences et Techniques, Université de Bretagne Occidentale, 6 avenue Le Gorgeu, B.P. 809, 29285 Brest Cedex, France; Tel (33) 98 01 61 76, Fax (33) 98 01 66 20, Internet gquentel@univ-brest.fr

Languages: English and French

Cost of course and dinner: 300F

Program

DAY 1 (0900 - 1800)

- Registration
- Introduction to massive sulfide deposits and to the course
- Modern seafloor deposits: Analogues for ancient massive sulfides and related deposits
- Kuroko ores of Japan: The "type" massive sulfide ores in felsic volcanic rocks
- Cyprus Troodos ophiolite: The "type" massive sulfide ores in mafic volcanic rocks
- Laboratory No. 1: Modern seafloor deposits, Kuroko, Cyprus
- Banquet

DAY 2 (0900 - 1800)

- Canadian Precambrian volcanogenic massive sulfide deposits: An overview of significant features
- Besshi-type deposits: Mixed sedimentary-mafic volcanic environment
- Laboratory No. 2: Canadian Precambrian, "exhalites", Besshi-type
- Shale-hosted ("sedex") deposits: Massive sulfides not directly associated with volcanism
- Metamorphic camouflage of massive sulfide ores and their enclosing rocks
- Laboratory No. 3: Sedex deposits, metamorphosed massive sulfides
- Visit to Océanopolis marine aquarium; enjoy culinary delights of Brest on your own

DAY 3 (0900 - 1200)

- Geochemical halos
- Genetic models for massive sulfides

April 8-10, 1997, Moscow, Russia

SGA CO-SPONSORED

PRINCIPAL GENETIC PROBLEMS RELATED TO MINERAL DEPOSITS OF MAGMATIC AFFILIATION - A Special Memorial Scientific Session and a Symposium to be organized by the Institute of Geology of Ore Deposits, Petrography, Mineralogy, and Geochemistry (IGEM), Russian Academy of Sciences.

A. G. Betekhtin Symposium: A Special Memorial Scientific Session and the International Symposium will be dedicated to the Centenary of late Professor Anatolii G. Betekhtin (1897-1997), outstanding Russian geologist, member of Russian Academy of Sciences.

Sponsored by: Russian Academy of Sciences, State Geological Committee of RF Moscow University, Moscow Geological - Prospecting Academy, Society of Geology Applied to Mineral Deposits (SGA)

Main topics of the Symposium:

1. Hydrothermal fluids, their nature and the ore-formation processes
2. Mineral paragenetic assemblages, stages and other temporal divisions of mineralization processes
3. Physico-chemical problems of endogenous ore-formation
4. Modern analogues of magmatogenic ore-forming systems
5. Genetic interpretation of textures and structures of mineral aggregates
6. New methods of mineral substance investigations

Post-Symposium Field trip (3-4 days):

A field excursion to the famous Kochbulak Paleozoic epithermal gold and Almalayk porphyry copper deposits of Tashkent district of Uzbekistan will be organized for a small group of foreign participants

Language

The official languages will be English and Russian. A consecutive translation from both will be provided

Abstracts

Abstracts are required for oral and poster presentations and will be published and issued before the Symposium

Registration fees

The registration fee (US\$ 250 - US\$ 200 for SGA members) includes the attendance at the Symposium sessions, volume of abstracts, coffee breaks and local transportation expenses in Moscow

Accommodation

Hotels ranging in price from US\$50 to 100 and higher could be reserved for participants

Social Program

Excursions to cultural sites of Moscow and suburbs will be organized and tickets to theatres, concert halls and museums will be reserved

Important dates

September 15, 1996
October 1, 1996
February 1, 1997
February 15, 1997

Response to First Circular

Second Circular
Deadline for abstracts
Deadline for registration fees and field trip payment transfer

For additional information contact:

N. S. Bortnikov, D. Sc., Secretary of the Symposium, IGEM RAS, Staromonetny per., 35, Moscow 109017, Russia; phone: +7 095 230 8259; fax: +7 95 230 2179; e-mail: symposium@igem.msk.su

REPLY FORM FOR THE A. G. BETEKHTIN SYMPOSIUM, MOSCOW, RUSSIA, APRIL 8-10, 1997

Name
Position/Title
Organization/Affiliation
Address
Tel..... Fax
e-mail
Preliminary title of the paper/poster

I wish to join the Post-Symposium field trip

My chance of attendance:

☐ certain

☐ fair

☐ slight

I will be accompanied by

Date.....Signature

Second circular will be delivered to those who return this form filled. The attendance at field trip will be offered on the "first paid - first served" basis.