

Kenneth L. Taylor

ISSN 1028-1533

**INTERNATIONAL COMMISSION ON THE HISTORY
OF GEOLOGICAL SCIENCES**

INHIGEO

NEWSLETTER No. 39 for 2006

Issued in 2007



INHIGEO is

A Commission of the International Union of Geological Sciences

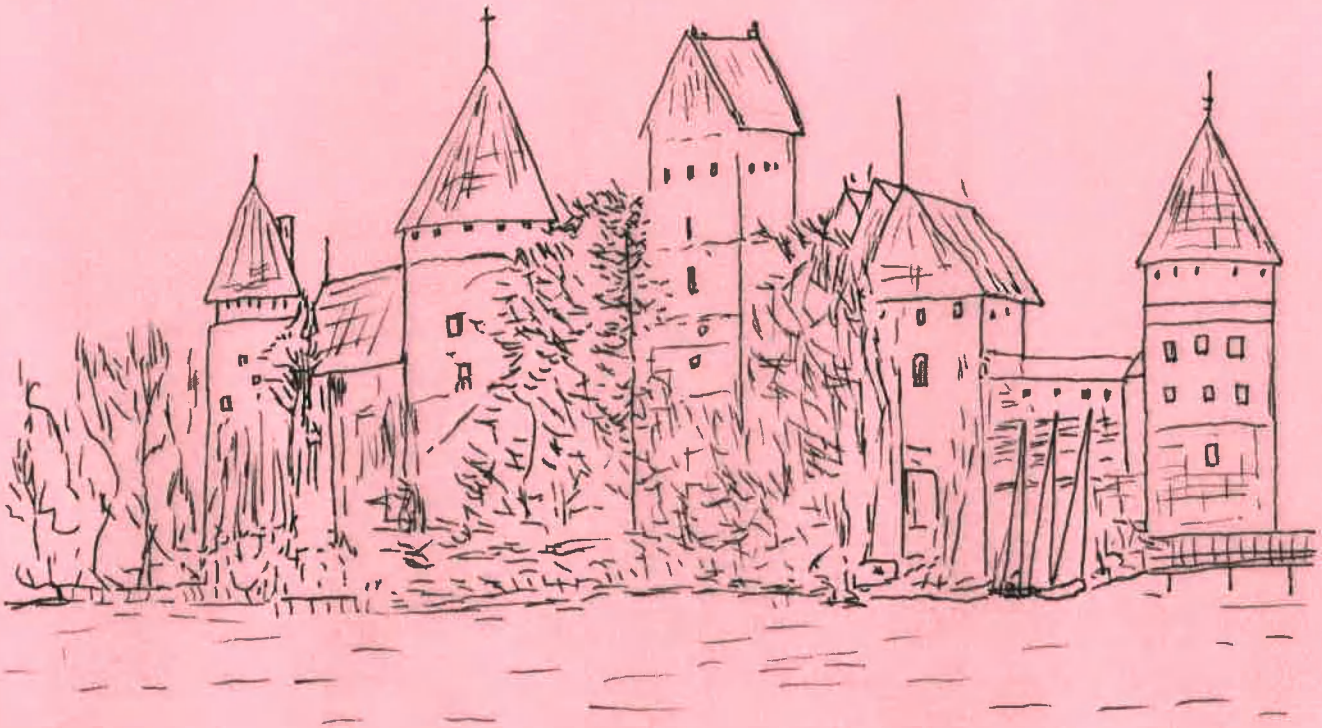
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An Affiliate of the International Union of the History and Philosophy of
Sciences

Compiled and edited by Kennard B. Bork
INHIGEO Secretary-General

Edited in Granville, Ohio, USA
Printed in Sydney, Australia

Sketch by Yasumoto Suzuki, 30 July 2006



Trakai castle

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THE INHIGEO BOARD
April 2007

President

Professor Philippe R. TAQUET (France)
Laboratoire de Paléontologie
— 8, Rue Buffon
Paris 75005, FRANCE
Phone: 33-1-4079-3039
Fax: 33-1-4079-3580
E-mail: taquet@cimrs1.mnhn.fr

Secretary-General

Professor Kennard B. BORK (USA)
Dept. of Geology and Geography
Denison University
Granville, OH 43023, USA
Phone: 1-740-587-6486
Fax: 1-740-587-6774
E-mail: bork@denison.edu

Past-President

Professor Manuel C.S. PINTO (Portugal)
Department of Geosciences
University of Aveiro
3810 Aveiro, PORTUGAL
Tel.: 351 2 34 370 744
E-mail: mspinto@csip.ua.pt

Vice-President Europe

Dr Martina KÖLBL-EBERT (Germany)
Jura-Museum Burgstrasse 19
D-85072 Eichstätt GERMANY
Tel.: 49 (0) 8421 2956
E-mail: koelbl-ebert@jura-museum.de

Vice-President North America

Professor Kenneth L. TAYLOR (USA)
Department of the History of Science
University of Oklahoma
601 Elm Street, Room 622
Norman, OK 73019, USA
Tel.: 1-405-325-5416
Fax: 1-405-325-2363
Email: ktaylor@ou.edu

Vice-President Latin America

Mr. Gerardo J. SOTO (Costa Rica)
Apartado 360-2350
San Francisco de Dos Rios
San José, COSTA RICA
Tel.: 506-280-0128
E-mail: katomirodriguez@yahoo.com

Vice-President Asia

Professor Hakuyu OKADA (Japan)
4-8-36-601 Yoshizuka
Hakata-ku
Fukuoka 812-0041, JAPAN
Tel.: 81 92 623 8161
E-mail: hokada@bb.mbn.or.jp

Vice-President Australasia and Oceania

Professor David OLDROYD (Australia)
28 Cassandra Avenue
St. Ives, Sydney NSW 2075, AUSTRALIA
Tel.: 61 2 9449 5559
E-mail: doldroyd@optushome.com.au

President's Message (April 2007)

Dear Members and Friends,

2006 was a very fruitful year for INHIGEO and for its members, with a fascinating meeting in Vilnius on the "History of Quaternary Geology and Geomorphology," followed by a wonderful excursion through the Baltic countries. The meeting and field trips were perfectly organized by Algimantas Grigelis and by all his colleagues from Lithuania, Latvia, and Estonia.

2007 also promises to be exciting for historians of Geology. This year is the celebration of the tricentenary of the birth of Georges Louis Leclerc, comte de Buffon (1707–1788), who in his famous *Histoire Naturelle* published in Paris a brilliant essay on the Theory of the Earth and on the History of the Earth. In the chapters entitled *Les Epoques de la Nature*, Buffon tried to estimate the Age of the Earth, experimented on cooling iron globes prepared in his forge of Montbard in Burgundy to prove the progressive cooling of the Earth. Buffon was interested in the Earth's time scale, in the changing of climates during the past, and in the study of fossils.

2007 will also be the year of the celebration by the History of Geology Group (HOGG) of the bicentenary of the Geological Society of London, the oldest geological society in the world, which was born on November 15th, 1807. The event, "In the footsteps of the Founding Fathers," will be celebrated from 9 to 13 November, with a five-day meeting and field excursion.

Last but not least, 2007 is the year of our INHIGEO meeting in Eichstätt (Germany). From July 28th to August 5th, Martina Kölbl-Ebert will receive us in a pretty, baroque, small city, perfectly

adapted to our topic "The historical relationships of Geology and Religion," which is an accurate and stimulating choice.

Three events in 2007, among many others, developed in this newsletter by our devoted and efficient Secretary-General, Ken Bork. All of them demonstrate the dynamism of the historians and the broad interest in studies in the History of Geology.

Philippe Taquet, Paris

Secretary-General's Report (April 2007)

The year since my report in our last newsletter (No. 38, p. 4) has been a good one for the Commission. It was highlighted by a superb meeting and set of field trips in the Baltic States (July–August 2006); it included election (March 2006) of eighteen new members from fourteen different countries; and it has involved strong support (January 2007) from the International Union of Geological Sciences (IUGS) and the International Union of History and Philosophy of Science/History of Science and Technology Division (IUHPS/DHST). As this newsletter goes to press, we are anticipating a fine meeting (July–August 2007) in Eichstätt, Germany, focused on the significant topic of interactions between geology and theology.

Our INHIGEO meeting in the Baltic States of Lithuania, Latvia, and Estonia profited from the leadership of Algimantas Grigelis and the active involvement of the Local Organizing Committee, composed of representatives from each of the three countries. Technical presentations focused on the history of geomorphology and Quaternary studies. The meeting site, at the Museum of Applied Art, in Vilnius, was extremely pleasant, and the field trips throughout the Baltic countries were well organized, enjoyable, and informative. Mike Johnston (New Zealand) provides a truly excellent overview of the meeting and field trips (see his report in this newsletter). The Minutes of the Business Meeting (see immediately below) present some insights into our deliberations.

For those of you who appreciate having a long-term vision of future symposia, I can note that we have a valuable set of meetings ahead of us. The 2007 sessions on "The Historical Relationship of Geology and Religion" will be hosted by our Vice President for Europe, Martina Kölbl-Ebert, of the Jura-Museum in Eichstätt, Bavaria. Interesting pre- and post-conference trips within the area are planned. In 2008, the 33rd International Geological Congress (IGC) will be held in Oslo, Norway, and INHIGEO will be part of that significant event. We expect to offer technical sessions on "The History of Exploration of Polar Regions" and "The History of Resources and Sustainability." Field trips to historically noteworthy metamorphic terrains are also contemplated. After a long string of meetings in Europe, we travel off the European tectonic plate in 2009, when our Canadian colleagues will welcome us to Calgary, Alberta, and a strong set of technical sessions and field trips. Then, in early July 2010, the Spanish delegation will conduct well-planned meetings and field trips associated with the general topic of "The History of Mineral Resources." Our bases of operation will be Madrid and Almadén, Spain. We do not have firm plans for 2011, so proposals are invited from national delegations. As many of you know, the 34th IGC will be held in Brisbane, Australia, on 5–15 August, 2012, so you might want to plan for a winter week or so in the Southern Hemisphere!

Thanks to the authoring and editing activities of INHIGEO members, the Commission's publication productivity has remained high this past year. After a difficult set of dealings with Pober Publishing, Patrick Wyse Jackson, host of the INHIGEO 2003 meeting in Dublin and editor of the resulting papers, terminated the Commission's association with Pober and transferred the volume on *Geological Travellers* to the Geological Society of London. Look for the book to appear in an attractive and well-illustrated format this year (2007). Commission colleague Gian Battista Vai, along with W.G.E. Caldwell, edited papers given at the 32nd IGC (Florence, Italy, 2004). The resulting book (dedicated to Nicoletta Morello, our previous Vice President for Europe, who died in April 2006) is now available as *The Origins of Geology in Italy* (Special Paper 411 of the Geological Society of America). Papers dealing with the history of geophysics, our topic at the 2005 INHIGEO meeting in Prague, hosted by Jan Kozák, will be featured in *Earth Sciences History* (probably Fall 2007). Patrick Wyse Jackson is currently Editor of *ESH*. Other papers (by Kerry Magruder, Kenneth Taylor, Marianne Klemun, and Rodney Grapes) from the Prague meetings were published in a Special Issue of *Centaurus* (Volume 48, 2006), edited by Hanne Andersen. And a book stemming from papers given at our 2006 sessions in Vilnius, Lithuania, is to appear in a Special Publication of the Geological Society of London. Editors for the GSL volume are INHIGEO members Rodney Grapes, Algimantas Grigelis, David Oldroyd, and Rowl Twidale.

The generosity of a number of institutions and organizations should be acknowledged. Denison

University continues to provide me with an office and complete support services. The University of New South Wales has long aided our operation with free mailing of the newsletter. It is also a pleasure to note that IUGS and IUHPS/DHST have been generous in their financial support for 2007. We could not operate properly without these various contributors, and they deserve the Commission's thanks.

We hope that you enjoy this year's newsletter. As always, I thank those who contributed. Your efforts are truly appreciated. Apologies are extended for any errors in editing or production. And thanks go out to all of you who understand the complexities of the editorial process and were generous about our attempts to generate a good final product each year. Your critical comments and constructive suggestions are welcomed, as are any updates for e-mail or postal addresses. Please send any notes to <bork@denison.edu>. Thanks to all who support our missions, through hosting meetings, writing materials for the *Newsletter*, and participating in Commission activities.

Kennard B. Bork, Granville, Ohio

Minutes of INHIGEO Business Meeting 2006
Museum of Applied Art, Vilnius, Lithuania
Saturday, 29 July 2006

Present: Carol Bacon (New Zealand); Vic Baker (USA); Kennard Bork (USA); David Branagan (Australia); Alena Cejchanova (Czech Republic); Bernhard Fritscher (Germany); Algimantas Grigelis (Lithuania); Mike Johnston (New Zealand); Vidojko Jovic (Serbia); Marianne Klemun (Austria); Simon Knell (United Kingdom); Martina Kölbl-Ebert (Germany); Jan Kozak (Czech Republic); Ervins Luksevics (Latvia); Irena Malakhova (Russia); Wolf Mayer (Australia); Eugenij E. Milanovsky (Russia); Simon Nation (New Zealand); Sally Newcomb (USA); David Oldroyd (Australia); Tonu Pani (Estonia); Manuel S. Pinto (Portugal); Claudia Schweizer (Austria); Yasumoto Suzuki (Japan); Philippe Taquet (France); Hugh Torrens (United Kingdom); Frederik van Veen (Netherlands); Michiko Yajima (Japan); Toshihiro Yamada (Japan); Gaile Zaludiene (Lithuania)

Attending: Katherine Bork (USA); Barbara Christy (USA); Leonora Z. Gelumbauskaite (Lithuania); Robert Newcomb (USA); Anto Raukas (Estonia); Migle Stancikaite (Lithuania); Shirley Torrens (United Kingdom); Witold Zuchiewicz (Poland)

Presiding: President Philippe Taquet (France) and Secretary-General Kennard Bork (USA)

President Taquet opened the meeting by thanking: (a) Professor Narebski (Poland) for bringing a poster concerning the founding of INHIGEO, as developed by Dr Czarniecki (Poland); (b) Ken Bork (USA) for his work as Secretary-General during the past year; and (c) Algimantas Grigelis (Lithuania) for his efforts on behalf of this meeting. President Taquet also noted that the International Geological Congress (IGC), to be held in Oslo, Norway, in 2008, coincided with the International Year of the Earth. Lastly, Philippe stated that INHIGEO seemed to be doing well, but that we all might consider how best to include even more participants in our meetings, fieldtrips, and activities.

1. *Regrets/Apologies* from those not able to attend were recorded: Barry Cooper (Australia); Greg McNally (Australia); Sue Turner (Australia); Yadviga Anoshko (Belarus); Silvia Figueirôa (Brazil); Kerry Zhang (China); Rodney Grapes (China/New Zealand); Gerardo Soto (Costa Rica); Dimitri Kaljo (Estonia); Frank Rietz (Germany); Kottapalli Murty (India); Gordon Herries Davies (Ireland); Paul Mohr (Ireland); Patrick Wyse Jackson (Ireland); Claudia Principe (Italy); Ezio Vaccari (Italy); Hakuyu Okada (Japan); Petras Sinkunas (Lithuania); Alan Mason (New Zealand); Bruce Waterhouse (New Zealand); Filomena Amador (Portugal); Antonio de Andrade (Portugal); Ana Carmeiro (Portugal); Zoya Bessudnova (Russia); Tatiana Ivanova (Russia); Octovio Puche Riart (Spain); Donald Davidson (UK); Richard Howarth (UK); Léo Laporte (USA); Kerry Magruder (USA); Ursula Marvin (USA); Julie Newell (USA); Ken Taylor (USA)
2. *Arrangement of the Agenda* (requests from the floor for modification): No requests were voiced.
3. *Minutes of the Previous Meeting:* Prague, Czech Republic (July 2005): Ken Bork noted that the full minutes could be found on pages 5 through 9 of *INHIGEO Newsletter No. 38* (for 2005). Copies were available, if details were needed. David Branagan moved that the minutes be accepted. The affirmative vote was unanimous.
4. *Discussion / Matters arising:* No discussion was raised.
5. *President's Report:* Philippe Taquet preferred to make his comments at the end of the meeting.

6. *Secretary-General's Report*: Kennard B. Bork gave the following overview.
- a. Details concerning 2005–2006 topics are in *Newsletter* 38
 - Your input concerning the *Newsletter* is welcomed
 - One issue to consider is length of bibliographic lists versus simple reporting of the year's events for the "Country Reports."
 - b. The INHIGEO Election '06 is now final and we have 18 new members and 2 new Honorary Senior Members; details will be pursued under Agenda Item #9. We do need to consider adding members for 2008 from Scandinavia and other parts of the world.
 - c. Status of post-Prague publication plans

Earth Sciences History: Patrick Wyse Jackson reports that the articles have been received and have gone out to reviewers. They should be back by mid-August 2006. Thus, things are well in hand for publication as a *Special Issue*, perhaps as Number 2 for 2007 (No. 1, Volume 25 is in press and should be distributed in August 2006).

Centaurus: Hanne Andersen (Denmark) reports that four papers have been received and are being processed; positive reactions have been received from the reviewers; the papers are by Klemun / Grapes / Taylor / Magruder.

The situation regarding the Dublin Volume on *Geological Travellers* is a sad and complex story . . . Stephen Pober is not yet ready to publish the articles. Patrick Wyse Jackson is discussing options at this time . . .
 - d. Status of post-Vilnius publication plans (Geological Society of London)

Our proposal has been ACCEPTED; we have INHIGEO editors in place; systems are "go" for building a tome around the Vilnius materials on the history of geomorphology and Quaternary geology.

David Oldroyd reported that we must all realize that there is likely to be some "sieving" and sorting out of papers—not all will necessarily be accepted. David also noted that Rowl Twidale (Australia) will be joining Grapes, Grigelis, and Oldroyd as INHIGEO editors of the GSL volume.

David Branagan reported that several papers from the INHIGEO and IGC meeting of 2004 (Florence, Italy) are soon to be published by the Geological Society of America.

Algimantas Grigelis reported that full instructions for authors of the GSL volume had been sent out by Rodney Grapes.
 - e. A brief note was presented regarding the number of members and national/continental distribution.
 - With our election of 18 new colleagues, we now have 200+ members. (The approximation is due to questions concerning potential resignations and 'dismissals' due to not voting in two sequential elections.)
 - * In 2006, nominations were dominantly from Europe (other than Scandinavia and the Balkans). For 2008, we might think particularly about Scandinavia / Latin America / Africa / India—provided that those areas have the requisite personnel.
 - f. Secretary-General Bork commented on Professor Nicoletta Morello's death and Dr Martina Kölbl-Ebert's selection as Vice-President for Europe.
 - President Taquet asked for a moment of silence in memory of Professor Morello.
 - Bork read a statement from Ezio Vaccari concerning Nicoletta's life, contributions, and death. Please see *INHIGEO Newsletter No. 39* (for 2006) for Ezio's full commentary concerning Professor Morello.
 - Ken Bork notified the members present that there had been unanimous approval from the INHIGEO Board regarding Martina Kölbl-Ebert's serving as our new Vice-President for Europe.
 - g. BUDGET issues are under control, but remain tight.
 - (1) IUGS and IUHPS/DHST have had to cut back on their support.
 - (2) Thus, our budgeted requests of US\$6,000 and \$1,500 have yielded \$4,000 (IUGS) and \$900 (IUHPS).
 - (3) With (a) newsletter publication costs; (b) annual meeting publication and speakers' fees; and (c) operating costs, we are ahead of the curve, but the financial situation is close.
 - (4) The INHIGEO Board does NOT see Travel Grant Support as possible in future years.
 - (5) A major concern is mailing of the newsletter, should our free service (University of New South Wales) be terminated.

- h. We need to think seriously about FUTURE MEETING SITES; to be discussed in more depth under Issue #8.
7. *IUGS Topics*
- We need to consider the International Geological Congress (IGC) 2008 in Oslo and INHIGEO contributions!
 - * Our general topic is “The History of Exploration in Polar Regions.”
 - * We do NOT have a Symposium Organizer or Local Organizing Committee
 - * We do NOT have a Field Excursion program.
 - * Any “volunteers” or suggestions re a Chairperson or committee members?
 - * The Board will pursue the matter of involving people in the planning stages.
8. *Future Meetings of INHIGEO*
- Post-2008 INHIGEO meeting sites are a high-priority matter.
We need to consider our options re post-Oslo '08 INHIGEO meetings.
- * Spain has a strong and cogent PROPOSAL for 2010, centered on mining and resources. (A brief description was given by Ken Bork.)
 - * Canada has made overtures but no formal proposal for 2009.
 - * The USA is a question-mark . . . Costs and a variety of concerns were voiced, from the political to the logistical. Some participants felt that it was time to get to North America. Gerald Friedman’s offer concerning meeting in Troy, NY, was noted.
 - * Other non-European sites?
 - * The possibility of Japan was mentioned; discussion ensued.
9. *Ratification of the 2006 ballot and declaration of results*
- Ken Bork reported on the general results, noting that all 18 nominees received strong affirmative votes. The names of the new members were then read.
- *** ALEXANDROWICZ, Stefan (Poland); ANASTASIU, Nicolae (Romania); ANOSHKO, Yadviga (Belarus); CEJCHANOVA, Alena (Czech Republic); GAIGALAS, Algirdas (Lithuania); JOYCE, Bernard (Australia); KALJO, Dimitri (Estonia); LUKSEVICS, Ervins (Latvia); MALAKHOVA, Irena (Russia); MAYER, Wolf (Australia); PEMBERTON, George (Canada); RABANO, Isabel (Spain); RICHET, Pascal (France); SCHWEIZER, Claudia (Austria); TARKOWSKI, Radoslaw (Poland); THALHEIM, Klaus (Germany); TWIDALE, Rowl (Australia); WOJCIK, Andrzej (Poland).
- A motion was moved (Nathan) and seconded (Branagan) to RATIFY the election. The motion passed by unanimous consent.
10. *Honorary Senior Members* (nominations acted upon by the Board).
- Professors (a) Stanislaw CZARNIECKI (Poland) and (b) Kanenori SUWA (Japan) were elected unanimously by the Board.
11. *New Business / Business without notice*
- a. David Oldroyd reported on *Episodes* and invited further articles.
 - b. Algimantas Grigelis noted that a Polish geological review is available.
 - c. Yasumoto Suzuki commented on the difficulties of hosting a meeting in Japan, as a function of high costs of travel and in-country expenses.
 - d. Philippe Taquet commented briefly on the “Travel Biography Brochures,” noting that the example of *In the Steps of Cuvier* is progressing. He suggested that, with 2008 being “The Year of the Earth,” it would be an excellent time for INHIGEO to generate good publicity with production of some of the guidebooks.
 - e. Manuel Pinto raised the issue of potential financial difficulties for the IGC, and cautioned that INHIGEO needs to be aware of the likely lack of external funding from IUGS.
 - f. Ken Bork presented the views of Jian-Zhao YIN (China/Canada) concerning the potential merit of expanding the INHIGEO website and charging members a small fee. Discussion strongly cautioned against such a move. Some with website experience (Simon Nathan) said that charging fees effectively shuts down a website.
 - g. Ken Bork introduced the concept of a “Virtual Library,” as originally conceived by Nicoletta Morello and described in a communication from Ezio Vaccari. Some members, including Hugh Torrens, expressed concern about “overlap” with such projects as the Oxford experiment currently under way.
 - h. There were no further items of New Business raised from the floor.
13. A large *Vote of thanks* was extended to our hosts in the Baltic States.

- On behalf of all attending, President Taquet publicly thanked Algimantas Grigelis, the Local Organizing Committee, all of the tour guides, and the personnel who had helped to plan, organize, and operate our INHIGEO meetings and field excursions in the Baltic States.
- The meeting adjourned for lunch at 1:45 p.m.

Kennard B. Bork, Granville, Ohio

INHIGEO BUSINESS MEETING, Eichstätt, Germany

JULY 2007

PROVISIONAL AGENDA

1. Regrets/Apologies from those not able to attend
2. Arrangement of the Agenda (requests for modification)
3. Minutes of the Previous Meeting: Vilnius, Lithuania (2006) (see above.)
4. Discussion / Matters arising
5. President's Report
6. Discussion / Matters arising
7. Secretary-General's Report
8. Discussion / Matters arising
9. IUGS Topics
10. Future Meetings of the Commission
11. New Business / Business without notice
12. Vote of thanks for our hosts in Germany, 2007

CONFERENCE REPORTS

**The International Commission on the History of Geological Sciences (INHIGEO) Symposium on
"History of Quaternary Geology and Geomorphology,"
held at Vilnius, Lithuania,
with fieldtrips through Lithuania, Latvia, and Estonia
27 July to 4 August 2006**

The 31st INHIGEO Symposium was under the auspices of Lithuanian Academy of Sciences, the Institute of Geology and Geography, Vilnius; the faculty of Natural Sciences, University of Latvia, Riga; the Institute of Geology, University of Tartu; and the Institute of Geology at Tallinn Technical University, Estonia. The meeting commenced in Vilnius on the evening of 27 July with a reception held in the Lithuanian Applied Arts Museum. Overlooking the confluence of the Vilnia and Neris rivers, this thick-walled 16th-century historic building formerly housed the Vilnius Arsenal.

Participants were welcomed by Professor Algimantas Grigelis, chairperson of the local organizing committee. The next day the formal part of the meeting commenced in the same venue with addresses from Professor Valdemaras Razumas, of the Lithuanian Academy of Sciences, who summarized the contribution made to geological research in his country over the past two centuries, and the President of INHIGEO, Professor Phillippe Taquet. Participants were then given a more detailed account of the history of Lithuania by Professor Grigelis. The first paper, by Victor Baker, of the University of Arizona, provided a dramatic introduction to the meeting's theme with his paper *The Spokane Flood Controversy*. The papers presented over the two-day meeting were distributed within three major subtopics: *Geomorphology*; *Theory of Glaciation*; and *Regional aspects*.

Geomorphology

Victor Baker – The Spokane Flood controversy: philosophical roots, 1920s debates, and implications of contemporary geomorphology.

David Branagan – Australia—wind, water, ice tectonics time and man—a Cainozoic history.

David Oldroyd – Thomas Griffith Taylor and Sydneyside scenery.

Vidojko Jović – Jovan Cvijić's contribution to karst studies.

Irena G. Malakhova – The Russian geomorphological school in the nineteenth and the first half of the twentieth centuries.

Yadviga Anoshko – First survey of glacial landforms in Belarus by Anna Boleslavovna Missuna.

Algirdas Gaigalas, Marek Graniczny, Jonas Satkūnas, and Halina Urban – Pioneers of modern glaciomorphology in Lithuania and Poland.

- Yasumoto Suzuki – Historical review of the geodetic study of crustal movements of the Japanese islands.
- Michiko Yajima – The Paleo-Tokyo Bay concept.
- Theory of Glaciation*
- Anto Raukas – Evolution of the theory of continental glaciation in northern Europe.
- Marianne Klemun – The problem of periodisation and Aldophe von Morlot's usage of the term 'quaternär.'
- Bernhardt Fritscher – Alexander Keyerling, Roderick I. Murchison and early Quaternary geology in European Russia.
- Frederik van Veen – Early ideas about erratic boulders and Torrel's land ice theory.
- Tatiana K. Ivanova and Evgeniy E. Milanovsky – Piotr A. Kropotkin and his *Researches on the Glacial Period*.
- Gailė Žalūdienė – Cycles of rock circulation by Josef Łukaszewicz and his treatise *Inorganic Life of the Earth*.
- Martin S. Brook – George Leslie Adkin and glaciation in the Tararua Range, North Island, New Zealand.
- Martina Kölbl-Ebert – Explosive history: Walter Kranz, Heinrich Ludwig Quiring and their perception of the impact craters Nördlinger Ries and Kaalijärv.
- Regional aspects*
- Evgeniy E. Milanovsky – Ideas and knowledge on the Pliocene and Quaternary glaciations in Eastern Europe, Siberia and the Caucasus.
- Phillipe Taquet – Eschscholtz, Kutorga, Parrot, Cuvier and the first discoveries of strange vertebrates in Livonia.
- Simon Knell – Christian Pander's Tooth.
- Claudia Schweizer – European biostratigraphy in the early nineteenth century: an interdisciplinary attempt.
- Algimantas Grigelis – First geological observations in Lithuania: a historical viewpoint.
- Jonas Satkūnas, Marek Graniczny, Halina Urban – Oldest geological maps of Poland and Lithuania: facts and implications.
- Wolf Meyer – The first geological investigations of the Pleistocene Tamala Limestone, Western Australia.
- Algirdas Gaigalas – Development of ideas and peculiarities of Quaternary research in the Baltic States.
- Alena Cejchanova – Hindsight for the history of Quaternary mapping of the Czech Republic.
- Manuel Pinto – Historical aspect of soil studies in Portugal.
- Witold Zuchiewicz – History of neotectonic studies in Poland.
- Stanisław Czarniecki – The origin of INHIGEO at the first international meeting of historians of geological sciences.

On the afternoon of 29 July, INHIGEO's formal business meeting was held (see separate report in this *Newsletter*), following which participants visited two of the capital's important, and historic, institutions: the Cathedral and the University of Vilnius. Our guide at the cathedral was Dr Napaleonas Kitkauskas and, being a Saturday, the edifice was crowded, including participants in a number of wedding ceremonies. The sound of the organ and choir music permeating into the King crypts will long be remembered. After walking through the Baroque old town to the University, founded in 1579, the first stop was its 436-year-old historic library, where Gražina Cijunelytė highlighted a number of breathtaking examples from its outstanding collection of antiquarian books. Other highlights within the University were its former observatory, established in the 18th century by Martynas Počobutas and the oldest in Eastern Europe, and the splendid interior architecture of many of the campus buildings.

Sunday 30 July was occupied by a whole-day fieldtrip to the area east of Vilnius, where there is a representative sequence of Middle to Upper Pleistocene glacial deposits. The principal guide was Professor Algirdas Gaigalas, who provided an informative account of both the history and glacial geology of the area, interspersed with Lithuanian songs. The first stop was at the 'official' centre of Europe at Bernotai. Of geological interest were numerous granite erratics transported by ice from Scandinavia, something that participants on the post-meeting fieldtrip were to see frequently. Also of interest was a well preserved esker on the crest of which archaeologists had unearthed the remains of an ancient wooden fort. The second stop was the Pučkoriai outcrop in the Pavilniai Regional Park, where a 66 m high face cut by a meander of the Neris River has exposed push and press terminal moraines of the Saalian Glaciation. Lunch was at beautiful Lake Galvė, one of several in the Trakai

Historical National Park, with a post-prandial visit to the restored stone and brick Trakai Castle (Figure 1), which dominates an island in the lake. Within the 15th-century castle walls are museums that explain both the history of the castle and its role as the former seat of government of the area. Our guide here was Julia Volyneć. The final stop for the day was the Velnio Duobė or Devil's Pit, a geological monument near Aukštadvaris village. This 40 m deep pit, some 300 m across, is floored with peat to a depth of 10 m. The peat has provided evidence that the pit is over 9,000 years old but, despite a lot of research, and much speculation (including some from INHIGEO members), no satisfactory explanation for its origin has been forthcoming. Explanations include a plunge pool of a waterfall on the edge of a Pleistocene glacier, a kettle hole left after a block of ice buried in the enclosing sediment melted, and a crater resulting from the impact of some extraterrestrial object. The explanation gaining the most support from INHIGEO members was an impact crater from a comet composed of ice, which could explain the lack of any crater rim.



Figure 1: The assembled INHIGEO group in front of Trakai Castle (Lithuania)

Fieldtrip, 31 July to 4 August 2006

Under sunny skies participants were conveyed by bus to the Lithuanian Baltic port city of Klaipėda, some 320 km northwest of Vilnius. Commentary was provided by Professor Grigelis (the Conference organizer). Lunch in the leafy courtyard of the Museum of Clocks (Laikrodžių Muziejus) was a precursor to being shown the fascinating collection of clocks and other instruments by the curator, Giedrė Kauzonienė. From Klaipėda, a short ferry ride delivered the bus onto the world-renowned Kuršių Nerija or Curonian Spit. Further explanation of the origin of this dynamic barrier spit and its dune complex, including the delicate balance between natural processes and human occupation, was provided by Dr Miglė Stančikaitė. The spit is also famed as a source of amber, the origin of which was explained by Professor Grigelis. During the Paleogene, amber, originating from resin from the now extinct *Pinus succinifera* growing in Scandinavia, was transported by rivers southeastwards and deposited in a bay in what is now the Sambian area. Amber is presently mined from the Paleogene marine deposits on which the spit is founded and pieces eroded from them are also washed up on the Lithuanian coast.

The next stops were in Nida settlement, the administrative centre of Neringa, and included a folk museum, Mizgiris' Amber Museum, and short climbs to vantage points on the spit. The remains of a substantial granite sundial on the high point of the Parnidis dune complex, close to the border with the Russian enclave of Kaliningrad, testified that the weather was not always benign. Gazing into the

enclave it did not appear that the authorities there had achieved the same level of ecological harmony as their counterparts in Lithuania. The return to Klaipėda allowed plenty of time in the evening to explore the medieval town centre.

The following day, the fieldtrip proceeded 70 km northeast from Klaipėda to the village of Mosėdis and the Vaclovas Intas National Stones Museum (Figure 2). The museum comprises a large open-air collection of erratic boulders. Boulders were formerly in great abundance, as erosion of till deposits by the nearby Bartuva River had formed a huge boulder-lag deposit. However, through the centuries the erratics in Lithuania, and in neighboring Latvia and Estonia, have been used as building stones or have been crushed for road metal and other uses so that this characteristic signature of the glacial origin of landscape has in many instances been largely eradicated. In the museum, which owes its origin to the enthusiasm of local doctor Vaclovas Intas, representatives of the various rock types that used to abound in the neighborhood are now preserved. Most of the boulders are of varieties of Scandinavian granites and, in addition to having descriptions, representative boulders have polished faces that allow their internal structure to be observed. The museum headquarters, an old flour mill constructed of erratics, contains a much broader collection of rocks from beyond Mosėdis and which are of considerably smaller size than those in the surrounding fields.



Figure 2: Glacial erratics at the Vaclovas Intas National Stones Museum (Mosėdis, Lithuania)

The museum of stones was the last stop in Lithuania and we farewelled Algirdas Gaigalas and soon after, on a deserted country road, the bus and its participants crossed through border control into Latvia where our main guide became Professor Ervins Lukševičs, of the University of Latvia, who provided us with a ‘potted history’ of his country. After lunch at the village of Liepāja, rain that had been threatening all morning set in and, although it proved impossible to keep to the planned timetable, all of the designated stops were accomplished. Near the village of Lēģernieki a slippery descent to the Lētiža River allowed participants to see an outcrop of spectacularly folded till. Due to the inclusion of finely-bedded Jurassic sediments in the till, the outcrop had been until recently interpreted as part of the underlying Paleozoic–Mesozoic sequence. The deformation is attributed to the meeting of two streams of ice. Further folded till deposits were examined, during a brief sunny interlude, in the Braņķi gravel pit at Zirņi above the Ciccere River. Our route then continued north to the Latvian capital of Riga. Because of the lateness of the hour a visit to the oldest scientific centre in Latvia, the Academia Petrina at Jelgava, founded in the 16th century, was curtailed. However, participants learnt a little of its achievements during a brief stop at dusk under the sheltering porch of the *Museum für Geschichte und Kunst*. At Riga, the absence of a working lift in the ‘Hotel Multilux’ meant that participants had to transport their bags up numerous flights of stairs to their rooms.

However, the exercise worked up an appetite that was satisfied by having to choose from an enormous and bewildering array of choices in a nearby restaurant.

The following morning, 2 August, participants were guided around the old town of Riga by Dr Laimdota Kalnina of the Faculty of Geography, University of Latvia. The beautiful town centre is dominated by the square tower of the brick Dome Cathedral and the spires of St. Jacob's Cathedral and St. Peter's Church, the latter faced with blocks of Devonian limestone crammed with brachiopods. The city, in common with several other towns in Latvia and its neighbors, still clearly demonstrated its links to the Hanseatic League, but buildings close to the Daugava River were showing evidence of structural stress due to compaction of the underlying soft sediments. The morning walk ended at the Natural History Museum of Latvia where Dr Ligita Lukševiča (wife of Ervins Lukševičs) explained the numerous geological and related exhibits, which were on temporary display while major renovations were in progress. On boarding the bus and heading east, the architecturally clearly demarcated zones marking the development of Riga since Hanseatic times were readily appreciated. Surrounding the old town was a circle of buildings dating largely from the late 19th century to the First World War, which in turn gave way to an industrial zone and finally suburbia.

The day's destination was Tartu, the second city of Estonia. The route was initially through the valley Gauja, which contains Latvia's largest national park, and where fossilized fish have been found in Devonian sandstone, exposed where rivers have cut down through the Pleistocene deposits. After some 90 km from Riga the medieval town of Cēsis in the Vidzeme Upland was reached. At Cēsis the ruins of its castle, founded in 1209 by the 'Knights of the Sword,' provided a welcome walk before lunch. After lunch, participants were taken in hand by Dr Tõnu Pani, Curator of the Geological Museum of Tartu University, in anticipation of crossing into Estonia. Continuing northeast, it was late in the afternoon before the largest of five meteor impact craters was visited. The Põrguhood Crater, some 80 m across and about 12 m deep, has thrown up a distinctive rim of material in the now forested flat glacial landscape, and did not provoke the same intensity of discussion as at the Devil's Hole. Nevertheless, all were impressed with the evidence left by this celestial visitor some 6,000 years ago. After dinner in a small hotel situated within the precincts of the historic University of Tartu, several participants visited the nearby Karl Ernst von Baer (1792–1876) Museum. Von Baer, of Baltic German descent, was a versatile scientist and what today would be termed a conservationist. He was active at the University of Tartu between 1867 and 1876, and the museum is in the house he lived in at the time. The evening was capped by a visit, under Tõnu Pani's guidance, to the University's Geology Museum. It was a well satisfied, if tired, group who made their way back to the hotel as rain began to fall.

While the rain may have had a soporific effect on participants, it was far from welcome when daylight heralded what proved to be a wet day. Much of the morning, with guide Dr Maris Rattas, was devoted to the field of mega-drumlins at Saadjärve. The field is about 55 km wide and about half this distance in width. Individual drumlins are up to 13 km long and 3 km wide with their crests up to 60 m above the bounding troughs. The first stop for the day was the Drumlin Museum at Vooremaa where, by means of dioramas and cross sections, the origin of these remarkable features in the Estonian landscape was more readily understood. Then it was a case of putting theory into practice when the more hardy souls ascended an open tower in the rain to view the drumlin field. For those who did so, it was a rewarding experience although the shelter of the bus was welcome relief from the rain, which was increasing in intensity. On reaching the small fishing village of Kallaste, on the shores of Lake Peipsi, the rain was sweeping horizontally across the lake from Russia. On the lake shore, a sheltering overhang worn into cross-bedded Middle Devonian red sandstone provided some relief, as did a visit to the local information centre. At the centre, the origin and ecology of the lake, the fourth largest in Europe, was explained by Dr Tiit Hang with the help of drill cores of varves and seismic profiles. The lake fills a glacially eroded trough and contains 35 species of fish as well as being the home for over 230 species of birds. This part of Estonia has many Russian inhabitants and Russian-style churches. The border between Estonia and Russia now extends through the lake.

The remaining stops, led by Dr Ivar Puura, largely concentrated on the Lower Paleozoic rocks that make up much of Estonia and many of which are economically important. Fortunately, the weather improved during the afternoon. Economically the foremost rock unit is a Middle Ordovician oil shale, which provides over 75% of Estonia's energy and 95% of its electricity. The oil shale consists of alternating layers of impure, richly fossiliferous, limestone and mudstone. The latter, known as *kukersite* after the nearby Kukruse manor house, is thought to have been formed from the remains of algae that accumulated as mats in tidal flats and were carried by currents into a more open

sea environment. The rocks are magnificently exposed in the huge Kohtla Quarry with its backdrop of stacks and towers of the conversion and distillation plant. This was followed by a stop at Vallaste where a series of ladders allow visitors to descend down a cliff of Ordovician limestone that constitutes part of the famed North Estonian 'Klint' (cliff). While of benefit to geologists, it appears that the ladders were largely put in so as to allow observation of a waterfall but, because of a dry summer, only a trickle flowed down the cliff. At Kunda, sediments of Cambrian age were examined in a large opencast pit. Due to a lack of burial, the sediments are very soft, which is unique for sediments of that age, and they are extensively exploited as clay for brick making and other uses. Before traveling to the Estonian capital of Tallinn for the night, a final stop was to the museum and the adjacent beautifully restored 17th-century Palmse Manor House in the Lahemaa National Park, situated by the indented northern coastline of Estonia.

On the final day of the fieldtrip participants were guided by Dr Jaak Nõlvak to the Pakri Peninsula, site of a former Soviet submarine base, where the Klint forms the precipitous shore of the Baltic. As the sun broke through, spectacular coastal views were evident and a large passenger ferry emerging from the mist appeared as though suspended in mid-air, giving a ghostly appearance. In the Klint, fossils such as *Orthoceras*, graptolites, and trilobites are abundant in the limestone. In the afternoon there was a tour of the old part of Tallinn, famous for its medieval buildings, followed by a visit to the *Eesti Vabaõhumuuseumi* or *Rocca al Mare* on the outskirts of the city. This extensive 'working', folk-museum, set in a forest, exhibits buildings, many of them original and reassembled on site, and other artifacts that express the history of Estonian culture. In the evening, INHIGEO 2006 concluded with a traditional Estonian meal in the museum. Except for a few hardy souls who took the fieldtrip bus back to Lithuania that evening, most participants left Tallinn the next day.

As with all the INHIGEO meetings that I have attended, the meeting and fieldtrips were outstandingly well organized, with specialists from Lithuania, Latvia, and Estonia all making their individual contributions. There were numerous opportunities to view the geology and countryside and enjoy the hospitality of three small, but culturally and linguistically diverse, countries. The Abstracts of Papers and Fieldtrip Guidebook publications were of exceptional value and due credit goes to the many contributors and the editing skills of Professors Algimantas Grigelis, Kennard Bork and David Oldroyd. The 120-page guidebook was not only very informative for the participants on the fieldtrip but it also provides a valuable reference to the history and geology of the three countries and is likely to be used by other visitors to this part of the Baltic. What was surprising to many of those attending the meeting and participating in the fieldtrips was that, despite these countries' long and often troubled histories, an amazing amount of the past has been preserved. Historic remains ranged from almost entire medieval cities, such as Baroque Vilnius and the Hanseatic ports of Riga and Tallinn (which now have UNESCO world heritage status), to humble villages and isolated farmhouses. Perhaps more enduring, natural features have been given wide recognition and protection, including under the Soviet era, when in other respects much ill-planned development took place. The sense of history and geology is well recognized with building restorations and the establishment of parks highlighting aspects of the landscape. With their independence, Lithuania, Latvia, and Estonia are asserting and enhancing their diverse past. In all, it was a great meeting and set of fieldtrips. The grateful thanks of participants go to Professor Grigelis and the Local Organizing Committee, as well as the numerous guides who gave their time and expertise to make 'INHIGEO 2006' a memorable occasion.

Mike Johnston, Nelson, New Zealand

**“Multidimensional exploration of Antarctica around the 1950s”
Report of the 2nd Workshop of the SCAR Action Group on the
History of Antarctic Research,
Santiago (Chile), 21–22 September 2006**

The 2nd workshop of the Scientific Committee on Antarctic Research (SCAR) History Action Group took place at the Ministry of Foreign Affairs in Santiago de Chile. José Retamales, Director of the Instituto Antártico Chileno in Punta Arenas welcomed 21 participants coming from Argentina, Chile, Germany, The Netherlands, Sweden, Tasmania (Australia), and the United States. Thirteen different papers covering a great range of perspectives were given. In the beginning, Eugenio Genest (Instituto Antártico Argentino) dealt with the development from exploration to co-operation during the international polar years. Jorge Berguño (Instituto Antártico Chileno, Chile) handled the intellectual sources of the Antarctic Treaty, while Jason Kendall Moore (University of Tasmania,

Australia) showed the long way required to progress from the French *Encyclopédie* to the Antarctic Treaty. Peter Abbink (Arctic Centre, The Netherlands) focussed on the policy behind the Belgian-Dutch Antarctic co-operation in the 1960s. Adrian Howkins (University of Texas at Austin, USA) presented his analysis of Chilean Antarctic science in the period 1946–1959 and Mauricio Jara (Universidad de Playa Ancha, Chile) discussed India and Antarctica in 1956. At the same period, headlines like “When Titans Clash, Something has to Give” described the U.S. Antarctic mindset in the mid-1950s, as seen from the contemporary Chilean point of view. Those interactions were analysed by Consuelo León Wöppke (Universidad Marítima de Chile). Later Cornelia Lüdecke (University of Hamburg) discussed German naming in Antarctica, and a new Antarctic map in the early 1950s, in the framework of a planned German expansion to the Southern Continent. Irina Gan’s (University of Tasmania) paper on “Preparation for the first Soviet Complex Antarctic Expedition 1955–1957” and the Australian response was contrasted by Nelson Llanos Sierra’s (Universidad Marítima de Chile) paper on “Chile and Australia: Antarctic Relations in the mid-1950s,” referring to politics and science. Within this framework—the logic of risk assessment in the planning for the IGY—a paper prepared by Lisbeth Lewander (University of Göteborg, Sweden) was also relevant. The early European attempt to launch an Ice Coring Project in Antarctica (the European Antarctic Project, EAP) long before the European Project for Ice Coring in Antarctica (EPICA) was the subject of Aant Elzinga’s (University of Göteborg, Sweden) paper at the end of the meeting.

We also had two book presentations: Adolfo E. Quevedo Paiva (Argentinean Army) on his bilingual (Spanish and English) book on *Argentinian geographical discoveries in Antarctica—Discoveries south of the Weddell Sea* and Alberto Sepúlveda (Diplomatic Academy of Chile) on the new book edited by Consuelo León Wöppke *et al.* on *La Antártica y el Año Geofísico Internacional: Percepciones desde fuentes chilenas, 1954–58*. The mixture of Ph.D. students, historians, historians of science, and Antarctic veterans, as well as profound experts on the Antarctic Treaty System resulted in very lively and exciting discussions and comments. The papers of the 2nd workshop will be published by the Chilean Antarctic Institute. The workshop was sponsored by SCAR, the Chilean Antarctic Institute, and the German Society for Polar Research.

Cornelia Lüdecke, Munich

**“Capture the Weather”—225th Anniversary of the Meteorological Network of the
Societas Meteorologica Palatina (1781–1792)
6th FAGEM Conference, Landesmuseum für Technik und Arbeit, Mannheim (Germany)
1–2 July 2006**

On the occasion of the 225th Anniversary of the meteorological network of the Societas Meteorologica Palatina, established by the Palatine Elector Karl Theodor (1724–1799), the History of Meteorology Specialist Group of the German Meteorological Society organized its 6th conference on “Das Wetter festhalten” (“Capture the Weather”) at the Landesmuseum für Technik und Arbeit (Country Museum of Technology and Labour) at Mannheim (Germany) from 1–2 July 2006.

After the welcome of the participants by Kai Budde from the Country Museum, Alexander Moutchnik (Heidelberg) opened the first session with a biography of the astronomer and professor of experimental physics at the university in Heidelberg, Christian Mayer SJ (1719–1783). Also discussed was his part within the organization of the Societas Meteorologica Palatina (1780–1795). Matthias Deutsch (Göttingen) and Michael Börngen (Leipzig) introduced early instrumental meteorological observations made at Erfurt, which were started by Johann Jakob Planer (1743–1789), a physician and professor of medicine, chemistry, and botany at the University of Erfurt. His observations lasted from 1 March 1778 until 1 March 1779, as well as from 1781 until 1788, while his later data sets were sent to Mannheim. The second session dealt with meteorological measurements in southern Germany. Peter Winkler (Hohenpeißenberg) described the oldest mountain station of the world, which the Society had established on Hohenpeißenberg (996 m high) in 1781 and which has been continuously taking measurements until today, except for some minor interruptions after World War II. Cornelia Lüdecke (Munich) dealt with the meteorological network of 30 stations of the Bavarian Academy of Sciences in Munich (1781–1789). Professor Franz Xaver Epp (1733–1789) had established most of the stations in monasteries for local investigations of such phenomena as rainfall in Bavaria. In the evening, Stefan Emeis (Weilheim/Bavaria) gave a public paper in the Museum referring to “Clearing up and following storm,” on contributions in meteorology by learned Fathers before the secularization (1803). On Sunday Karl-Heinz Bernhardt (Berlin) opened the third session with his talk on Alexander

von Humboldt (1769–1859) and his paper on the isothermal lines and his “Vergleichende Klimatologie” (“comparing climatology”). To our surprise, we learned that Humboldt did not use the Ephemerides of the Societas Meteorologica Palatina with the detailed meteorological data sets originating from all over the world for construction of the isotherms of the northern hemisphere, but relied on other sources. In the following paper, Michael Börngen (Leipzig) presented Heinrich Wilhelm Brandes (1777–1834) and his foundation of synoptic meteorology. In contrast to Humboldt, Brandes used the data of the Societas for his *Beiträge zur Witterungskunde* (1820), in which he described the weather development of 1783 in great detail, when just by chance the network consisted of a maximum of stations and when many volcanoes erupted in Iceland. After the coffee break, Wolfgang Lähne (Römerberg) showed a time series of temperature at Mannheim, which were begun by the Societas Meteorologica Palatina in 1781 and last until today. This series provides a wonderful means for the investigation of regional trends in Germany.

At the end of the conference Kai Budde guided a tour through the museum, focussing on aspects of science at Mannheim in the 18th century. The participants especially liked this kind of conference because it focussed on a limited subject, thus allowing very detailed discussions with experts coming from many different directions.

Cornelia Lüdecke, Munich

The 34th IAH Congress, held in Beijing, People's Republic of China 9–13 October 2006

The International Association of Hydrogeologists (IAH) held its 34th Congress in Beijing, P.R. China during 9–13 October 2006. The year 2006 is also IAH's 50th anniversary, as IAH was established in 1956. Since then, IAH holds its congress every one or two years, in cooperation with the National Committee (National Chapter) of one of his member countries.

More than 500 hydrogeologists from 51 nations, and associated international organizations, attended this congress. The Ministry of Land and Resources of P.R. China and IAH were the sponsors, and the China Geological Survey and Chinese Chapter of IAH were the organizers. The main topic of this congress was “Groundwater—Present and Future.” More than 610 papers were submitted and compiled in a book before the congress met. At the meeting, 220 papers were presented orally, and fifty papers were presented as posters.

During the plenary session, UN agencies (FAO, UNESCO, IAEA) and World Bank representatives gave speeches concerning ongoing groundwater activities and projects, which drew great interest from the participants. The session topics were: (1) Groundwater and sustainable development; (2) Evolutionary rules of regional groundwater systems; (3) Groundwater recharge and ecology; (4) Groundwater quality safety and contamination recovery; (5) Groundwater and rural development; (6) Groundwater for urban planning, construction, and management; (7) Special types of groundwater with its development; (8) Groundwater and geological hazards in mining and infrastructure construction; and (9) Isotopes, numerical modeling, exploration, evaluation, and exploitation of groundwater.

During the presentations and discussions, the most attractive points were concentrated on groundwater management, groundwater contamination recovery, ecological problems, isotope technique application, etc. In the morning of 13 October, a special meeting on Compilation of the Hydrogeological Map of Asia was held under the sponsorship of the Chinese Chapter of IAH and Institute of Hydrogeology & Environmental Geology of China. Participants warmly welcomed the inauguration of this project, and those who are interested in participation may make direct contact with the organizer.

Post-Congress field trips were organized to visit Guangxi (Karst Hydrogeology) and Tibet (Geothermal field).

This was the second IAH Congress held in China. The first one held in China was the 21st IAH Congress (October 1988) and it focused on the topic “Karst Hydrogeology and Karst Environment Protection.” That 1988 meeting was also a great success.

JI Chuanmao, Beijing

William Buckland: The 150th Anniversary Symposium

27 July 2006, Oxford University

(Reproduced through the courtesy of the History of Geology Group, UK)

Held in the lecture theatre of the Oxford University Museum of Natural History, this was a joint meeting between the Museum, HOGG (History of Geology Group), and the Palaeontological Association, to mark the 150th anniversary of William Buckland's death in 1856. The meeting was well attended with about 140 delegates, keen to listen to aspects of Buckland's life and work. Meeting convener Jim Kennedy (Oxford) started the session with a look at Buckland's life. He was born at Axminster in 1774, the eldest son of Charles Buckland and his first wife Elizabeth. After education firstly at home, then at schools in Tiverton (Devon), and Winchester (Hampshire), he was taken by his uncle Charles Buckland to Warnborough, just south of Oxford, to complete his education. In 1801 he was admitted to Corpus Christi college, Oxford to study Latin & Greek literature, and Geometry and Theology. He graduated in 1804, and was elected to a fellowship and ordained as a priest in 1808. He became friends with scientists John Kidd, Christopher Pegge, W.J. Broderip and W.D. Conybeare, whose lectures he attended, and whose influences changed his life. In 1813 he was appointed to the readership in Mineralogy, and 5 years later to the newly-established post of readership in Geology, for which he had petitioned. In 1823 he travelled to the cave at Paviland, south Wales, where human remains covered in red ochre, and subsequently known as the 'red lady of Paviland' were found. A year later he described remains of a large creature found in the rocks at Stonesfield (Oxford)—this was *Megalosaurus*. But, dissatisfied, he accepted the living at Stoke Charity (Hampshire) and would have left Oxford, but for being appointed Canon of Christ Church in 1825. In that same year, at the age of 41, he married Mary Morland, aged 28, whom he had known for some years. The defeat of Napoleon by Wellington had opened up avenues for European travel, and they went on the Grand Tour, for a honeymoon. It also allowed Georges Cuvier, the great anatomist, to visit Oxford, and Buckland showed him bones from Stonesfield. In 1836 he wrote his *Bridgewater Treatise* which was to be a best seller. But his popularity as a teacher was declining, and in 1845 he was appointed as Dean of Westminster, which also included the rectorship at Islip near Oxford. Robert Peel made the appointment and claimed it as "the best I have ever made"; Darwin said Buckland was a buffoon! In 1849 he started to show eccentric behaviour and was confined to an asylum in Clapham; he never resumed his duties as Dean, but managed to retain the salary and the house at Islip. In 1856 he died in the asylum, and was buried at Islip. Mary died a year later.

Following this opening, it was John Brooke (Oxford) who looked at the palaeo-theology of Buckland. As a theologian, Buckland had a problem in uniting the known human world with the prehuman, and took the decision to become an actor within the scenes he reconstructed. By using



Corbis

Gustave Doré's depiction of the Great Flood in a work entitled "Dove sent forth from the Ark"

extant forms he was able to transfer the language of natural theology to extinct forms, and so refine what was meant by 'progression' in the fossil record. In his inaugural lecture he had to vindicate science, not religion. The Bible was only concerned with the period of human history, and there was no decisive evidence to extend the age of the human race. But Buckland knew that the Earth had undergone a number of revolutions, and the problem was to affirm the unity that would reflect the unity of a divine mind. If Earth is the product of one piece of work we may expect to find unity and regularity. Buckland strove to integrate extant and extinct forms into a single chain—the Great Chain of Being—which started at the bottom with 'ethereal matter' followed upwards by air, water and pure earth, and thence through all the known geological objects (rocks, crystalline materials), to life forms and the known fossils, known living forms, finally ending with human beings at the top. He had evidence for things such as the great deluge, and there was a tradition of evidence of divine wisdom in earlier works of nature

by luminaries such as Boyle and Newton. Buckland also had skills in reconstructing ancient habitats. The fossil species found which gave links to the living, gave him proof of the “unity and universal agency of a common great first cause...where every individual is shown to be an integral part of one grand original design.”

Hugh Torrens (Keele University) looked at Buckland’s transmission of British stratigraphic knowledge. William Buckland is often portrayed as a rather eccentric character—in 1886 he was spoken of as the man who “ate his way through the whole animal creation.” But he was a multi-faceted character who in 1814 had issued a broadsheet entitled *Order of Superposition of Strata or Tabular Arrangement of Rocks* which had attempted to list the known strata in their correct order as found. The broadsheet was revised nine times between then and 1818, as newer information was found. This newer information was not restricted to discoveries made in England, but also included information given to Buckland by Werner in 1816. It also relied to some extent upon the work of Henry Steinhauer (1782–1818), a Moravian church minister from Haverfordwest. Exactly when in 1814 this chart was first produced isn’t clear. An extant copy has no date, but has a watermark of 1811, so could not be earlier than this. But the first series of sheets showed 12 formations, from granite and working upwards to end with peat bogs. It’s also noticeable that the name of the Oxford Clay pre-dates William Smith’s naming it ‘Clunch Clay.’ The second series adds the Stonesfield Slate for the first time, which was Buckland’s addition from Farcy’s book of 1811. The 3rd series is dated at about 1816, since Etheldred Bennett wrote to Gideon Mantell in that year, telling him that she had “received this version 2 months ago.” Version 3 of this series was later copied into French and Italian by Breislack in 1818. The 4th version attempted to correlate German and English formations, and Buckland allies the Lias with the Ooolite. The 5th version was published by Robert Blackwell and was started by Buckland during his tour of Germany, accompanied by W.D. Conybeare, and where they met both Goethe and Werner. Series 3 became the most impressive of all. The strata now read downwards, as in nature, and it was used, with permission by Phillips in his book of 1818. A version was published in Westgarth Forster’s book on the strata from Newcastle to Cross Fell. The charts became more influential than realised, and inspired many others. They were produced annually from 1814–1820 for Buckland’s students.

Martin Rudwick (Cambridge) examined the work of Buckland relating to Flood, Deluge and the Ice Age. Those who see Buckland as essentially English or even Oxfordian, do him a disservice. He was more European, and went on several tours, including a whole year for his honeymoon. He was in contact with people on the Continent (and even some in the USA). Cuvier had linked geology to human history and had developed a theory of a catastrophic event in the distant past; there was evidence for an aqueous catastrophe in many places. Buckland adopted the idea of a natural mechanism for this flood event—which might now be called a ‘mega-tsunami.’ The Edinburgh geologist Hall had already advanced a theory of uplifted oceanic crust which causes waves to spread outwards and a retreat of the sea, which then returns with a vengeance. It was applied to an area of western Edinburgh where there are visible striations and deep land ridges (now covered by housing). Buckland plotted the occurrence of gravels containing quartzite pebbles from the West Midlands, to Oxford and on to London, and said it must be due to a great deluge. He noted that the coastline near Lyme Regis showed a series of deep valleys which were truncated at the cliff line; these must have been cut by a large flood.

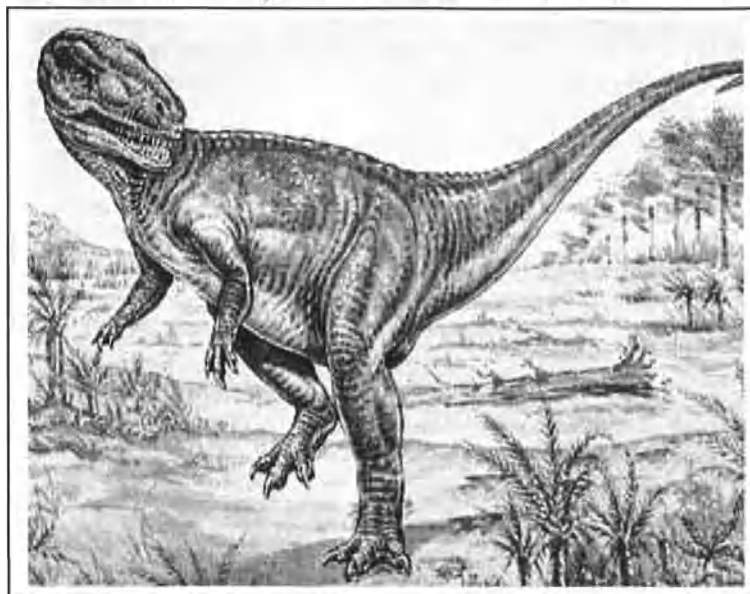
But how recent was this event? For Buckland the Biblical event was “The Flood,” but a geological deluge might have occurred much earlier in pre-human times. Although both were seen as natural events, neither was linkable to Genesis. Most geologists accepted a huge event in the past; the work of



Gustave Dore's depiction of the deluge

Leopold von Buch in tracing erratic boulders from Mt. Blanc all the way across the Swiss plain and on to the Jura Mountains was held as evidence, as was the work of Rasomovsky who described erratics from Finland all the way to Russia and the Baltic. Others, notably Brongniart (1824 in Sweden), de la Beche (1830 at Lake Como), and Sefstrom (1836, in Sweden) mapped eskers, erratics and scratched surfaces respectively, and came to the same conclusion—a pre-human event of some size. To avoid a clash between geological and biblical theory, it was suggested that rocks may have been transported on icebergs, but this didn't account for how they got onto land. The theory of glaciation had been advanced by Esmark but was ignored. Jean Charpentier (1786–1855) mapped erratics from the Upper Rhine Valley to the Jura Mountains, and proposed the extraordinary theory that climate might once have been different in the past. The only way of having an Ice Age was by assuming the Alps were raised higher than at present. Buckland was present at several crucial meetings on a possible ice age. The eventual change towards ice-age theories was not straightforward, but was logical.

Philip Powell (Oxford) examined the history of *Megalosaurus*, in the light of recent discoveries. *Megalosaurus*, or the 'great fossil lizard of Stonesfield,' is one of the best known of all fossils. A



recent paper has said that the bones collected by Buckland were "scattered remnants of a single individual," even though Buckland's paper of 1824 (*Trans. Geol. Soc. London*, Ser. II, p. 190) said that the bones "represent several individuals of different ages and sizes." The difference may come from a misunderstanding of the nature of the Stonesfield Slate. These beds are thin, never greater than 6 feet, and though part of the Great Oolite, are a rock type and not a structure. They have been used as roofing slates from the 17th century, and were mined from shafts, some up to 60 feet

deep. They are fossiliferous, and one of the earliest finds was a tooth, illustrated in 1699 by Edward Lhuyd. John Woodward's catalogue of 1728 shows the broken shank of a dinosaur limb bone. A thigh bone some 29" long with waterworn ends was unearched by Joshua Platt in 1758, and compared by him with an elephant bone, but there was no similarity. The bone is now lost. Other bones were also found. A Dr Watson described a scapula which was found in 1784, and presented to the Woodwardian Museum, but this might not be a Megalosaur. The now famous 'lower jaw' was known to have been in Oxford in 1797. Now, some new evidence in the form of several letters in the Buckland archive, have shed new light on how the bones came to be in Oxford. The outcome is that *Megalosaurus* is a mess!

Simon Knell (Leicester) looked at Buckland and the museum as a 'network hub.' Buckland was very much a museum man, and as curator occupying upper floors of the Old Ashmolean Museum, had by 1821 amassed a collection of fossils. Instructions on collecting had been given by many authors before Buckland, going back to John Woodward in 1696. When Murchison saw them, he complained that they were untidily kept! Buckland was in any case a celebrity since his work at Kirkland Cave, and he was aware of his own status, which he could exploit to construct a network. Buckland used fossils to explain the new science of geology, as these made it all the more powerful to his audiences. His museum became a hub, into which flowed specimens and information, and out of which flowed correspondence and theories, and teaching. Buckland exported this idea after his Kirkland discoveries in 1821 with the establishment of a museum and later Philosophical Society in York. One of his students, William Vernon, the son of the Archbishop of York, did much to raise funds for purchases, get to know people and establish a strong network.

In 1822, de la Beche visited Conybeare and was shown a lower jaw of a plesiosaur. Conybeare wondered what the whole creature looked like. De la Beche had been finding similar material at Lyme Regis. When Buckland saw it, he was amazed, and perhaps seeing its potential for teaching, said it should be cast in gold! It was too, in Francis Chantry's workshop, though not, alas, in gold.

Unfortunately Buckland had hired a Prussian named Mueller to work on the collection, and in the process he dropped the casting and broke it. Nonetheless it stayed in Oxford. Such was the power of actual specimens or even casts for Buckland. He was a sophisticated museum man, and with his reputation, was asked to advise on the quality of specimens being offered, as well as their meaning. Not only was he a good museum man, but he also understood the politics necessary to procure specimens or win other favours.

Marianne Sommer (Zurich) had the interesting title of 'You say it does not stick to your tongue?' in connection with Buckland and the problem of antediluvian remains. Buckland's visions of the animal life of antediluvian Britain came about in the context of natural theology and Mosaic history. The big problem was, where does 'man' fit into this picture? And it wasn't easily avoided. The problem of human antiquity in connection with both the post and antediluvian worlds troubled Buckland. His own researches led to the discovery of human remains, and he was aware that the evidence for humans being of great antiquity, was growing. But, he remained adamant in his rejection of the contemporary nature of humans with extinct faunas of Europe. There were problems in deciding if human remains were 'recent' or of great antiquity, especially in the absence of any stratigraphic dating. Buckland, the showman, is reputed to have shown that some bones had a tendency to stick to the tongue, and to have on several occasions attached a bone to his tongue, and still continued talking! The use of humour was one of his great attributes.

Ralph O'Connor (Aberdeen) chose to look at the literary side of Buckland's work and in particular his ability as a great raconteur. For the public, now freed from the problems of a war with Napoleon and able to enjoy wider pursuits, geology was emerging as a history of the deep past which they found interesting. Buckland became the chief storyteller. His work on the Kirkdale hyenas allowed the public to envisage the past but he started by testing his storytelling on more sympathetic audiences than the public. This was not just caution—geology was seen as anti-church. The public could read about the theories, but for most people books were too expensive, and geology was an unknown concept for them. Buckland was fairly uninhibited when presenting geology out loud—to students or the public—where he could be clear who he was talking to as well as know their social class. Speaking also gave more scope for improvisation. He was known to have mixed humour and seriousness when talking, in order to avoid a serious discussion, and the mixture made it more memorable for his audience. This style made a big impression, though Charles Darwin found the 'buffoonery' in bad taste. Today it's not easy to feel what it was like in his lectures, partly because history only records the humorous anecdotes. Buckland was seen by some to have a hero status and to be able to travel back in time. Buckland's ability as a populariser of geology was sealed with the publication of his book *Bridgewater Treatise* in 1824 which contained imaginative plates of creatures which helped to capture the public's imagination.



Philip Taquet (Paris) looked at the professional relationship between Buckland and the great French anatomist George Cuvier. Cuvier was born in 1769 in Montbéliard, in the Jura Mountains. After studying in Germany he took a job with a noble French family, in a chateau near Caen which still stands. He set out to be the new Aristotle! And he wanted to make an inventory of all known animals. At the time the French Revolution was raging but he was protected from the worst of its violence. His excellent drawing of birds especially were recognised, and in 1795 he was invited to Paris by Geoffroy Saint-Hilaire at the newly reformed Muséum National d'Histoire Naturelle (National Museum of Natural History), where after a period as an assistant, where his first job was to make an inventory of artefacts saved by the revolutionaries, he became a full professor of animal anatomy. His strategy was to collect skeletons of creatures for

comparative anatomy studies, which he was able to house in a building with 7 rooms, each one devoted to a different class of animal (e.g., birds, mammals, fish, etc). In a few years he had 16,000 skeletons. When Napoleon came to power, Cuvier continued his work, but times were hard under the Emperor. As his fame spread he was appointed to different posts including one as foreign

correspondent to the Royal Society. In 1818 he visited London for the first time, in his capacity as Inspector of the University of France, for which he received a sum of 6000 Fr to visit British Universities, with his wife as an assistant. In addition to universities, he met William Herschel and saw his telescope, as well as King George IV. During this visit he went to Oxford and met William Buckland, and saw the bones from the Stonesfield Slate, as well as the skeletons of two woolly rhinoceros at Radcliffe. With Buckland he established a cordial relationship, exchanging many letters documents, fossils, casts, and most importantly, ideas. Between 1822 and 1830 at least 25 letters and drawings were sent by Buckland, and these are still extant, and Cuvier returned similar. Buckland also sent exquisite drawings done by Mary Morland between 1822 and 1823, who was later to become Buckland's wife. Both were also helped by Joseph Pentland, an Irish naturalist, who was making excellent casts of specimens. Buckland and Cuvier's mutual admiration for each other is shown by the homage paid in various works. Cuvier died in 1832, in Paris.

Claudia Schweizer (Vienna) took as her subject the relationships of Buckland, Brongniart, and Sternberg with Ernst Friedrich Schlotheim (1764–1832). For them 1804 was a landmark year, for it was then that Schlotheim published a seminal work on fossil plants. In this work he noted the fossil imprints of plants in coal formations and compared their morphologies with still extant plant species. The oldest plants appeared as tree-like ferns similar to those from the coal transition rocks, while primordial plants were more similar to modern equivalents. This led to a thought that the temperature may have fallen since primordial times. Further steps were taken in 1820 when Schlotheim published a further work which deepened the knowledge of fossil imprints from 1804, and raised the idea of a continued history of life, thus replacing the then widely-held diluvian theories. This was also about the time that Buckland started taking an interest in fossil plants. Kaspar Sternberg (1761–1838), who had initially studied theology in Rome before moving on to botany and fossil plants, also published his findings in 1820. He continued a correspondence with Schlotheim up to 1832, and this gave an insight into ideas for a change in climate based on similarities between plant fossils and still extant forms. Adolphe Brongniart was born in Paris in 1801, the son of Alexandre Brongniart, already known for a botanical classification of plants. In 1824 he visited Schlotheim and exchanged ideas. In 1827 he was studying medicine in Paris, but by 1833 he held a professorship in botany and plant physiology. He followed Sternberg and Schlotheim's basic ideas in his major publication. Buckland visited Sternberg in 1822, and started corresponding with him, but never met Schlotheim. While Schlotheim, Sternberg, and Brongniart all followed the same idea of several successive vegetational periods, and a climate shift in Europe, which led to morphological similarities between fossil plants and extant ones. Buckland saw it differently. He accepted that the theory of the Earth was ordained by a plan of God. He saw the process of one of a biblical deluge which was allied to religious learnings.

The final speaker was Patrick Boylan (Leicester) who looked at Buckland's association with the Oxford Readership, the Geological Society and the BAAS, as a way of institutionalising English geology. The idea of travelling to Europe to study the geology in situ, as part of a Grand Tour, was one which was devolving downwards towards the middle classes. At least 40,000 English people were estimated to be travelling or living on the Continent in 1785, just before the French Revolution. Not only did it offer education, but the cost of living in Rome for instance, was only about 1/5th that of London. Other nationalities also partook, including Goethe who went on a two-year Grand Tour in 1785. It reinforced a complex web of introductions, contacts, studies at universities, private tutoring and correspondence. But in 1789 it all changed as revolution spread in France. While this marooned Buckland and his contemporaries, it did have a beneficial effect, as Grand Tours were undertaken to look at English geology. Buckland also became well aware of just how different things were on the Continent, with funding being available from official sources. In Bologna there was substantial funding from the Church, and academicians in Paris received state salaries, while the Swedish Academy of Sciences gave scholars a reward for every almanac sold. Buckland and others felt that the State in England could help, and geology especially needed to be brought in from the margins. After Wellington's victory at Waterloo, Buckland was once again able to travel freely, and did so almost every year. This only reinforced his feeling that the State should take a greater part in funding. Despite Buckland's own position in the mostly privately-funded Oxford University being precarious, he started in 1818 to try and persuade patrons and friends of the Prince Regent, that there should be a publicly-funded Chair of Geology. With the support especially of Lord Grenville, a former Prime Minister and a man involved in anti-slavery legislation, the Government made available £200 for a Reader in Geology. Buckland was eventually elected to the post (which he held along with his Readership in Mineralogy, since 1813). Buckland was pleased to get the post, but the funding was

miserly, and was not the start of general funding as he had hoped. Buckland was aware of the funding and Royal patronage for the Royal Society, and he wanted a similar situation for the Geological Society. In 1824, during his first Presidency, he started on a high-risk strategy of raising the matter with influential people. The response was positive and in 1825 the charter was presented. Buckland wasn't satisfied, and wanted geology to be brought before a wider audience. He was familiar with the annual meeting for scientists in Leipzig and became a most enthusiastic supporter of the BAAS to have an annual meeting in the United Kingdom. The first meeting was in 1831, but its first full meeting as the "Parliament of Science" was in 1832 at Oxford. Buckland served as the President.

It was simply left for convenor Jim Kennedy to thank all those who had given talks, the audience for attending, and the projectionist for faultless work, before delegates were allowed to take a glass or two of wine and to wander among the dinosaurian skeletal remains.

Peter Tandy, HOGG Newsletter Editor, London

With thanks to Peter and to HOGG (Cherry Lewis, Chair) for generously allowing duplication here.

World Congress of Soil Sciences Philadelphia, July–August 2006

In the summer of 2006, in Philadelphia, Pennsylvania (USA), many of us came together for the 18th World Congress of Soil Science. The oral symposium and poster session on the "History of Soil Science in Developing Countries" attracted a considerable audience and was a great success. A possible special publication is under discussion.

The past four years have been a period of renewed interest in the history, philosophy and sociology of soil science. For this, we owe a great debt of gratitude to the leadership team of the International Union of Soil Science (IUSS) Commission 4.5 (Benno Warkentin, Dan Yaalon, and Hans Van Baren). Their efforts at promoting research and publication within our profession, and creating outreach to related disciplines, has been exemplary. The active support of Emmanuel Frossard, as IUSS Division 4 Chairperson, has given our community a voice at the highest levels of our profession.

The Newsletter published jointly by IUSS Commission 4.5 and Soil Science Society of America Committee 205.1 has stimulated discussion within our community and kept members informed of on-going activities, recent publications and up-coming events. Continued publication on an annual basis is planned. Back issues can be accessed at <http://www.iuss.org/> by clicking on the "IUSS Newsletters" link.

Three major volumes have been or will soon be published this year: (1) Warkentin, B. P. (ed.), *Footprints in the soil: People and ideas in soil history*, Elsevier, 2006, 572 pp.; (2) Frossard, E., Blum, W.E.H., and Warkentin, B.P. (eds), *Function of soils for human societies and the environment*, Geological Society (London) Special Publication 266, 2006 (in press); and (3) McNeill, J.R. and Winiwarter, Verena (eds), *Soil and Societies: perspectives from environmental history*, The White Horse Press, UK, 369 pp. These new books, along with Yaalon, D.H., and Berkowicz, S. (eds), *History of soil science: International perspectives*, Catena-Verlag, 1997, 439 pp.; Helms, D., Effland, A.B.W., and Durana, P.J. (eds), *Profiles in the History of the US Soil Survey*, Iowa State University Press, 2002, will form the cornerstones of our future efforts.

The newly elected chair and vice chair of Commission 4.5 are Edward Landa (USA) and Christian Feller (France). The Chair of Committee 205.1 and Newsletter editor is Eric Brevik. Ed Landa (erlanda@usgs.gov) is with the U.S. Geological Survey in Reston, Virginia. He received his Ph.D. in soil science in 1970 from the University of Minnesota. His research has focused on radionuclide and trace element behavior in soils. Among his historical interests has been the work of Lyman Briggs, Edgar Buckingham, and Albert Munsell. Christian Feller (feller@ird.mg) is with the Institut de Recherche pour le Développement, in Antananrivo, Madagascar. He received his Ph.D. in chemistry from the Faculty of Science, Paris, in 1972, and his Doctorate of Science degree (1994) from Strasbourg University, for work on organic matter in tropical soils. His research has focused on carbon cycling and sequestration. Among his historical interests has been the work of Charles Darwin, Albrecht Daniel Thaer, and P.E. Müller. Christian will present the Nyle C. Brady Frontiers of Soil Science Lecture at the upcoming ASA-CSSA-SSSA meeting in Indianapolis. Eric Brevik (ecbevik@valdosta.edu) is at Valdosta State University in Valdosta, Georgia. He received his Ph.D. in soil science in 2001 from Iowa State University. His research has focused on human impacts on the soil resource, carbon sequestration, and use of electrical conductivity in soil survey. Among his

historical interests has been the work of Edward Elway Free and George Nelson Coffey.

Dan Yaalon, Jerusalem

- * Editor's Note: The March 2007 *Newsletter* (No. 14) of the Commission on the History, Philosophy and Sociology of Soil Science appeared as the present INHIGEO *Newsletter* was going to press. The 35-page issue contains a variety of news items, including details concerning the World Congress noted above. Contact International Union of Soil Sciences (IUSS) newsletter editor Eric Brevik (ecbrevik@voldosta.edu) if interested.

ARTICLES

Notes on Experiences in Russia following the INHIGEO meeting in the Baltic States, 2006

David R. Oldroyd

Sydney, New South Wales 2075, Australia
doldroyd@uptushome.com.au

Following the Conference and Field Excursion, so admirably organized in the Baltic States by our colleague Algimantas Grigelis, I was privileged to visit Moscow and then make a 'mineralogical excursion' to the Urals, kindly and efficiently organized by my friend and fellow INHIGEO Member Zoya Bessudnova, of the Vernadsky State Geological Museum, Moscow.

As a preliminary, we travelled by fast train to the city of Sergiev Posad, north of Moscow, where the beautiful monastery of Troitse [Trinity]-Sergieva Lavra is situated. The monastery is the chief centre for the Russian Orthodox Church. It consists of a large collection of lovely smaller churches, several with gilded roofs in the typical Russian style. One of these contained the relics of the Monastery's founder, Sergey, who was subsequently sanctified. The relics attracted a long line of devotees, each of whom was individually blessed by a priest. The on-going ceremony was accompanied by a continuous, soft and melodious, high-pitched chanting, of a mode unknown to me, provided by a rotation of local women. The return 'economy' train served as a kind of travelling shop, with a constant flow of vendors passing through our carriage, plus some 'musicians'—without whom I could have done!

The following day, Zoya (Figure 1) and I embarked on a one-day/two-night journey to the town of Miass, crossing the southern part of the Ural range towards the end of the journey. The crossing was unfortunately during the night, but we were awakened by a truly magical sunrise as the train wound its way down from the hills. We were now 2,000 km from Moscow. The train had passed through Ryazan', the large city of Samara by the Volga, Upha, and Zlatoust. (It made a very cautious crossing of the bridge over the Volga.) After Miass, the train terminated at the industrial city of Chelyabinsk, but the line continues right across Siberia. It is an important rail link; and before the route was changed so as to take a more direct way via Yekaterinburg (Sverdlovsk) it was the line taken by the famous Trans-Siberian Express.

Early in the morning, we were met at Miass station by a mutual friend, Dr Elena Shcherbakova, who is a mineralogist and Senior Curator at the Museum of the Ilmen State Reserve, which is located on the outskirts of Miass. The Ilmen Mountains form a small range, somewhat to the east of the southern part of the main Ural range and parallel to it. The Urals are notable for the variety, quality, and quantity of their minerals, a considerable number of which were first found in the Ilmen Mountains, many occurring in large pegmatite veins, for which the range is well known. Notable early travellers to the region were Peter Pallas (1768–1772), Alexander von Humboldt and Gustav Rose (1829), Johannes Menge (1825–1826), and Roderick Murchison (1841).

The Ilmen State Reserve (founded 1920 for the purpose of protecting the area's well-known unique rocks and minerals) is not large, but is home to numerous animals and plants, some of them rare, such as wolves and maybe the odd bear or two. In 1935 it was designated a Nature Reserve for animals and plants as well as minerals. All known types of large animals in the Reserve are admirably displayed through the work of its Museum's first taxidermist, Sergei Ushkov. There is also a notable collection and display of the region's minerals and rocks, augmented by specimens from other localities and countries. A local 'granitic' rock is called miaskite (a biotite-bearing nepheline-syenite, named by Rose in 1839) and the Ilmen range is also the home of ilmenite. The Reserve has 270 mineral species and seventeen types that were first discovered in the range. Among the minerals,

several contain rare earth elements. Gemstones also occur there. The Museum today has, I was told, about 20,000 mineral and rock specimens and about 3,000 biological specimens.

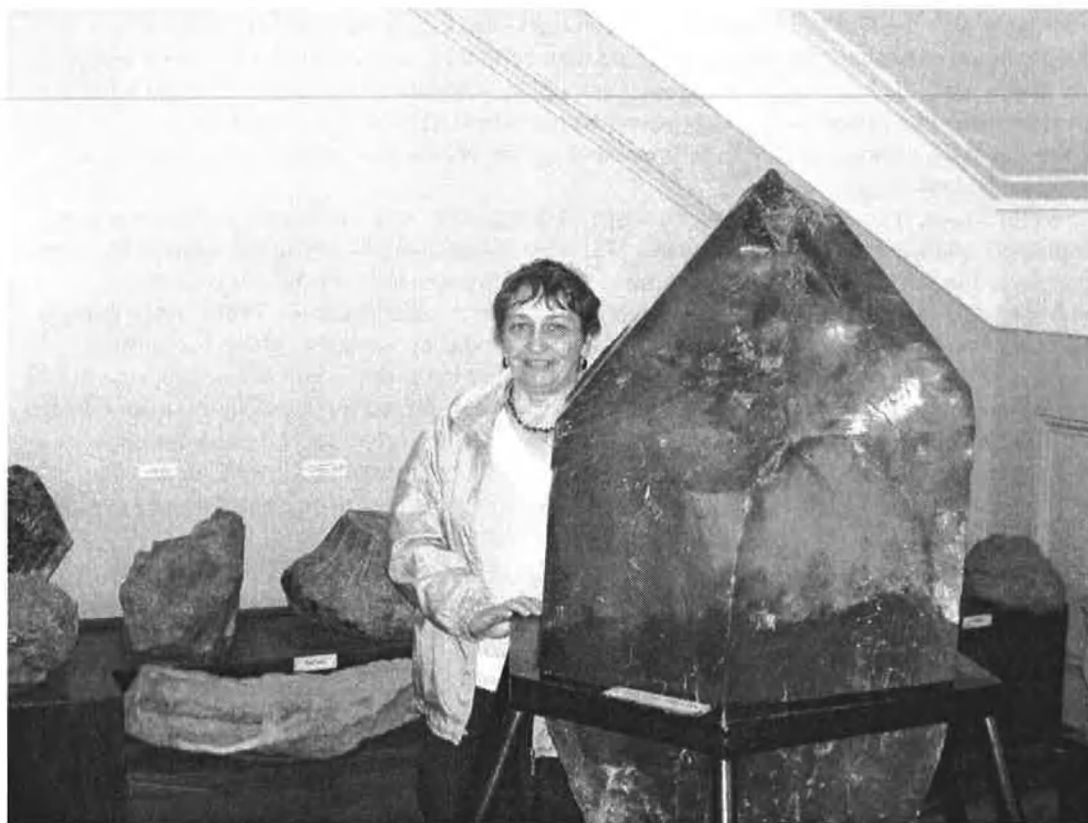


Figure 1: Zoya Bessudnova next to an impressive (!) quartz crystal in the Ural Geological Museum, Yekaterinburg, Russia.

Our hosts in Miass were the Museum's Director, Sergei Nikandrov, and his wife Nadezhda (Nadia). Sergei, a large, jovial, and genial man, could and did play the guitar and sing. (He also produced a special bottle of vodka, with marks on the side indicating the hour of the evening when a particular level should be reached, and the appropriate topics for conversation at the different hours.) He took us on a little excursion to the Urals proper in the area of Taganai National Park, famous for its aventurine quartz and numerous rare and interesting minerals. The region was visited by many famous geologists and travellers in the eighteenth and nineteenth centuries.

We picked over a heap of stones in the so-called Akhmatova Pit. This had been opened back in 1811, but much more recently fresh rock has been exposed by explosives to facilitate access to its minerals. Three research students from Warsaw, who were travelling in Russia to work on pegmatites, were there before us, chipping away. Sergei, as might be expected, had a keen eye for specimens and a deft hand with a hammer. He collected specimens such as garnets for subsequent sale in his Museum's shop.

The pit is located at a contact zone of amphibolites and marbles, which has given rise to the formation of skarn minerals. The chief ones of interest that I observed were garnets, clinoclhor, vesuvianite, and titanite; but one can also find there such items as apatite, epidote, barite, zircon, chondrodite, actinolite, etc. The Ilmen State Reserve Museum has a special display devoted to this pit.

Our journey to the Park took us through the exceptionally dreary and cold town of Zlatoust—founded in 1754 as a site for iron manufacture, and where a blast furnace was constructed in 1765. Today it has a large iron foundry and a population of about 200,000. The town centre has a monument to the nineteenth-century engraver, Ivan Bushuev, who invented a special technique for engraving steel, suitable for the decoration of swords. But the inventor of the particular Zlatoust steel by the crucible technique or 'puddling' was Pavel Anosov (1837). (This was prior to the work of Benjamin Huntsman in Sheffield [1740]; but the process had been used much earlier in India, and in the Middle East—hence the name Damascus or damask steel.)

The pollution and squalor of Zlatoust were reminders of the way industry had been developed in a number of medium-sized towns in the Urals in the desperate times of the Great Patriotic War (WW II), when industry was developed as quickly as possible to serve the needs of the Red Army in its epic struggle with the German invaders. There, in the Urals, safe from bombing, weapon manufacture could continue, and armaments could then be sent by road or train to the battle fronts. The Ural towns were the backbone of the Soviet war effort. Regrettably the legacy of those times is a number of dismal, squalid towns. Yet they are set amidst a land of great forests and lakes, and it does not require too much effort to escape from them to enjoy the woods and the pleasures of collecting raspberries and mushrooms!

As for Miass, it is a dismal town of about 170,000 people, who are mostly packed into ugly and dilapidated apartment *blocks*. Founded in 1773, what is now the Old Town was a locale for copper mining and smelting; and gold was found in the vicinity. (Unfortunately we did not have the opportunity to visit this part of Miass.) The modern town was established in the 1940s, when a large truck plant was evacuated there from Moscow. This place is still in operation. Miass has another important factory, which was started later. It used to manufacture missiles for nuclear submarines and was a prime nuclear target during the Cold War. Now—I was informed by one of its engineers, Sergei Egorov, who drove us in his car to Taganai Park—it makes small rockets and satellites for non-military purposes, and provides launching facilities for other countries (South Africa, Brazil, in Europe, etc.). New Miass has passed its heyday; and it looks like it. It was originally thrown together in a hurry and cheaply, and the ugly housing is of low quality and is decaying.

Nevertheless, if you want untouched countryside, or if you like fishing or growing vegetables in your *dacha* garden, then Miass could still be the place for you (though up to six months of snow may not appeal). We sampled the Ilmen Mountains and Reserve one day by walking up to the main ridge, at the summit of which can be found miaskite (though the part of the ridge that we reached was formed of gneissose granite¹). One could sit astride the summit ridge, but unlike Murchison we could not have one leg in Asia and one leg in Europe. The Ilmen range is too far east for such an exercise. Our Ilmen Mountains excursion was the only one that was hampered by rain, but the clouds cleared near the top of the ridge and we had good views of the lakes to both east and west. The massed birch trees were most beautiful.

The next stage of our journey was northwards by (very fast) car, along the flat country to the east of the Urals, to the bustling city of Yekaterinburg (founded 1723, in the time of Peter the Great). Our driver was Vladimir Pelepenko,² an innovative and prosperous mineral collector and dealer (and friend of Zoya), who generously made a special journey of about 250 km down to Miass to pick us up. He and his wife Yulia (Julia) kindly provided accommodation for us at their elegant home outside Yekaterinburg.

Vladimir (aged 71) is a remarkable man, who carries on Yekaterinburg's long tradition as a city of crystals and gems. The nearby occurrence of rich deposits of emeralds and rubies, and some gold, and its location near the lowest part of the Urals for a convenient crossing, was the basis of the city's foundation and its original prosperity. For many years it was a centre for gem cutting and the manufacture of jewelry, but the large old factory focused on jewelry production was closed three years previously and the site taken over for offices. (The same fate had overtaken an important school, I was informed.)

Vladimir, however, maintains Yekaterinburg's mineralogical tradition. He has a huge collection of gems and minerals, collected from all over the old USSR—from the Kolo Peninsula to the Far East, to Kazakhstan—which is displayed in a large private museum, along with artworks (mosaics or sculptures) made chiefly from Russian stones such as jasper, amazonite, malachite, rhodonite, etc. This work is a special art-form for the Ural region. Vladimir also employs mineral collectors and prospectors and sells the work of craftsmen who make elaborate and tasteful jewelry. His collections are known worldwide and he has won numerous awards at international exhibitions. His house, it may be mentioned, is home to some of his most prized specimens and is a kind of museum in itself. Besides importing, exporting, and exhibiting rare minerals and stone art-works, he has chosen to keep the craft tradition alive in Yekaterinburg by establishing a training school for apprentices.

¹ But miaskite crops out near the Museum of the Ilmen State Reserve.

² See Zoya A. Bessudnova, 'Vladimir Andreevich Pelepenko', *The Mineralogical Record*, 2000, 21, 389–396.

Vladimir's hospitality also extended to taking us on an excursion to a zone of mineralization, discovered in 1639 to the northeast of Yekaterinburg (in gently undulating country, some distance from the main Ural range). Here may be found amethysts, rubies, emeralds, citrines, sapphires, tourmalines various, topazes, many types of quartz, amazonite, zircons, etc. The villages of the area used to be inhabited by gem seekers and gem workers (besides peasant farmers), but the region is now suffering significant depopulation. Many houses (log wood construction) are abandoned or burned and those that are still inhabited are impoverished and in a dilapidated condition. Those remaining, however, have large vegetable gardens, and I suppose the inhabitants are self-supporting to a considerable extent.

The state of agriculture is sad to behold. A healthy-looking herd of cows visited us while we picnicked by a beautiful small lake, and I was told that it belonged to one of the few remaining collective farms. So grazing cows is certainly possible in the region, the savage winters notwithstanding. But Russia is not short of food and marketing and exporting dairy products requires capital investment—which appears to be lacking. Some cereals are also grown in the region, and, with suitable investment, production could be greatly increased. But capital is lacking and this is, at the moment, unlikely. The region is superb for vegetables (it 'had a good Pleistocene'), as the cottage gardens clearly showed, but again no development in that line seems likely in the immediate future. The place is far from potential markets, and roads are poor.

Vladimir has interests in the region, however. He had purchased a cottage for next to nothing and had a couple installed there for the summer, who hunted for fresh gem sites. We also visited a house where a jeweler friend, Il'dar Artemyev, was staying with his wife and two grand-daughters. Little Katya (aged 9) was a charming and gifted child. She read well from her English Book 2 (though she was really only at Book 1 stage), and played two Russian pieces very nicely for us on an electronic piano. We discussed English pronunciation ('put,' not 'poot' as in Putin!).

It seemed that religion was also in decline in the region and I suppose there is now no priest in the area. We saw two churches: one falling down and the other converted into a museum—for minerals of course, but with few visitors. There are probably no road makers or menders either! The way to our destination village, Murzinka, was partly a muddy track such as Murchison might have encountered.

During our travels, we encountered several other awful industrial towns. On our journey from Miass to Yekaterinburg we went by Karabash, Kyishtyim, and Kasli. Karabash has a shocking pollution problem due to copper smelting: there were mountains of slag and hills denuded of trees. I was told that the place had been cleaned up to some extent, and there were some signs of tree regeneration, but the air still smelled like the top of Volcano, which INHIGEO visited in 1995! Near Kyishtyim is Ozersk (in Soviet times called Chelyabinsk-65—to confuse the US?³), which is said to be badly polluted with plutonium. Another horror town, which we passed through on our journey from Yekaterinburg to Murzinka, was Rezh, a 'nickel town', which had a loathsome-looking and smelling smelter and mountains of waste (but also a beautiful lake). However, I was told that the worst place of all in that area was the iron town of Nizhny Tagil, to the northwest of Yekaterinburg. Fortunately I was spared that.

Yekaterinburg itself was, however, a pleasant surprise. I had imagined it was the centre of the polluting Ural industries and would be a 'slough of despond.' Not at all! It is a busy city of about 1.5 million people, with wide streets, the early stages of high-rise development, and a rather more advanced state of urban sprawl. New industries vie with the old. The apartments look quite habitable in some cases and there are 'New Russian' suburbs. It is a 'little Moscow,' but seemingly without the 'mafia' (few black cars with darkened windows; but I was told that my superficial impression on that score was mistaken). Evidently the depopulation of the countryside is leading to expansion of the provincial centre.

As said, the city was established in the eighteenth century. At that time, a wooden dam was constructed across the river, and this was later strengthened with stone and clay. The water power provided a source of energy for the local gem industry and sawmilling. But nothing remains of the original town as its wooden buildings were repeatedly destroyed by fire. Nearly all of what one sees

³ Certainly the naming confused me. I read somewhere that Chelyabinsk is the most radioactive town in the world; and I then assumed that the name referred to the city where our train to Miass terminated its journey, well to the east of the Urals. But in fact, the place to be feared is the relatively small Ural town of Ozersk.

today was constructed during the 20th and 21st centuries, and there are now wide avenues, trams, a new metro, lakes and parks, and an impressive river. It doesn't look too bad!

The most striking new building is the Church of the Holy Blood, dedicated to Czar Nicholas II,⁴ who was murdered by the Bolsheviks in 1918. The church was only completed three years ago and is thus in pristine condition. It has a magnificent high ceiling, from which looks down a huge image of the face of Jesus. Nicholas II has now been sanctified, and his devotees kneel before, and kiss, his image. Times change . . .

Surprisingly, I shall remember Yekaterinburg as a city of sun! It put on three beautiful days for us (the inhabitants also seemed a little surprised!). One could soak in the warmth and beauty of the ancient countryside. My memories of the great arch of the clear blue sky and the green/yellow fields in the evening light are something that will not be forgotten. And if Russia's economic development is slow and patchy, she may yet be the saviour of the world. It is the only country left with a modest population coupled with vast forests and huge mineral and oil deposits. And compared with China (which I also visited in 2006), often touted as a miracle of economic success, Russia is not polluting herself to death. She will soon have the last great expanse of forests on our planet.⁵ On the other hand, it has a shocking record for irresponsible industrial pollution, and agricultural mayhem, especially in the old southern provinces such as Uzbekistan and Kazakhstan, now independent countries. Moreover, nearly every town has a terrible legacy from Soviet times of abandoned industrial plants, all rusting away and looking dreadful.



Figure 2: David Oldroyd about to make off with an emerald from the Ural Geological Museum, Yekaterinburg, Russia.

But these thoughts are supposed to be about geoscience! Well, if that be your pleasure, the Urals are the place for you. Yekaterinburg has several geological/mineralogical museums other than Vladimir's, and I enjoyed visiting the Ural Geological Museum (belonging to the Ural Mining

⁴ Or, according to a guide-book: "all the saints radiating in the land of Russia".

⁵ But according to a recent report, the melting of the huge areas of permafrost in northern Russia is releasing large quantities of methane, which can only accelerate global warming.

Institute and opened in 1937), where Zoya met up with several old acquaintances. We were allowed into its 'inner sanctum'—the 'gold room'—and I was permitted to hold an emerald as large as my hand (Figure 2). There was also the Museum of the History of Gem-craft and Jewelry Art and Craft, and the Natural History Museum. Yekaterinburg is truly the 'city of crystals': there is even a huge model of a cluster of crystals by the roadside at the city boundary. But I suppose its future wealth will lie with silicon chips rather than 'classical' minerals.

David Oldroyd (on Train No 15, the Ural Express), 18 August, 2006

I am most grateful for the suggestions and corrections made to these notes by Zoya Bessudnova and Elena Shcherbakova; and all my other Russian hosts who made my visit to the Urals so interesting, instructive, and enjoyable.

**The first detailed geological map of the coal basin
in the historic Polish Kingdom, by Jan Hempel (1856)**

Andrzej J. Wójcik

Institute of History of Sciences, Polish Academy of Sciences

awojcik@ihnpan.waw.pl

Abstract

Jan Marian Hempel (1818–1886) started his work in the coal mines of the Western Region of the Polish Kingdom in 1840. In 1847 he was entrusted with the organization of the so-called *Markszajderyjna Sluzba* (surveying service) in the coal mines. At that time he introduced the use of the theodolite and various methods of calculating coordinates into surveying. In 1856 he finished four years of work on the *Mapa geognostyczna zaglebia weglowego w Krolestwie Polskiem* (Geognostic Map of the coalfield of the Polish Kingdom). His map was published, in 1857, at the government's expense. It was printed in 18 sheets (scale 1:20,000). The map presents an area between Czeladz (in the west) and Olkusz (in the east), and reached Ujejsce and Zabkowice in the north and the national border on the Biala and Czarna Przemsza Rivers in the south.

Hempel was well rewarded financially and received a Government medal for his work. The map was well regarded by his contemporaries. In 1857, Rudolf A. W. von Carnall prepared an extensive report on it for a meeting of the Geological Society in Berlin. Moreover, Bernhard von Cotta of the Mining Academy, Freiberg, provided an extensive commentary on the map. Carl Mauve, director of mining in the Myslowice-Katowice area, evaluated the map favorably.

Hempel undoubtedly made great contributions to the development of geological knowledge of Upper Silesia. Without a specialized geological education he undertook the difficult task of creating a geological map. Yet his thorough knowledge of mining and mineral resources occurring in the area of the map, as well as his surveying skills, enabled him to determine the structure of the coal beds. Thus, a self-taught geologist discovered traces of Permian fossils, and grouped the coal beds into what were later called in Polish "under-Reden," "Reden," and "over-Reden." The historic name "Reden" is used only in Polish mining and geology and means the thickest bed of coal, which is usually over 25 meters in thickness. It was named after Friedrich Wilhelm von Reden, who was a Director of the Superior Mining Department in Wroclaw (Breslau). For many years, the information in Hempel's map was of great importance for mining in western Poland.

Introduction

Mining, and later the steel industry, represent key examples of human economic activity. Unfortunately, Polish experiences in the mining and geological field could not be called continuous. This was mainly caused by an unfavorable geopolitical environment, as Poland was largely deleted from the world's map for 123 years (1795–1918) by three countries; Russia, Prussia, and Austria. These countries agreed between themselves to divide the territory of Poland and include its parts into their own lands.

The development of a specialized educational system, such as the opening of the Mining Academy in Kielce, contributed to the successful organization of industrial plants in the Polish Kingdom. Many foreign specialists employed by the Academy, as well as its own graduates, easily found jobs in industry. Moreover, they contributed to the development of geological and mining sciences in the Polish Kingdom.

In the 1830s and 1840s, the Bank of Poland, together with the Governmental Income and Treasury Committee, concentrated on the development of the steel industry (for example, the steelworks in Henrykowo and the Bank Steelworks in Dabrowa [Gornicza]). That ultimately contributed to the increase in openings of new deposits of hard coal. The zenith occurred in the early 1850s, when Jan Marian Hempel conducted geological work in the Western Mining Region of the Polish Kingdom.

Due to long and bloody wars, as well as uprisings, along with poor political decisions, the situation in mining and metallurgic industry was very complicated. Because of these complex issues there was a complete liquidation of state industrial companies.

Working underground requires expert knowledge of the mining industry. Information concerning the search for mineral resources was handed down from generation to generation. Discovering ore deposits was a highly valued activity at that time. Unfortunately, because of different technologies used in exploitation of ores, skills of those experts were rather useless in the case of hard-coal deposits. These deposits are far deeper in the ground and they can't be exploited in a strip mine. That's why searching out and exploiting these deposits became very expensive and time consuming.

Work experience in the Western Mining Region

Jan Marian Hempel was born on 12 December 1818, in the village of Burc, near Lukow, in the Podlasie Region. The son of Napoleon's officer, Joachim Hempel, started his education at the Regional School of Piarists in Lukow. He also studied at a technical department in a gymnasium (high school), which he finished in 1838. He then pursued additional courses in Warsaw for two years, in a program established to train teachers for district schools.

Beginning in 1840, at the age of 22, Hempel started his work in mines in the Western Mining Region of the Polish Kingdom. Initially he worked as a cadet (with no remuneration) in the "Reden Mine" and later in a plant in Niwka. During his work in Niwka, he had a serious accident when he was in a pit-shaft and a bucket full of coal fell on his head, leaving a deep scar on his forehead. After he recovered, he was sent by the Director, Jerzy Schumann, to work under the supervision of Wacław Borowski.

In 1841, Hempel was employed as an assistant geodetic engineer "to copy plans," and later to work in the building section. His work received high praise by his supervisors. In December 1843 he was appointed to an apprenticeship in a Technical Section at the Mining Department in Warsaw.

In 1847, he came back to Dabrowa, with instructions to organize a surveying service in the coal mines. Hempel introduced various methods of coordinate calculus and he applied the theodolite to surveying. At that time he also was delegated to introduce mining plans and to improve tests concerning the usage of gunpowder in mines.

Hempel, when he was working in the "Reden Mine," kept records in the form of "measurement diaries", and one of his diaries remains available as handwritten, loose paper sheets. Hieronim Labecki, the chief executive of the Technical Section at the Mining Department, praised Hempel for his precision in measurements at the "Reden Mine," but at the same time analyzed the reasons for mistakes connected with using compasses for surveying.

In February 1847, Hempel took over duties as mining engineer and assistant director of the Mining Department of the Western Region. As a result, he acquired all of the surveying instruments of his predecessor, Mr Krumpel.

Geognostic Map of the coalfield of the Polish Kingdom

In 1856, Hempel finished four years of work on his "Geognostic Map of the coalfield of the Polish Kingdom" His map was prepared and published in 1857, at government expense, by M. Fajans' Company in Warsaw. On the fourth sheet there are two transverse scales and two numerical scales (separately for 1:20,000 and for sections at 1:2,000), as well as sheet indices and explanations concerning methods used to produce the map. There is a chart on the tenth sheet presenting "Designation of the main mines rising above sea level". Geological sections are presented on sheets Sheets X and XI and XIII–XVII. There is also a wind rose and information concerning "yaw of magnetic needles in the Ulisses mine" (declination). Sheet XII contains an explanation of conventional signs, and Sheet XVIII is the title page.

The map presents the area between Czeladz (in the west) and Olkusz (in the east); it reaches Ujejsce and Zabkowice in the north and the national border along the Biala and Czarna Przemsza Rivers in the south. Hempel's map presents many topographical details, elaborated with the contour-

line method (of Lehmann). Moreover, it gives the location of particular buildings.

The topographical data were probably collected by using photographs, a special table for measurement, and various cartographic data that were available at the time. For better orientation within the area, special "mining pyramids" were used. They served as landmarks and stabilization points. They were earth mounds located at the top of the hills, which enabled one to plot all the interesting points on the topographical surface. Hempel marked the locality of each "pyramid" on his map. Unfortunately, none of his handwritten map descriptions remain. That is why conclusions can only be drawn on the basis of the map itself and its sections.

Hempel's map met with positive reviews. For his elaboration of such valuable information, Hempel received generous financial reward and was decorated with St. Stanislaw's Order of the Third Class. In 1857, during a session of the Geological Society in Berlin, Rudolf A. W. von Carnall presented an extensive report on Hempel's work. The map was also positively described by Bernhard von Cotta, a professor at the Mining Academy in Freiberg. During his stay in the Western Mining Region, in 1859, the professor prepared a lengthy commentary on the map and handed it over to Hieronim Labecki. Although von Cotta was rather enthusiastic about Hempel's work, he suggested that sediments classified by Hempel as Permian should be classified as the products of the Lower Triassic. At the same time, he presented the characteristics of hard-coal deposits in the Western Mining Region, supported by the map analysis and his own observations.

Carl Mauve, the director of mining in the Myslowice-Katowice region, also assessed the map positively. In the subheading of his cartographic discussion, which was printed in 1860, Mauve enclosed a reference to Hempel's map. Mauve's *Flötz-Karte des Oberschlesien Steinkohlengebirges* (Upper Silesian Coalbed Map) was one of the first regional geological and mining maps made in Prussian Silesia. The map included a valuable summary of knowledge about hard-coal deposits.

Hempel's elaboration was published and made accessible in at least two versions: a black and white edition (Figure 1) and a colored one that also had its own variations. Apart from the fact that the colored version seems to be clearer and is better to read and analyze, both versions do not differ too much. Although colored geological boundaries allow one to recognize the land's geological structure, the black and white map is more useful in analyzing topographic elements, and also in recognizing infrastructure locations. The map was colored by various people, according to their needs and its potential purposes—that is why there are so many different versions.

The "geognostic map" contains not only geological formations, but also ore deposit signs and indications of industrial plants. Notations include hard-coal beds, red calamine, white calamine, iron ore, lead ore, quarries, cement limestone, fire-clay, state and private coal mines, state and private calamine mines, and state and private iron ore mines. ("Calamine", as used here, follows historic mining terminology for an ore of zinc. Today two specific minerals are recognized within the general term: smithsonite (zinc carbonate) and hemimorphite (a complex zinc silicate).

The coal deposits have customary names (for example: "Andrzej", "Tadeusz") and the author grouped some of them (using, for example, the depth of occurrence). The outcropping beds possess information about the dip angle. In the region of Strzyzowice, where the coal had been extracted for over eighty years, Hempel marked the Strzyzowice coalfield. It included the outcropping beds which are positioned into a characteristic round coalfield. This basinal configuration had been known from the very beginning of the Western Region's activity.

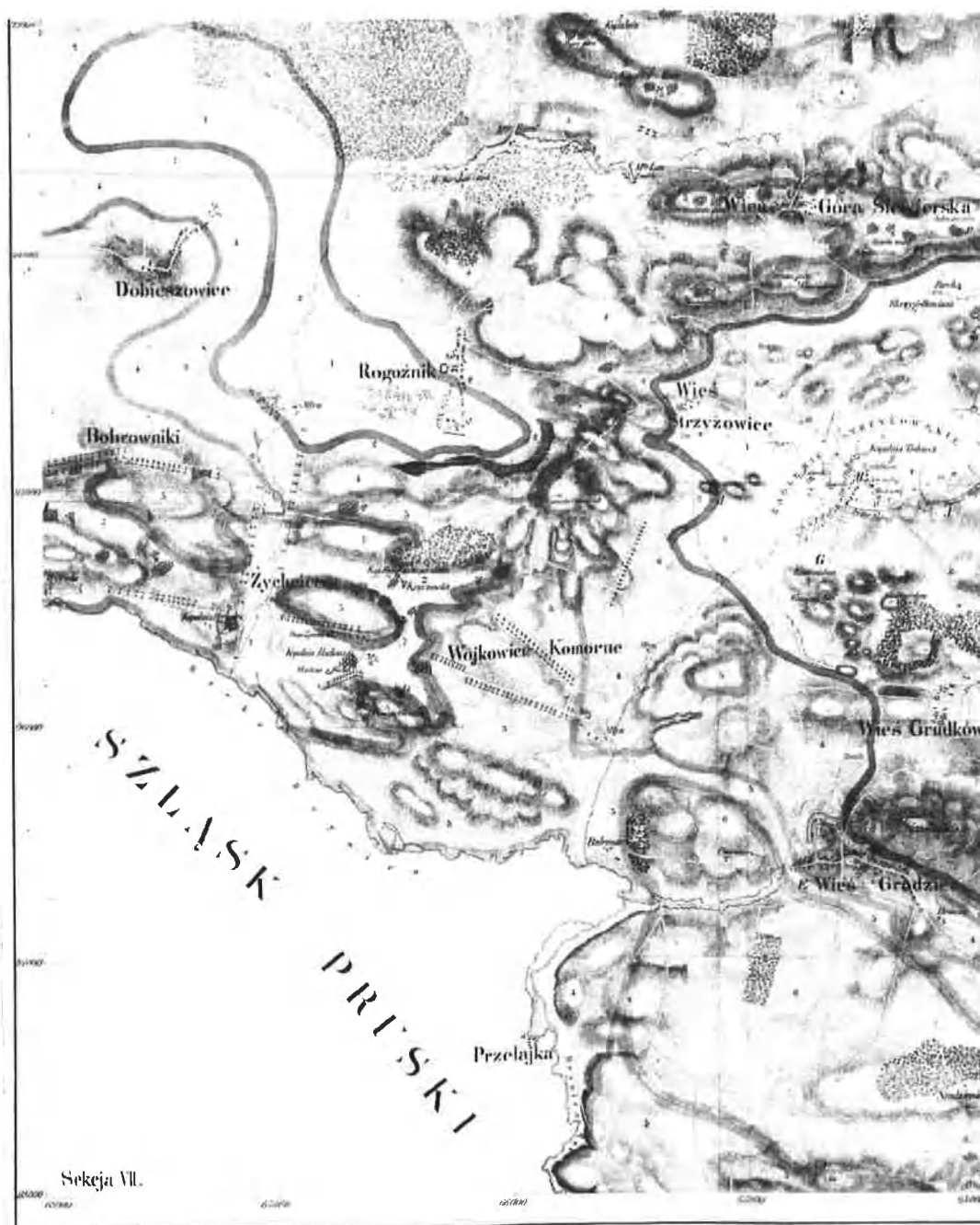


Figure 1
A section of Hempel's map (black and white in original)

Hempel's field researches in mines

The elaboration and map design, containing a huge area of the Western Mining Region of the Polish Kingdom, couldn't have been done without basic observations, probably conducted by Hempel in particular mines. Unfortunately, neither notes nor drawings from measurements made by coal miners remain. The first handwritten materials came from 1842–1843. In the case of hard-coal mines, such sources are even more recent.

Measurement drawings realized in the calamine mines have rock and mineral descriptions, such as “dolomite yellow rock,” “dark-grey stone and calamine traces,” and “calamine, hairy with iron ore, hard in all pillars.” The descriptions are fairly concise and are associated with schematic drawings that show the rock formations and elements of old post-mining excavations. Some of the drawings present various forms of metallic mineralization that exist in the Triassic shell-limestone formation. Most of the information incorporated in the notes applies to the technical determinants of exploitation,

deposits that were not extracted, as well as the infrastructure of galleries (their length measured from the pit-shaft, their width, and points of refraction).

The introduction of the theodolite into surveying contributed to the improvement of drawing quality. Implementation of printed notebooks in 1855 enabled geologists to plot the collected data (drawings and information) on particular maps.

Due to the deposits' composition in beds, locating them was not a problem and particular elements of the excavation system could be precisely identified. This concerned various excavations, galleries, and the non-extracted deposits that were left behind and used as safety pillars.

During underground geological observations, all the information concerning faults, their course and extent, and the size of their throw was collected in measurement diaries. The most significant information, both for geologists and miners, concerns thickness of particular coal beds, as well as their variability and the configuration of the coalbed surface. Such relevant information influences the choice of excavation system.

A number of works also dealt with the surface terrain. They were related to maintaining slope stability in the outcrops where the coal was excavated, and also filling up selected parts of the excavation, as was done in the "Reden Mine" and the "Cieszkowski Mine".

Hempel's achievements in mining

Hempel traveled abroad extensively (1853–1855), taking the opportunity to learn about mining and metallurgical technical developments. For example, he visited wire-cable and elevator-chain plants. He also had a close look at calamine scrubbers in Tarnowskie Gory. In 1863, he went to France to learn about the techniques of coal mining there.

Hempel visited the Eastern Mining Region of the Polish Kingdom many times. At the beginning of 1856, he brought new tools for measuring to Dabrowa from Kielce. In 1857, he left Dabrowa due to severe criticism concerning his evaluation of ways to mine coal, and for abandoning non-excavated parts of the deposits, leaving large amounts of coal dust that subsequently contributed to underground fires.

Prior to that criticism, he was repeatedly praised for his cooperation in putting out fires in mines, particularly in the "Ksawery Mine". After that he was sent to the Eastern Mining Region in order to prepare geognostic maps and search for hard coal. He took some of his tools and his theodolite from Dabrowa.

The geologic map of the Kielce region (scale 1:262,500), as well as the results of his geological researches, were published in 1867.

In 1861, Jan Hempel took over the responsibilities of Mine-Master in the Western Mining Region. After his return he took part in putting out the fire in the "Reden Mine" which broke out from a spontaneous combustion of coal dust. Various ways of extinguishing it were considered, including flooding the mine with water diverted from the Czarna Przemsza River. The fire was put out by using bonfires which reduced the air supply. Flooding was eventually used for quelling an enormous fire in the "Ksawery Mine" in 1870. As a reward for the significance and effectiveness of his activities, Hempel was nominated to the position of Director of the Western Mining Region in 1861.

Hempel kept up-to-date regarding scientific progress of the time. He continued to import new measurement tools to Dabrowa, such as a pantograph made in 1861 by Gustaw Perlach's company in Warsaw. Also in 1861, he bought, in Katowice, a "universal instrument theodolite for measurement in mines" produced by Pistor & Martius Company in Berlin.

Hempel was also involved in other geological matters. Between 1868 and 1876 he organized and supervised underground exploration of natural sulfur deposits in Czarkowy, near Nowy Korczyn. He also analyzed the results of his rock salt research. That resulted in publication of test data.

Frequently he received guests visiting industrial plants in Dabrowa. They were mainly geologists and miners who were working in Prussia or Austria. He also helped with collecting minerals for the Mineralogical Office in Vienna. We still have "An open letter" from Hempel, allowing guests to visit the plant in Dabrowa. It was addressed to mine-masters in the coal and calamine mines, and it enabled guests to enter the plants and to collect rock samples.

In 1867, Hempel was commanded to conduct geological works in the Eastern Mining Region. At his request he was dismissed in 1868, but after his work in a private company he came back to mining in 1876 and took over the position of chief manager of mining in the Polish Kingdom. He continued working until 1885. Hempel died at the age of 67 on 19 January 1886 and was buried in Suchedniow.

The significance of Hempel's geological works

In the face of constant growth in the demand for coal, the number of mines and the depth of their exploitation increased. At the beginning of the 1860s, systematic geological research was introduced in the Prussian Silesia Region. Those researches were sponsored and organized by mining authorities, especially the Superior Mining Department in Wroclaw (Breslau). Ferdynand Roemer and Oscar Degenhardt were in charge of creating new geologic maps for all of Upper Silesia, including Dabrowa (Western Mining Region) and the Krakow Region.

In fact, the new geological maps (scale 1:100,000) were the result of Degenhardt's and Roemer's researches. The maps were the first complex geological elaboration of the Upper Silesia Region. Degenhardt's publication is the version that shows the area without Quaternary deposits and partly without Tertiary strata, although it marks out the occurrence of hard-coal beds. Topographic relief is presented by using the contour line method.

Roemer introduced new stratigraphic divisions and described geological formations and their included paleontology. His recognition of new fossils from the Triassic enabled him to use the enlarged topographic map (from 1839) as a topographic base for the area of the Polish Kingdom. Nevertheless, the geological contents of the map didn't go beyond the information that was exposed on the maps by Hempel or Carl Mauve. Although Roemer often visited Dabrowa and was guided around the area by Wincenty Kosinski, he didn't mention the sources and materials used for the elaboration of the Western Mining Region portion of his map.

Hempel's conclusions, in reviewing Roemer's map, gave the basis for further division of coal beds into "under-Reden," "Reden" (both were later called the "central beds"), and "over-Reden." The work of Trejdosiwicz should also be mentioned. He wrote an 1880 article concerning the characteristic of porphyries in the Polish Kingdom, using information from Hempel's map.

The works of Staszic, von Oeynhausen, von Carnall, Pusch, and Labecki summed up and generalized the experiences gained by the mining industry during the years in which Hempel worked in the region. The depths to which their investigations were conducted were not very deep, usually limited to the level at which dehydration of the ground was possible (using shallow adits). At that time it was common to conduct research on the ground surface and by digging ditches and shallow adits.

Conclusions

Jan Marian Hempel contributed significantly to the development of geological knowledge in the Upper Silesia Region. He undertook the very difficult task of creating a geological map, despite the fact that he didn't have a specialized geological education. At the core of his activity was a deep knowledge of mining, which enabled him to determine a great deal about hard-coal beds. Such impressive results could not have been achieved without a thorough knowledge of mineral resources in the area.

This self-taught geologist discovered traces of Permian products. Moreover, he grouped together coal beds in the Western Mining Region of the Polish Kingdom (called the Dabrowa Coalfield prior to the nineteenth century) into systems that were later called "under-Reden," "Reden," and "over-Reden." In the nineteenth century, when the region's mining and geology knowledge was developing, the information given by Hempel's map had a fundamental significance.

These data were also used by Prussian geologists. Although the region was divided by three frontiers it was necessary to create uniform descriptions and analyses. Indeed, the geology of a large area does not acknowledge any political frontiers; to conduct a complex regional analysis requires extensive knowledge of local features, which then can be fit into a coherent larger puzzle.

OBITUARIES

Luis Adaro
(11 August 1914–27 September 2006)



Luis Adaro in 2006

D. Luis Adaro was born in Gijón, Asturias, Spain, on a hot 11th of August in 1914; he died due to a heart attack in his native city on the 27th of September 2006. He was 92 years old. His wife, Dña Maria Jove died several years ago. They had several children: Luis, Maria Covadonga, Fernando, and Gonzalo and had 15 grandchildren. He was, in our opinion the main historian of Spanish mining, having written numerous books and articles. Adaro was an inaugural member of the Spanish Society for the Defense of the Geological and Mining Heritage (SEDPGYM). He always had a major concern for the heritage of mining culture. Maybe as a member of a distinguished family of mining engineers he looked for the history and the ancestral roots of the miner's heritage. For his professional work in mining engineering and his human orientation he had received numerous tributes, the last one being election as an Honorary Member of SEDPGYM. That recognition occurred at its general assembly, celebrated in Puertollano (central Spain) on 22 September 2006.

Adaro studied in the Mining Engineer College of Madrid, where his studies were interrupted by the civil war. He received the Gullen prize for the best end-of-career project, titled "A synopsis of the iron and steel industry of Asturias" (1941). Soon afterwards, he obtained the title of Doctor of Mining Engineer (1 April 1945). He worked all his life in the family company, S. A. Adaro, founded by his grandfather in 1901, dedicated to the metallic construction and casting of artistic bronzes. Due to D. Luis Adaro Ruiz's innovations in this factory, all types of parts and mechanical elements were elaborated. He started a laboratory of chemical analysis and metalography, as well as a metrological section (devoted to measurement), having precise equipment. Other departments of investigation and development permitted the start of their own technology, producing magnificent safety lamps for mines and reducers of velocity. He was President of the Board of the Port of Gijón for two years and Vice President for another 15 years. During those 17 years the area of the port quadrupled its surface. Gonzalo Bueno (1990) points out that the tonnage moved from 3 to 13 million tons and ships of 20,000 to 200,000 tons of Register were admitted. With the construction of the Levante dike, the port of Gijón was considered one of the principal ports of Northern Spain.

Cultural contributions.

In 1951, Luis Adaro collaborated with the foundation "Ateneo Jovellanos" of Gijón. In 1994, with the help of the city council of Gijón, a cultural association was created named "Foro Jovellanos" whose President was D. Francisco Carantoña, with D. Luis Adaro as Vice President, moving in 1998 to the position of member of the board of Directors, a position he held until his death. In this forum he continued as an active member. He was also founding member of the Ancient Asturian Library

(B.A.A) whose aim is to collect historical documents related to the Principality. He recently became a member of the International Commission of History of Geological Sciences (INHIGEO), an association of IUGS-UNESCO.

Luis Adaro contributed outstanding service, at the request of Dña Paz Felgueroso, mayoress of Gijón, to the establishing of the museum of Mining and Industry (MUMI) of El Entrego. The museum was inaugurated in 1993 and it currently receives close to 100,000 visitors a year. He has left to this institution his huge library, with its uncountable mining documents and other items. At the time of his death he was Scientific Consultant of the museum and president of its Trust. In 1995 he participated in establishing the Spanish Society for the Defense of the Geological and Mineral Heritage (SEDPYM). Since then he was a member of SEDPYM, being named Honorary Member five days before his death. After his retirement, and free from company responsibilities, he dedicated himself to writing. What stands out from his numerous publications are the four enormous volumes of "Facts and documents for a Mineral and Industrial History of Asturias" (at his death, the fifth volume was in the process of being written.) The five volumes relate to "The port of Gijón and other Asturians ports." With more free time he was able to make long visits to archives outside Asturias, for example referring to the Spanish Navy in Viso del Marqués (Cuidad Real) and making important documental findings. As one example, the recovery of the plans of the first Spanish coke furnace, which permitted other investigators to find its ruins. He was a member of the Royal Academy of Doctors and of the Royal Institute of Asturian Studies, and also correspondent of the Royal Academy of History of Spain and the Royal Academy of Pure Science Physics and Natural Science of Madrid, among other recognitions.

For a selected listing of Adaro's papers on the history of geology in Spain, as well as several key references, please see our extended obituary in *De re metallica* (vol. 6, December 2006, p. 46–49).

Octavio Puche Riart; E. Orche Carcía; L. F. Mazadiego Martínez; and J. M. Mata Perelló
(Translated by Leonard Caruana)

Professor Antoni Stanislaw Kleczkowski

(5 May 1922–19 January 2006)

Antoni S. Kleczkowski was born in Poznan, Poland, on 5 May 1922, but was raised in Cracow where his father was professor of German philology at the Jagellonian University. In 1950 Antoni Kleczkowski gained a diploma in geology at the Academy of Mining and Metallurgy and, one year later, also the M.Sc. degree at the Jagellonian University, on the ground of the thesis on Triassic deposits in the Gory Swietokrzyskie Mts., Central Poland. As a student (already in 1947) he started to work in the Department of Geology of the Academy of Mining and Metallurgy, where he got the Ph.D. degree in 1958, after having defended his dissertation on a detailed study of Middle Triassic deposits in the Gory Swietokrzyskie Mountains. In the years 1958–1960, Kleczkowski was employed as an expert in China and, after returning to Poland, he published a monograph on "Hydrogeology of the Hopei Plain," which was the basis of his qualification for an assistant-professorship. In 1965 he was nominated the Head of the Department of Hydrogeology and in 1972 obtained the title of Professor.

In 1981, A.S. Kleczkowski was democratically elected (for the first time in Polish People's Republic, earlier rectors were nominated by political authorities) the rector of his parent Academy of Mining and Metallurgy and carried out this duty till 1987. At this post he demonstrated an exceptional fortitude. In December 1981 the Communistic authorities declared a martial state. When a considerable number of students of his Academy joined the protesting workers in the Lenin Steelworks in Cracow-Nowa Huta he succeeded in leading them out from the factory and thus saved them from dismissal. Consequently, the Academy was not closed and the students could continue their studies. Besides, being professionally a specialist in applied geology, due to his historical approach to the problems studied, he has distinctly humanized his parent technical Academy.

A.S. Kleczkowski was a very eminent and active scientist, author and academic teacher. Among his most important books and papers published, we have to mention such monographs as: *Hydrogeology of Polish and Adjacent Territories* (1979); *Protection of Subsoil Waters* (1984); *Drainage Basin of the Vistula River* (1991); and *Map of the Areas of Subsoil Water Basins in Poland Requiring Special Protection* (1990–1991). The latter book was edited also in English. In 2003 there appeared another important monograph, *Formation of Chemical Composition of Quaternary Soil Waters of Cracow in the Period 1870–2002 and its Future Tendencies*.

Professor Kleczkowski was, unquestionably, one of the most outstanding and professional Polish historians of geological sciences. Being particularly interested in the period of origin of modern geology in Poland, he found in the archives of the Mining Institute in Leningrad (now again Petersburg) intact documents concerning the history of geology and mining in Poland in the first half of the 19th century. Other important documents concerning this problem he has found in the archives of the Bergakademie (Mining Academy) in Freiberg (Saxony). On the basis of these data, A.S. Kleczkowski has published numerous important papers on the activity of such eminent pioneers of Polish geology as Stanislaw Staszic (1755–1826) and, first of all, Georg Gottlieb Pusch (1790–1846), the most eminent of Saxonian geologists-professors of the Mining Academy in Kielce (Central Poland), founded by Staszic in 1816. This first mining school in Poland was active till 1827 and has educated about 100 specialists. Rector Kleczkowski justly considered his parent Academy of Mining and Metallurgy in Cracow as the continuation of the Kielce Academy, merely suspended by Russian invaders. He has manifested this opinion by placing proper historical inscriptions and data in the hall of the main edifice of the Mining and Metallurgical Academy in Cracow, formed after the recovery of Poland's independence in 1919, and which bears the name of Stanislaw Staszic, the founder of the Kielce Academy. It should be remembered that G.G. Pusch, who considered Poland to be his second motherland and his family was completely polonized, was the author of an important geological monograph of Polish territory, *Geognostische Beschreibung von Polen* (1833–1836). A.S. Kleczkowski was the author of Pusch's detailed biography and numerous papers on this subject. Several his papers are devoted to famous professor of the Bergakademie Freiberg (Saxony) Abraham Gottlob Werner, whose Polish pupils were the pioneers of mineralogy in Poland and Lithuania. Other publications refer to the activity of Polish geologists in other countries, for example K. Bohdanowicz and N. Krisztafowicz in Russia and R. Roslonski in the USA.

As already mentioned, A. S. Kleczkowski paid considerable attention to the history of his parent Technical University, a pioneering school in the newly independent country, and to biographies of its most eminent academic teachers (e.g. Jozef Morozewicz, W. Goetel, R. Krajewski, and Z. Wilk). He has summarized these publications in the monograph *Studies on the past of Academy of Mining and metallurgy in Cracow* (2004), strongly pointing to the continuation of academic mining education in Poland from the 19th century in Kielce to 20th century in Cracow.

A.S. Kleczkowski was an INHIGEO member from 1975 till 1999, participating in its many meetings and introducing his versatile knowledge and exceptional sense of humor into the discussions. He was very sorry when—having neglected the obligatory voting for new members—he lost membership in our Commission. However, he never asked to cancel this decision of the Board.

Professor A.S. Kleczkowski died in Cracow on 19 January 2006 and was buried in the monumental Rakowice Cemetery in this town, in the presence of the highest authorities and his numerous co-workers and friends. With his death Polish science has lost an outstanding specialist and the Polish historians of geosciences a master, colleague, and man of uncommon personality.

Stanislaw Czarniecki and Wojciech Narebski, Cracow, and Zbigniew Wojcik, Warsaw

Isao IMAI
(20 October 1925–25 March 2006)



This note contains the very sad news that Professor Isao Imai, who was a President of the Japanese Association for the History of Geological Sciences (JAHIGEO) from 1998 to 2002, died of cystic cancer on 25 March 2006.

Imai was born in Matsuyama, Shikoku, on 20 October 1925. His father, Hanjiro Imai, was a famous mining geologist specializing in coal geology. The elder Imai also authored a book *Chisogaku* ("Lithology"), published in 1931.

Isao Imai graduated from the Department of Mining Geology at the Junior College of Waseda University in 1947. He was employed by the Geological Survey of Japan in the same year, and was mainly engaged in geologic mapping.

Along with co-authors, he published twelve geologic maps at a scale of 1:50,000, covering the southern part of Hokkaido, the northern and central parts of Honshu, and the northeastern and southern parts of Kyushu. In addition to those geologic maps, he and his co-workers compiled and published five sheets of geological maps at a scale of 1:200,000, two sheets at 1:500,000, one sheet at 1:1,000,000, one sheet at 1:2,000,000, and one sheet at a scale of 1:5,000,000.

He published *Japanese Geology at her Dawn* in 1966. The book described the life and geologic contributions of François Coignet (1835–1909), Benjamin Smith Lyman (1835–1920), Tsunashiro Wada (1856–1920), Edmund Naumann (1854–1927), Toyokichi Harada (1860–1894), Tadatsune Kochibe (1854–1927), Bunjiro Koto (1856–1935), and their close colleagues. It was an introduction to the history of Japanese geology in the Meiji era (1868–1912).

In 1969, Imai translated Sekitei Kinouchi's (1724–1808) *Unkonshi*, published in the middle Edo era, into modern Japanese, with explanatory notes. The book describes about 2,000 samples of stones, fossils, ores, stone implements, and pottery artifacts.

Then, in 1978, he and Masato Katada published *Progress of Earth Sciences*, describing the history of wide areas of earth science.

Imai edited the chronological tables in *The History of Geology in Japan*, published in 1978 for the 75th anniversary of the Geological Society of Japan. *The 100 Years of Japanese Geology* was published in 1993 for the 100th anniversary of the Society.

Further, as Chief of the Editorial Committee of History of Geosciences for the Tokyo Geographical Society, he published the history of Japanese geosciences from 1868 to 1945. The compilation summarized the history of geology, geomorphology, geodesy, geophysics, oceanography, and meteorology. It also discussed the foundation of various organizations devoted to the geosciences and the departments of geosciences within Japanese universities.

In 1982, he was invited to be a Professor of Geology in the Department of Education, Iwate University, in northern Honshu, and was engaged there until 1991. From 1998 to 2002, he was the second President of JAHIGEO, which was founded in 1994 under the presidency of Professor Masae Omori.

Professor Imai was calm and kind in character, and had wide and deep knowledge of the geosciences. His death is a great loss for JAHIGEO.

Yasumoto SUZUKI, Ichikawa, and Hakuyu OKADA, Fukuoka

Nicoletta Morello
(2 October 1946–16 April 2006)



In the evening of Easter Sunday, April 16, 2006, Nicoletta Morello, at the age of 59, passed away in Genoa after having suffered a brain hemorrhage. She had been in intensive care in the hospital for ten days. This news shocked her many friends and colleagues in the Italian community of historians of science, as well as in the University of Genoa, where she was well known for her research and teaching. She was the leading historian of geology in Italy: she published her first papers and books in the late 1970s, when this research field was nearly unknown in Italy, and significantly contributed to the development of these studies in our country over the last twenty years.

Born in Genoa on October 2nd, 1946, Nicoletta Morello graduated in Letters in 1972 with a thesis on Charles Lyell's scientific journals. In 1982 she became a researcher at the Institute of Modern and Contemporary History of the University of Genoa and was awarded with a N.A.T.O. fellowship in Paris, where she undertook research in history of geology under the supervision of Professor François Ellenberger. In 1982 she was also nominated an Italian corresponding member of INHIGEO, as well as a member of COFRHIGEO (the French commission on the history of geology). Between September 1985 and January 1986 she worked in Paris, with a N.A.T.O. senior fellowship, at the Galerie de Paléontologie of the Museum d'Histoire Naturelle under the supervision of Professor Philippe Taquet. In 1987 she organized the 13th INHIGEO Symposium "Rocks, Fossils and History" (Pisa, Padova) and later was co-editor of the Proceedings. During the same year she was also nominated a Full Member of INHIGEO for Italy. In 1995 she organized the 20th INHIGEO Symposium "Volcanoes and History" (Naples, Aeolian Islands, Catania) and was the editor of the Proceedings. In 1999 she was invited to Paris for one month by the *École des Hautes Études en Sciences Sociales*, for teaching and doing research on Italian geology of the early 19th century. In 2000 she became an Associate Professor of History of Science and Technology in the Early Modern Age and she was elected Vice President of INHIGEO as representative of the European Countries.

During more than twenty-five years of scholarly career, she took part in several INHIGEO and COFRHIGEO meetings, as well as congresses on the history of the Earth Sciences in Italy and abroad. Her research fields included the history of paleontology, mineralogy, volcanology and stratigraphy between the 16th and 19th centuries, with particular attention to scientists such as Georgius Agricola, Giovanni Alfonso Borelli, Athanasius Kircher, Agostino Scilla, Nicolaus Steno, Fabio Colonna and Tommaso Antonio Catullo. Among more than sixty publications on the history of Earth sciences, two books strongly influenced the following studies on the history of geology and paleontology in Italy: *La nascita della paleontologia nel Seicento. Colonna, Stenone e Scilla (The birth of paleontology in the 17th century. Colonna, Steno and Scilla; Milano, 1979)* and *La macchina della Terra: Teorie geologiche dal Seicento all'Ottocento (The Earth as a machine: Geological theories from the 17th to the 19th centuries; Torino, 1979)*.

Her scientific career shows the results of a rigorous work based on the detailed study of a remarkable amount of primary sources from the Antiquity to the Modern Age, as well as a strong interdisciplinary approach, built on the knowledge of different branches of modern geological sciences and constant interaction with field geologists. Nicoletta's enthusiasm and passion not only in undertaking scholarly work in the history of the Earth sciences and encouraging young researchers, but also in promoting live arts and music in the university, led to an untiring activity which impressed everyone who knew or met her even for a short time. We will all sadly miss her great knowledge, which was always given with spontaneous pleasantness and friendship.

Ezio Vaccari, Varese

AN INTERVIEW WITH ALBERT V. CAROZZI INHIGEO Honorary Senior Member

Introduction

The commentary beneath the portrait was generated by Dr Albert V. Carozzi in response to a set of my recently posed questions. Some of the issues raised were general and somewhat open-ended, others were more focused. Using a responding author's right, Dr Carozzi melded the topics into a flowing commentary. The narrative provides a valuable overview of the maturation of a professional geologist whose background and natural interests led him into the history of geoscience. That, in fact, was one of the motivating reasons for interviewing Albert Carozzi. His life and work bridge continents, languages, and disciplines. A number of us thought that it would be instructive for the INHIGEO readership to hear from one of our Honorary Senior Members, whose career has included a rich amalgam of experiences in Europe and the United States, and whose contributions to the history of geology were formative for the young discipline of the history of geoscience. As readers will see, Albert has definite ideas about how historical research in the sciences should be conducted. He also offers some noteworthy observations about historical personages, institutions, and concepts that he has dealt with in his productive career.

On a personal level, I should like to record that Dr Carozzi has had multiple impacts on me, in that I used his textbook in petrology as an undergraduate, embarked on my path into the history of geology by pursuing some of the same topics on which he had done ground-breaking work (Francophone Swiss naturalists of the eighteenth century), and profited from research conducted by Albert and his wife, Marguerite. Upon reading the essay-response below, I now find that Professor Carozzi and I both bought the same book (Louis Bourguet's *Traité des pétrifications*, 1742) as one of our first purchases in the history of geology. (He got a much better deal!) The account below gives insight into the evolution and current visions of one of our multilingual and multitalented colleagues.

Kennard B. Bork, Granville, Ohio



From youth in Geneva to the worldwide controversy on turbidity currents

In retrospect I had really a golden youth, with a strong emphasis on isolation at such an early age. With the beginning of grade school I had an English tutor, around 1930, because my father assumed that the knowledge of foreign languages was fundamental for any career in sciences or medicine. The schedule of private grade school was typically with free Thursday and Saturday–Sunday. At that age, I could not venture alone and climb the huge cliffs of Pleistocene gravels in the vicinity of Geneva, along the Rhône and the Arve rivers, but I could at least collect at the foot of them interesting pebbles representative of practically all the types of Alpine rocks scattered over the Swiss Plateau by the huge glaciers as far as the Jura Mountains. Obviously, I needed some kind of help to identify the collected specimens and the only way was to visit the Museum of Natural History which had several major sections (local and regional geology, mineralogy and zoology). The curators were available all day long for the enlightenment of the citizens. It was wonderful to be taken by the hand and instructed about all these beautiful rocks and to see them identified in their regional context.

The curators were at the same time strange and dedicated scientists, but also somewhat frustrated academics. They were the products of the “academic pyramid” in Geneva which produced too many geologists at the Ph.D. level, in comparison with the relatively small number of available professorships. Therefore, they had to wait for many years, teaching high school or joining the public service of the Museum curators. My free time was fully used with the Museum connection, which even extended to one-day excursions in the field. Among the curators two were remarkable men, Etienne Joukowsky whose interest was in Pleistocene gravels and their importance as aquifers and Jules Favre a stratigrapher and structural geologist. I am deeply grateful to both geologists to have shared their motivation. My future research interest, Horace-Bénédict De Saussure, also began his studies with the gravels of the Rhône and the Arve, but he was alone and did not get this valuable guidance.

An exciting event took place in 1932 when my father decided to build a vacation house at Ste. Maxime on the French Riviera. This was my first contact with the sea and the spectacular volcanoclastic and metamorphic rocks of the Massif des Maures-Estérel which belong to the Hercynian orogenic belt. It was the wish of the family to spend as much time as possible near the sea, even at the expense of my school schedule in Geneva which seems to have suffered a bit having the following vacations: two weeks at Easter, three months in the summer, and two more weeks at Christmas. But rocky coastlines are incredible micro-worlds and if I did not become a biologist I could go into oceanography or in the petrography of volcanics. Obviously, it seems that volcanism has always fascinated me. In the numerous fieldtrips undertaken in the years to come for my consulting activity for oil exploration, I managed to visit a few volcanoes, among which the ascension of the Vesuvius and the exploration of the active volcanoes of Hawaii and the Philippines were highlights.

My father, Dr Luigi Carozzi (1880–1963), not only completely rescheduled my high school curriculum but provided an unusual family atmosphere which also was a function of his duties for many years as director of the section of Industrial Diseases of the International Labor Office at Geneva, a branch of the League of Nations. This position allowed him to travel extensively worldwide for more than forty years. Among his numerous publications on the prevention and treatment of professional diseases is an unusual *Encyclopedia of Industrial Hygiene* (1930–1932), 2,000 pages in two volumes, which include articles from most of the experts in the field. He participated actively in the drafting of legislation for the protection of workers in the mineral industry of various countries and in particular coal miners in the United States, in collaboration with the Bureau of Mines. It was not unusual for him to carry along for a meeting for demonstration purposes, rock samples, and I vividly recall the quartzose gold-bearing conglomerate of the Witwatersrand from South Africa. More spectacular was for me to be taken to watch the autopsies of miners who died of silicosis and to watch under the microscope the suffocating concretionary structures which their lungs developed as a reaction around the aggressive crystals of quartz. This was not a pretty sight and a harrowing experience for a high school kid.

This variety of scientific and medical experiences was certainly meant by my father as an objective display to entice me to select in due time, a profession on the basis of practical data, but I ended up not following his advice. Strangely enough, he did not recommend medicine for me, having already realized that I liked the outdoors. He was much in favor of organic chemistry and microbiology—certainly an influence at the University of Pavia, of his teacher the famous professor Camillo Golgi.

Home also had a strong influence on me, mostly through a rich library dealing not only with the technical and social aspects of Industrial Hygiene, but also with the history of professional diseases from Greek Antiquity to the present. My father worked for many years on such a history, which was left as an unfinished manuscript at his death. I don't think it is necessary to look very far for a motivation of becoming a historian of medicine or of sciences and particularly to become attracted by geological and mining questions by introducing the outdoors factor.

I quickly became familiar with Agricola's *De Re Metallica* (1530) and *De Ortu et Causis Subterraneorum* (1546), and other works all the way back to Strabo and Plinius. My father was a strong advocate of the knowledge of foreign languages as indispensable for a scientist or a historian of sciences in the search for primary sources and high quality of quotations. Naturally the respect for books and the artisans of their "fabrication" is part of this broad attitude. An effective way of the use of books is to become an expert in the correction of galleys and follow all the steps of printing. I recall his advice when examining a book to go first to the references. If mistakes or inaccuracies appeared he would not purchase the volume regardless of any other qualities, because mistakes in the list of references indicate a non-scholarly attitude and propagate errors among readers.

The summer of 1943 marked my graduation from high school and preparation to enter the University. I spent a lot of time in the old city of Geneva, visiting not only printing shops but also second-hand book dealers. A particular book attracted my attention. It was entitled *Traité des Pétrifications*, 1742, quarto, by Professor Louis Bourguet. It was a beautiful copy with the binding of the time and superb copper plates illustrating many fossils and "productions of Nature." I was really facing for the first time the geological world of the eighteenth century and its delightful style. Indeed, some titles of chapters were like this: "Letter on a petrified elephant, speculations on the origin of mountains, and crinoid columnals described as parts of vertebrae of a sea-star good to eat, the origin of concretions in caves." The price of the book was a real bargain of ten Swiss Francs and so I bought my first book on paleontology.

Entering the University required the choice of a combination of disciplines with a major field and related ancillary ones. I made the following choice: major in geology and mineralogy, electives being chemistry, physics, zoology, and mathematics. The choice of geology was not at first acceptable to my father, who at that time was working on Egypt and the Pharaonic industrial diseases in mines and was frantically trying to derail my interests. By chance, he was not able to comprehend rather simple geological structures where the mines were located and reluctantly accepted the explanations I had given him because he could not visualize structures in three dimensions—as absolutely needed for the interpretation of these questions. He was not happy to see his efforts for many years rejected. He added that geology could not be considered as a serious field, being in his opinion an amateurish way for rich gentlemen to spend idle time. He concluded by noting that I would die of hunger by becoming a geologist.

I was really becoming confused and fortunately I decided to test the idea of a starving geologist by visiting privately with Professor Léon-William Collet, who was head of the Department of Geology and a structural geologist of international reputation. He would certainly tell me the truth about my future plans. He was a gruff person nicknamed "The Bear" but very nice when you had broken the ice crust. He listened carefully to my long story without saying a word and when I rose to say goodbye he handed me a book with the following words: "read this book tonight and I will see you again." It was a book written by the famous French geologist Pierre Termier, entitled *A la gloire de la Terre: souvenirs d'un géologue* (Paris, 1924). I spent a sleepless night reading the enthusiastic and lyrical prose of Termier and my decision, which I never regretted, was taken to become a geologist.

During the war the situation at the University of Geneva was unusual. It was almost deserted, having mostly foreign students, an interesting international crowd who had taken refuge in Switzerland. It was like getting private tutoring with an incredible flexibility in subject matters. This unique situation explains how I began in 1943 to take classes and to become almost immediately a teaching assistant and without interruptions to go through the sequence BS-MS-PhD terminating the entire program in 1948 with a thesis on the Upper Jurassic limestones of the Jura Mountains, the only territory available along the frontier between Switzerland and France occupied by the Germans. At the end of the war in 1945, we could begin again to take trips to the classical localities of Europe, and until 1956 it was a busy period of teaching and of consulting for groundwater projects and foundation studies for hydro-electrical dams all over the Alps as chief assistant to professor P, who as Head of the Department of Geology had a very heavy schedule combining his academic and consulting activities. I had little time to think about my future career, which theoretically was supposed to lead me to the

position of full professor and head of the Department. Unfortunately, political intrigues at the highest level had other plans that left me no chances whatsoever at the full professor level. The successor of Professor P. at the time of his retirement was professor L., waiting in Belgium for years to become in turn Head of the Department with a possible position for me as number two. It was clear that for at least fifteen years I would simply change boss and accept the consequences of the "academic pyramid" mentioned above. The reasons were simple: I was too young and under the influence of a political party required to make from time to time concessions to the opposition. I was the object of such a concession, which naturally did not take into account the publication of books and articles and other professional activities.

I did not suffer from starvation as my father had predicted, but maintained the status-quo of my position accumulating until the demise of Professor P., more experience, climbing academically as high as possible and taking more contacts with colleagues overseas. I was in fact in a favorable position, in that I was able to set up fieldtrips for European and American geologists anxious to visit for the first time the classical sections of the Alps whose access had been forbidden by the war. It all began in 1951–1952 when a Dutch professor of geology at the University of Gröningen, Philip H. Kuenen, had undertaken numerous experiments on a sedimentary structure of detrital rocks called "graded-bedding," demonstrating that it was formed by a process called turbidity currents which Carlo Umberto Migliorini had investigated in the Apennines. He suggested that they occurred in the final phases of all mountain ranges. Meanwhile, an American sedimentologist-oceanographer, M. L. Natland, had found in the Cenozoic of California thin layers with shallow-water foraminifera intercalated in deep-water shales whose fauna indicated at least thousands of feet depth. A mechanical transport was demonstrated of shallow water fauna into deep water. Similar observations began to appear everywhere, in particular the fact that modern turbidity currents were large and powerful enough to cut and bury submarine cables in the Atlantic. Professor Kuenen undertook a worldwide trip to visit all these occurrences in the field and their authors. I was convinced that if he was right, a real revolution in thinking was going to happen, but the European geologists were hardly interested and the Swiss not at all. I presented a paper on the question at a meeting of the Société de Physique et d'Histoire Naturelle of Geneva which was published in the *Archives des Sciences*, vol. 5, fasc. 1, 1952, in spite of a violent negative reaction from the audience. That same year, 1952, I presented a similar paper, this time on carbonate turbidites in the Jurassic of the High Calcareous Alps, to the *Revue Générale des Sciences*, Paris, vol. LIX, No. 7 and 8. The profession was finally reacting and Professor Kuenen was in Geneva, more convinced than ever of the importance of turbidity currents in various environments that had in common sub-aquatic unstable slopes under tectonic control (Flysch facies). After a field trip, we wrote a paper published in the *Journal of Geology*, July 1953, which finally led to the general acceptance of our ideas. I was vindicated but still no exciting new job on the horizon except for a long shot at the position of assistant visiting professor of geology at the University of Illinois. This possibility was raised during a conversation with Professor Ralph E. Grim in 1951 at the International Congress of Sedimentology in Göttingen. I was impressed by Grim's thinking capacity and his fundamental contribution to clay mineralogy, as shown by his famous papers on the structure of illite, and his kindness in saying that he would look for a visiting professorship for me, a very active program at the University of Illinois. But, it was hard for me to get very excited on these dreams of overseas positions.

Indeed nothing happened until the fall of 1954, when a telephone call came from Professor George W. White, Head of the Department of Geology at the University of Illinois. He said that Ralph Grim had had made him aware of my curriculum vitae and of my interest in a temporary position in the US and that he was offering a visiting assistant professorship for the academic year 1955–1956 with a relatively small load of courses which would allow time for research and field work. He would like me to teach graduate courses on structural geology, in particular on the Alps, and historical geology of the North American continent, which would be an excellent learning experience for me. Coming from Switzerland, I was by definition a structural geologist although my specialty was the petrology of sedimentary rocks, in particular carbonates. It was not difficult to prepare a program that would combine these various aspects. I accepted right on the phone and my family was as excited as me when we spoke about getting a first preference visa, a leave of absence for a year, and a ticket on the Queen Mary. Professor White promised he would take all the necessary steps, including lodging, travel, salary, etc., to make my visit a great success.

History of Geology: a new international research field

The American adventure turned out quite well in all respects. In particular I enjoyed teaching very much. It ended with a farewell cocktail and was followed by a long Greyhound tour of all the National Parks and Monuments of the US. For about two months (June 27 to August 17) with two suitcases and a camera, after having sent our daughter Viviane back to Geneva in the care of my parents, we discovered spectacular natural features that will remain forever in our memory. This tour was largely an idea of George White, who also was enthusiastically working on creating INHIGEO with his Russian friends. He is responsible for developing the history of geology as a scientific field of research on a worldwide basis and also through the preservation, in collections, of books which had been milestones in the history of the development of geological thinking. This he accomplished through the purchase of these volumes by means of a worldwide net of connections with second-hand book dealers, using his own money as well as funding from the "Rare Book Room" of the Library of the University of Illinois.

Other institutions followed him in creating programs of the history of geology, associating historians of science with professional geologists. His collection of rare books in geology became famous and I had the honor in 1984 to prepare with Dederick C. Ward, our geology librarian, a catalog of his holdings under the title *Geology Emerging*, a catalog illustrating the History of Geology (1500–1850) from a Collection in the Library of the University of Illinois at Urbana-Champaign. This catalog of 2,380 items is still today a major reference in the field and the "bible" of the second-hand book dealers. This seems the appropriate place for a few comments on the way George White was effectively operating in attracting scientists and historians to the history of geology. I vividly recall when I had just completed my AAPG distinguished lecture tour of 1960 and I was temporarily in the hospital with back pains requiring surgery and a lot of rest. To cure my boredom, he brought a copy of Abraham Gottlieb Werner's 1774 book *On the External Characters of Minerals*, in German. It was not only just another copy, but Werner's own copy with his handwritten notes for a second edition, which he did not complete. White said: "Here is a little something to fight your boredom." Indeed this book was going to be the first of numerous other translations in English I completed during the years and under White's initiative. It was published by the University of Illinois Press in 1962.

This seems to be the appropriate place for a few comments on the problems facing the development of the history of geology, which in fact is a two-headed monster not yet fully tamed. Two kinds of persons make up the teachers and scholars in the field, Historians seem to be the most abundant and consequently attempt to publish too many papers on the history of geology. Unfortunately, they lack the necessary fundamental training in geology, assuming erroneously that it is a simple discipline as compared to the history of physics or mathematics. Geologists on the other hand "do" active geology as a profession and gradually come across the complexity of the subject and begin to turn to the history of their science, late, usually during their retirement when time is available. In summary, historians of geology tend to be more philosophical in nature arguing for ever on the significance of the fundamental principles that they think they have understood, whereas geologists spend a lot of time looking for data in the field and deriving a relatively small number of fundamental tenets. Naturally, I am biased toward observations in the field and if I like to rediscover outcrops which were described more than 200 years ago, it is mostly because I like to penetrate the intricacies of the human mind in attempting to understand the reasons and natural circumstances for their different or similar interpretation, given the human knowledge of the time. Being right or wrong is of course a chimera and I really dislike being qualified as a "whiggist" or "presentist" by historians. I do not really care about such adjectives which are of little interest to geologists. Most of them would not mind being qualified of "pastist," why not introduce here a new term for the sake of arguing? "Pastism" rings well as a French Apéritif, the best introduction to the so-called past and present causes in geology discussed below.

Return to Geneva

A few words will suffice to describe my return to the University of Geneva from the US and my re-insertion in the orbits of my previous academic and consulting activities, which had remained essentially open. Now that I had taught for a year in the US and this activity was considered as an important and critical part of any curriculum vitae, I was welcomed back, so to speak, as if nothing had taken place. On purpose, I had not bragged about the interesting aspects of the American academic world and indeed Professor P., upon hearing me talk about suggestions of minor changes of organization in the undergraduate Geology laboratory in Geneva, said: "It is not because you have

taught in the United States that things are going to change here the way they have been for the past 30 years." The voice of doom was loud and clear and I quietly resumed my former duties.

It was now October 1956 when the telephone rang and George White asked, in a tone of gentle reproach, why I had not answered his offer of a permanent position as associate professor at the University of Illinois, adding that time was getting short for the preparation of the paperwork of an appointment starting in the fall semester 1957. I accepted the offer on the phone, suffocating with joy and with an immense relief and expressing my great surprise and apologies for the fact that I had not been aware of such an offer. It turns out that during the farewell cocktail before our visit to the National Parks, Professor Grim had brought up the subject that the staff unanimously wanted me to return permanently. Apparently, the highly-charged alcoholic atmosphere of the party prevented efficient communications between participants and I remained completely unaware of the offer! My world had turned around. Important matters had to be settled such as: an indefinite leave from the Swiss Army, resignation of the different academic positions I had occupied, to which Professor P. said: "Good Luck, nobody is indispensable in this Department." When I took leave from the Rector, handing in my resignation, he said: "Mister Carozzi, one does not quit his Alma Mater in this manner," namely by a short notice of a few weeks. I answered that I had been given no choice, that I had been used and lied to all the way by a corrupt institution. Soon after some of my colleagues from all over the world wrote me that they recognized the same administrative duplicity they had suffered during their careers. Fortunately for me, I had been largely successful in the end, whereas they were still toiling deep in the mines of Agricola. The volume with Bernard Crettaz entitled *Les Plis du Temps* (1998) gives some advice on these unfortunate and repetitive intrigues which have ruined so many hopes.

Permanent return to the United States

This return was the beginning of an exciting phase of my life of teaching and consulting which lasted thirty-four years until early retirement in 1989 and beyond for eighteen active years of research in the history of geology. This double career was made possible by the open-minded support at all levels of the high administration of the University of Illinois, continuous in spite of the inevitable financial crises which took place during such a long span of time. My reply to many questions concerning such an unusual teamwork between higher administration and academic research and teaching is to say that everybody helped to keep me out from the frustrations of administrative committees and duties and to dedicate essentially all my time to teaching, supervision of graduate students, and personal research. In that respect, I feel that developing a close relationship between geology departments with short courses or graduate programs and the petroleum industry with a steady supply of new materials fresh out of offshore drilling is a mutual rewarding situation for all parties involved. In essence, reality is brought to the classroom by cores dripping with oil. That is "doing" geology.

My studies in the history of geology also took advantage of the favorable conditions at Urbana by giving me easy access to the numerous volumes which enriched our collections and allowed me to undertake the annotated translation of the works of many authors who do not seem to have received the attention they deserved because of a great variety of circumstances: In particular, the "regionalism" of geology, the difficulty of communications, the languages (although Latin was a kind of *lingua franca*), the political and social factors. An interesting aspect is to look into the works of "classical" literary authors who occasionally promoted some geological theories or ideas which made them real forerunners, worth within reason to be rescued from oblivion. A case in point is the position of Voltaire described in detail by Marguerite Carozzi in a volume entitled *Voltaire's attitude toward Geology (Archives des Sciences, Geneva, vol. 36, 1983)*. Voltaire is here at his best combining his famous literary talent with a detailed analysis of sandstones, both heavily intermixed with pungent jokes. He was convinced that the region of Ferney, near Geneva, where his mansion was located, consisted of Cenozoic (Chattian) sandstones with freshwater shells in a situation similar to some of the freshwater Miocene faluns of Touraine that he had also investigated, and that consequently the Alps had not been shaped by the sea and risen from below sea-level to their present height. His point of view was that the presence of shells in the sandstones near Ferney does not indicate a former and spectacular extension of the ocean on land, but simply freshwater lakes. Voltaire's attitude was one of caution, telling scientists that they should limit themselves to descriptions of natural phenomena without unnecessary flights of imagination influencing their conclusions. Voltaire's contemporaries unjustly failed to consider his judgment of great importance whereas modern critics are equally unfair in concluding that prejudice and religious beliefs, not scientific truth influenced him.

Marguerite and I have been for many years interested in Pallas' views on the theory of the Earth (1778) with its related investigation of the structure of the Urals and interpretation of Pleistocene glacial deposits as representing a gigantic tsunami. Many ideas of Pallas have been misunderstood by his publications in German, French, English, and Latin of a variety of aspects of the structure of the Urals, combined with different versions of his Theory of the Earth. We have published an English translation by combining various sources, but he obviously needs to be restudied on the basis of recent Russian geological maps.

Past and Present Causes in Geology

The general discussion of the statement that the present is the key to the past appears to me to have reached a point of saturation after the publication of many controversial papers, in general biased and repetitive. The most reasonable approach is to set the observations in the context of the cyclic evolution of depositional processes which record mainly the geochemical and tectonic history of the planet. Two distinct sets of conditions have alternated through time: long periods of orogenic quietness, short periods of violent orogenic activity.

The long-lasting conditions correspond to epeirogenic movements consisting of gentle and slow oscillations involving very extensive shallow seas bordered by low-elevation continental masses, often almost peneplained, and therefore releasing very little clastic materials. The marine sedimentation of these extensive periods is characterized by the widespread deposition of constructed limestones, supra-tidal dolomites, large-scale seepage refluxion through reef barriers, and extensive evaporites, oolitic iron ores and phosphates. Clastic rocks exist but in minor amounts. That was the past. The present is totally different, predominantly marine clastics are concentrated in orogenic belts with high continental reliefs, active deltas, narrow shelves with abundant turbidites, debris flows, high seismic activity, and reduced carbonate generation. This is the present, and obviously it cannot be used to interpret the past or at least only in a very limited manner to the spans of time when orogenic paroxysms occurred. Does this mean that there are past and present causes which are mutually exclusive? No, it seems more logical to consider a general pool of permanent causes which become alternatively active or inactive, controlled by the tectonic cyclic activity which shapes the planet and may also decrease in intensity with time.

The reader is invited to read the book by Lucien Cayeux (1941, translation with comments by Carozzi, 1971) to realize the unusual aspect of processes active during epeirogenic times.

Scale of geological processes and imagination

The real and profound working of the mind remains a mystery. Such a question can be raised when comparing the work of De Saussure in his *Voyages dans les Alpes* (1779–1796) with the *Etudes sur les Glaciers* (1840) by Louis Agassiz. The question concerns the Pleistocene extension of Alpine glaciers, and the concept of an Ice Age as a doctrine applicable to the entire Earth. Both geologists were highly motivated, but Saussure was a loner while Agassiz was gregarious and the leader of a team that would follow him to intellectual and physical extremes in fighting the battle against his Famous French (Elie de Beaumont) and German (Von Buch) opponents who refused to admit even the remote possibility of an Ice Age.

De Saussure was a meticulous observer who would return time after time to the same places to catch in his obsession all the possible details an outcrop would offer. He would then write an almost perfect description of his findings, including a new nomenclature if required to make this thinking clear. Often his observations would remain as field notes and he was reluctant to publish even the simplest system leading to a synthesis of his data. The only exception pertained to his discovery of the fundamental concept of horizontal forces as the major mechanism capable of uplifting and overthrusting entire mountain ranges all over the world. Even such a major structural idea was the object of only a few lines.

Agassiz, with his impetuous character and grandiose visions, was actually fired by his association with Karl Schimper, a botanist and poet who belonged to his circle of friends and who in 1837 wrote a poem half serious and half humorous which was privately distributed to the members of the circle and in which for the first time the term Ice-Age (*Eiszeit*) was printed. From the first version of the Schimper-Agassiz theory arose a worldwide concept for which Agassiz in the following years would predict field proofs some of which were genuine all over the northern hemisphere, while others (in Brazil) resulted from the regional confusion of granitic rounded boulders produced by equatorial weathering with genuine erratic boulders. The entire question became known by 1840 as the Agassiz

Ice Age Theory. It shook the scientific audience for years to come until brought back to the reality of a documented large development of glaciers in the Alps and all over the Northern Hemisphere in general, in the way Schimper had described also in a fit of imagination. The story is fascinating and the eighteen quarto plates are superb (see Carozzi, 1967).

De Maillet's cosmogonic system

The cyclic evolution of planets presented by De Maillet in 1748 stands in *Telliamed* (Carozzi, annotated translation, 1968) as a very interesting approach not only within the knowledge of its time, but by attempting a comparison with the recent progress of astrophysics.

De Maillet's system was Cartesian in essence and postulated that the celestial bodies of our solar system undergo an eternal cycle of dark and luminous which corresponds to a constant transmigration of matter within the various vortices and between them. This cyclical evolution of the celestial bodies was explained by using six arbitrary stages, which need not be elaborated here. The duration of a complete cycle undergone by a celestial body as assumed by De Maillet may be considered to be of the order of five billion years. This figure is based on his assumptions that the longest time the largest star could remain inflamed would be two billion years, and that the diminution of the sea has been in progress on the Earth for at least two billion years. More than two centuries have passed since this system was written. It certainly contains remarkable assumptions and speculations on the alternate dark and luminous phases forecasting the modern ideas on the evolution of stars and on "panspermia" which make at least delightful reading.

The mission of INHIGEO

There is little discussion in general in the *Newsletter* of geological maps which are of critical importance in the field search of outcrops of unusual rocks described several centuries ago and still available for comparative interpretation. The *Voyages aux volcans d'Auvergne* of De Saussure (see Carozzi, annotated English translation, 2000) are a typical example in which outcrops of rare intrusives are shown in the geological maps 1:25,000 and 1:80,000 although poorly visible in the field. Geological maps are usually difficult to purchase, expensive, and the only way to obtain them is to borrow them from Public Institutions, Museums and Geology Departments, with a serious promise to return them in good shape.

It seems to me that the countries where the Annual Meetings and excursions of INHIGEO take place could start a program of preparing *page-size, black-and-white simplified versions* of their geological maps (with possibly a cross-section or two) which could be inserted in the *Newsletter* before the meeting and provide participants with a general framework for the understanding of the features presented in the field by the leaders in charge. Such an insertion would also give more value to the *Newsletter* as a reference document for the future and also indicate the status of geological mapping in a particular country.

FORTHCOMING MEETINGS

The 11th International Conference on History of Science and Technology in China

23–25 July 2007

Nanning, Guangxi Province, P. R. China

The 11th International Conference on the History of Science and Technology in China will be held in Nanning from 23 to 25 July 2007. It will provide a unique opportunity to scholars working in the field of the history of science and technology, and civilization, in China or its neighbors. There will be opportunities not only for displaying fruits of research but also for exchanging ideas with colleagues. As you can expect, the preparation is now going smoothly and efficiently. The general theme of the conference is *Science and Technology Innovation & Scientific View of Development; Science, Technology and Civilization of Chinese Ethnic Groups*. Needless to say, any other topics concerning the history of science, technology, and civilization are also acceptable. If you could circularize this information to other concerned organizations or individuals, the organizers would be very grateful. Please feel free to contact us if you have any problems or request.

Sponsors include the Chinese Society of History of Science and Technology; The Institute for the History of Natural Science of Chinese Academy of Science; Science & Technology Department of Guangxi People's Government; and Guangxi University for Nationalities. The primary host is

Guangxi University for Nationalities. Conference languages are Chinese and English. Organization of the Conference is being done by the Chinese Society of History of Science and Technology and The Institute for the History of Natural Science of Chinese Academy of Science. The fee structure is as follows: RMB ¥800 for attendants; RMB ¥500 for members of CSHST; RMB ¥300 for students; RMB ¥250 for student member of CSHST; RMB ¥300 for accompanying members. Board and lodging is up to individuals. The Conference Contact Address is: □Research Institute for History of Science and Technology, Guangxi University for Nationalities, Nanning 530006, Guangxi, P.R. China; Tel: (86) 0771-3260598, 13607718820; Fax:(86) 0771-3262241, 3260598; E-mail: <wfb8820@163.com> or <weidanfang@126.com>.

**The Geological Society of London,
BICENTENARY MEETING
“In the Footsteps of the Founding Fathers”
9–13 November 2007**

The Geological Society of London is the oldest geological society in the world and its History of Geology Group (HOGG) will be celebrating the Society's bicentenary (founded 13 November 1807) with a five-day event comprising field trip, conference and dinner.

Walk with the Founding Fathers (9–11 November 2007)

The celebrations will start with a field trip to the Isle of Wight to visit some of the classic geological localities of historic interest. The trip will be led by Professors Hugh Torrens and Martin Rudwick. Accommodation has been arranged for the nights of Friday and Saturday, 9–10 November, at the Wellington Hotel, Ventnor.

Talk with the Founding Fathers (12–13 November 2007)

A two-day international conference will commemorate the lives of the founders, the achievements of the Geological Society of London, and the activities of some of its members over the past 200 years. Sessions will be held at the Geological Society of London, Burlington House, Piccadilly, London. Guest Speaker will be Dr Iain Stewart, presenter of the BBC series *Journeys From The Centre Of The Earth and Ring of Fire*. The Keynote Speaker is to be Professor Martin Rudwick, Cambridge University, UK. Three themes will be considered: (1) The status of geology around 1807, in comparison to other sciences, and to geology in other countries; (2) The founders of the Society; and 3) The foundation of the Society and the first 100 years.

Dine with the Founding Fathers (12 November 2007)

A bicentenary dinner will be held in the New Connaught Rooms, which now incorporates the Free Mason's Tavern, where the Geological Society was founded.

A plaque commemorating the founding of the Society will be unveiled by Professor Richard Fortey, President of the Geological Society of London.

For any enquiries please contact: Dr Cherry Lewis, Senate House, University of Bristol, Tyndall Ave., Bristol BS8 1TH UK. Email: hoggchair@aol.com.

BOOK REVIEWS

Chronostratigraphic units named from Belgium and adjacent areas

Dejonghe, Léon (ed.) and 31 authors, *Current status of chronostratigraphic units named from Belgium and adjacent areas*, Geologica Belgica, vol. 9, no. 1–2, 2006, 225 pages. ISSN 1374-8505. 24 €.

As Belgian geologists were pioneers in producing large-scale geological maps, including legends, many stratigraphical unit names were chosen in Belgium and adjacent areas. The “Father of Belgian Geology,” Jean-Baptiste d’Omalius d’Halloy (1783–1875), author of the first geological map of the French Empire, named two new periods in 1822: the “Penean,” after the river Penée in Greece, and the “Cretaceous” (*creta* = chalk), because of chalk being the main component of this unit in Belgium. His disciple, André Dumont (1809–1857), author of the first large-scale geological map of the Kingdom (1849), named many other units after names chosen from Belgian cities or regions (Gedinne, Famenne region, Tournai, Visé, Ypres, the river Rupel, etc.); from Germany (Coblenz, Eifel); from France (Reville, Deville); or from The Netherlands (Maastricht).

Other authors also introduced new unit names. Jules Gosselet (1832–1916) named the Givetian and the Frasnian; Albert de Lapparent (1839–1908) named the Dinantian and the Strunian;

Edouard Dupont (1841–1911) and John-Clay Purves (1825–1903) named the Couvinian, Dupont also gave us the Waulsortian; and Purves named the Namurian and the Virtonian. The name Chokierian was introduced by d’Omalius d’Halloy. In 1976, Raphael Conil, Eric Groessens, and Henri Pirlet subdivided the Dinantian into the Hastarian, Ivorian, Moliniacian, Livian, and Warnantian.

After the recommendations of the International Commission on Stratigraphy (1976), the need has been felt for documents to synthesize the current situation regarding stratigraphic units named from Belgium and adjacent areas. A guide to a revised lithostratigraphic chart of Belgium was published in *Geologica Belgica* (Bultynck and Dejonghe, 2001). A volume dealing with chronostratigraphic units was also needed. The special volume 9, numbers 1 and 2, 2006, of *Geologica Belgica*, edited and coordinated by L. Dejonghe, is the result of the effort of thirty-one specialists. The volume is divided into four parts.

Part I is concerned with all the chronostratigraphic units, named from Belgium and adjacent areas, which are currently accepted as internationally valid stages by the International Commission on Stratigraphy. These are: Rupelian, Ypresian, Maastrichtian, Viséan, Tournaisian, Famennian, Frasnian, and Givetian. For each of these units, a summary is given of material derived from important publications that led to their definition and acceptance as international units. Each summary contains the following items: the name of the stage in English, Dutch, German and French; the interval of geological time represented by the unit (expressed as an absolute age); the author(s) who initially defined the unit, the detailed reference of the corresponding publication, and a selection of the text defining the unit for the first time; the historical type area or locality from which the unit was named, including its position on a topographic map at the scale 1:10,000 and a reference to the corresponding geological map; a brief description of the unit; the historical background and the evolution of the use of the term and the reason(s) it was chosen as an international unit; a description of the lithological characters of the stage in Belgium and any lateral variations in lithology and thickness, the corresponding formations and members, and the boundaries in the reference section(s); the sedimentology, paleogeography and the paleontology—with emphasis on the biostratigraphic data relevant to the unit and the most useful markers; the criteria used to date and correlate the stage; the radiometric data, if available; a brief mention of the structural context; important reference section(s) in Belgium, together with an indication where the base of the unit is now defined; and references of main publications concerning the unit.

Part II concerns the substages whose international status is still under discussion.

Part III refers to Belgian chronostratigraphic units that have been used internationally until recently but which are now relegated to use at the regional level only (as series, stages, or substages). The characters and history of each unit are presented and the corresponding internationally accepted unit is cited. The term Waulsortian, which has acquired international status as a facies term, is presented in this section.

Part IV includes units whose use should be avoided in the future. Each unit is defined briefly and the reasons why the term should be abandoned are stated. Some of these terms can easily be replaced by the name of the corresponding formation (e.g., Ledian should be replaced by Ledc Formation; Bruxellian by Brussels Formation; Revinian by Revin Group). Other terms have proved to be strongly diachronous and hence inappropriate for chronostratigraphic purposes. A few (e.g., Paniselian, Scaldisian) cannot even be used as lithostratigraphic units because they incorporate strata that are no longer related to the current lithostratigraphic framework. It must also be remembered that the use of some terms has extended beyond the bounds of stratigraphic nomenclature into the vocabulary of such disciplines as water supply, architecture, history, engineering, and nature conservation. Where these traditions are well established, it is impossible to impose restrictions, particularly as these terms were above all used with a lithostratigraphic rather than a chronostratigraphic connotation. For example, the ferruginous sandstones of the Diest Formation will probably always be referred to by architects as “Diestian sandstones.”

Eric Groessens, Brussels

Political Regimes and Biographical Constructions: metabiographical reflections

Rupke, Nicolaas A., *Alexander von Humboldt: A Metabiography*. Peter Lang, Frankfurt am Main, Berlin, Bern, Bruxelles, New York, Oxford, Vienna 2005. 320 pp.

Alexander von Humboldt (1769–1859) is known as one of the most celebrated figures of nineteenth-century natural history. He is known not only to historians of science but also to an international

general public: his name lives on, not only in topography but in a large number of institutions. Before his death there was already a dazzling public record of the life of Alexander von Humboldt, and in Germany today the Humboldt Research Center in Berlin houses more than 5,000 bibliographical items.

It is understandable that such a lively biographical "industry" over the course of more than two centuries should have brought forth a range of differing views. And so Rupke's observation that every epoch constructs its own Humboldt does not immediately cause historians any particular surprise, since it is an inevitable part of the change in historiography. Rupke's study is remarkable, however, in that it uses concrete analyses to take us critically through the Humboldt literature and the current debate on biography as a contested form of representation and means of communication.

Rupke presents us with six Humboldt portraits specific to particular epochs, using a large number of meticulously researched greater and lesser contributions to the German biographical literature on Alexander von Humboldt—following the course of German history: the "Liberal Democrat before the Empire Period" in the time before the foundation of the German Empire (1870); the "Wilhelminian and Weimar *Kultur* Chauvinist" in the Wilhelminian period and the Weimar Republic; the "Aryan Supremacist of National Socialism"; the "Antislavery Marxist" in the time of East Germany; "West Germany's Cosmopolitan Friend of Jews"; and not least Humboldt as "Today's Pioneer of Globalization." In fact there are many more different portraits that Rupke successfully brings together here, and these he relates to institutional groups that constantly redefine themselves as to Humboldt's life and beliefs.

Each of these institutional collectives has its own social needs in terms of which they developed their particular Humboldt identity. For example the Monists, under Ernst Haeckel in Jena, associated Humboldt and his book *Kosmos*, as the idea of a uniform universe, with monism. The core of their argument was the intellectual link to Darwin and the voyage of the *Beagle*. Otto Lamprecht's Leipzig Circle saw Humboldt's worldview as being rooted in the German Reformation and Protestantism. The two brothers Alexander and Wilhelm von Humboldt therefore represented the expression of the high point in the development of the German spirit. With the establishment of the German colonial Empire in Africa and the Pacific, Humboldt's influence was discovered in South America and instrumentalized as a human resource and a connection between the German people and Mexico. In the GDR it was Humboldt's education at the *Bergakademie* in Freiberg that commanded most attention, and Humboldt's membership of the (aristocratic) elite was minimized and subordinated to the basic tenets of socialism.

Whilst others have economized, Rupke presents us with detailed and comprehensible portraits: it is not a single unique Humboldt who appears in this work, nor a single one who shows himself in various different facets. Instead we find a succession of many different Humboldts, with portraits that differ homogeneously from one another.

Rupke shows meticulously how different biographical designs are anchored as narratives in different details of the biography. It is not only a matter of a particular rhetoric, or a kind of ideological cosmetic, that is played out in the preface to the biographies and could be, as it were, stripped of its ideology by the reader. It is rather a question of totally different understandings of Humboldt, which are mutually exclusive.

Humboldt's relationship with Jewish circles in Berlin, for example, constituted one biographical aspect that post-war Germany focused on. And to evaluate Humboldt's personality various assessments of his works were undertaken. During the first phase, before the foundation of the German Empire in 1870, Humboldt's work and achievement related solely to the work *Kosmos* published in German, and this caused Humboldt's activity in France to be marginalized. But in Rupke's opinion Humboldt's "Germanness" had been transformed, no later than the time after the war in the 20th century, into a universal "state of mind of worldwide validity." Since every epoch placed the biographical emphases in different positions, we are concerned here not only with a change within historiographic discourse but also with completely different biographical products; there are, so to speak, different personalities who all bear the name Humboldt. For this reason the choice of *Metabiography* as the title of the book is probably justified, since he is not concerned with an overview of different historiographic approaches that relate to Humboldt, but with the different Humboldts in the course of the biographical literature. Where, then, asks Rupke, is Humboldt, his core, his authenticity? Or, to put it differently, is the "real" Humboldt still hidden somewhere behind the layers of contemporary rhetoric? Sigmund Freud once wrote: "whoever becomes a biographer is committed to lying, standardizing, hypocrisy, whitewashing and even to concealment of a lack of

understanding, for biographical truth does not exist, and if one could find it, it would be unusable" (Sigmund Freud to Arnold Zweig, 31 May 1936; Cited in Peter Gay, *Freud: Eine Biographie für unsere Zeit*, Frankfurt am Main, 1989, pp. 1f.). After reading Rupke's book, shouldn't one revise Freud's apodictic rejection of biography, with its conviction of the impossibility of capturing an authentic "true" core of a human being, in the sense that every "lie" is initially constituted by its particular politico-cultural context? And still more clearly, is it not only an epoch, but within it a collective that constantly redefines itself through its biographical designs concerning Humboldt? Is it there that we find the usefulness of a biography that Freud rejected?

What is essential, and for me convincing, is Rupke's statement that it is not the case that one interpretation is better than any other—and this is also true for the GDR biography, which portrays its own Humboldt—but that every age has developed its own view.

Rupke's book appears at a time when historiography is again facing up to the problems of the methodological role of biography as a genre, when it has experienced a 'crash' after its high point in the age of historicism. In social and cultural history it was rediscovered more than ten years ago as a result of everyday interest in history; in the history of science, admittedly, it was theoretically discredited, but never forgotten, since for centuries it had provided an exemplary life model.

So, what do we learn from Rupke's metabiography? No age is immune to the development of a new, but neither neutral nor objective, picture of the past. As far as biography is concerned there is no continuity of knowledge, no linear stages to a better biography. There is no epoch that introduced more ideology than any other. Politico-cultural necessities changed with the constructed biographies of Humboldt. Every age and every collective developed its own archetype, which it embedded into an historical context, even if they were sufficiently sure of themselves to follow the sources as closely, neutrally and objectively as possible.

If anyone should put the book down in disappointment because, as a reader, they expected to discover more about Humboldt and feel cheated, then they should pick it up again, because they will learn in particular why people have repeatedly concerned themselves with Humboldt. And this discovery seems to me to be one of some importance; at least it has a place as a set of meta-instructions to the reader in how to read any biography, whatever the context in which it was written. It was this that gave me pleasure.

Marianne Klemun, Vienna

Stone in Religion, Culture, and Art

Kopczynski, Kazimierz, and Skoczylas, Janusz, *Kamien w religii, kulturze i sztuce (Stone in Religion, Culture and Art.)*, Wydawnictwo Naukowe UAM, Poznan, 2006, 148 pp. (in Polish with English summary)

This book, published in the interdisciplinary series of the A. Mickiewicz University in Poznan (Northern Poland) is the product of cooperation of a psychologist and educationist (Kopczynski) and geologist and petro-archaeologist (Skoczylas). The latter, being an INHIGEO member, has been interested in this problem for many years, carrying out field investigations, particularly in Mediterranean countries, but also in North America.

As noted in the authors' English abstract: "this book discusses the significance, role and influence of stone in different domains of human life. It exhibits the magic significance of stone in religious symbolism, particularly in that of Christianity, Judaism and Islam, as well as in the culture of many epochs and, to lesser degree, in art. The interdisciplinary character of this book indicates a close relationship between abiotic nature and humanistic, mainly social sciences."

The authors present basic information on stone as a rock, and present numerous plots related with the cultural role of stones in western and eastern civilization (e.g., the problem of stone circles, monuments, sacred and laic edifices, pyramids, philosophical stones, etc.). Particularly interesting—because of ethnographic links—is the discussion in the chapter "Stone in legends, proverbs and parables." The subject is also attractive to researchers working on the problem of so-called primary science.

The authors' considerations are based on their own field observations in different countries and on a fairly rich bibliography. As follows from the presented list, the vast majority of foreign publications concerning these problems were already translated into Polish.

As far as the Polish territory is concerned, the reviewers could indicate the lack of data on Neolithic mines of flint in Malmian limestones in the Gory Swietokrzyskie Mountains, Central

Poland. The final products of their elaborations were flint hatchets, distributed on wide areas of Central Europe and used not as a useful tool but rather as the symbol of authority.

The reviewed interdisciplinary book, containing very rich information on studies concerning the civilizing role of stone in ancient times, is a very valuable compendium of science on this subject. Therefore, it is, unquestionably, very interesting for historians of geosciences.

Zbigniew Wojcik, Warsaw, and Wojciech Narebski, Cracow

Biography of Andrzej Bolewski (1906–2002)

Team Project, *Professor Andrzej Bolewski (1906–2002): Scientist, academic teacher, organizer of science, activist; Memorial book in centenary of his birth*, Wydawnictwo Naukowe AKAPIT, Cracow, 2006, 103 pp.

The book is devoted to commemorating the most distinguished Polish mineralogist of the 20th century. His handbooks of mineralogy, petrography, and mineral deposits—often prepared in cooperation with his pupils Andrzej Manecki, Włodzimierz Parachoniak, Witold Żabiński, Hubert Gruszczyk, and others—were the basic texts of students of all Polish universities

First of all, Professor A. Bolewski formed, in the Academy of Mining and Metallurgy, a significant modern centre of mineralogical studies, known in Poland and abroad. After his studies at the Academy of Mining and Metallurgy in Cracow, he associated with its Department of Mineralogy and Petrography, lead by Professor Zygmunt Rosen. Initially he served as an assistant, beginning in 1928. After supplementary studies in Romania, Greece, Austria, Czechoslovakia, Spain, and France, he gained the Ph.D. degree, on the grounds of his thesis (1935) on flotation of sulphur. He qualified for an assistant-professorship four years later. During the Nazi occupation, A. Bolewski, together with numerous professors of Cracovian universities, was arrested by the Gestapo and imprisoned in a concentration camp in Germany. After liberation, he took part in secret university education and, in conspiracy, was preparing detailed data on the deposits of mineral raw materials in the areas east of rivers Odra and Nysa. In 1945, Bolewski presented these data as an expert to the participants of the Potsdam Conference. Besides being nominated Professor of his parent Academy of Mining and Metallurgy, he took part in the protection of the post-German property in the western territories of Poland.

In the years 1952–1957, A. Bolewski was the president of the Central Geological Office (equivalent to ministry) and later—as a Fellow of the Polish Academy of Sciences—was very active in scientific and social life. The Mineralogical Society of Poland (M. Michalik, president) and the Commission on Mineralogical Sciences of the Polish Academy of Sciences (A. Manecki, president) were both formed and organized by A. Bolewski, as was the Department of Mineralogy, Petrography and Geochemistry of the Academy of Mining and Metallurgy (T. Ratajczak, head) and the Society of Alumni of the Academy (S. Mitkowski, president). All those organizations celebrated the centenary of birth of Professor Bolewski by convening a special scientific session. All the lectures presented were published in a jubilee book. The speakers, representing Bolewski's most advanced and closest pupils and co-workers, characterized various aspects of his many-sided activities. Those included serving as the head of the Department of Mineralogy and Petrography and creator of the Mineralogical Society of Poland. Bolewski was an eminent scientist, and an organizer of scientific life and geology in Poland. He contributed to the formation of the Polytechnical University in Gliwice and he stimulated the development of the basis of mineral raw materials and ceramics. Finally, Z. Wojcik has characterized his role as the government's expert and historian of his parent Academy and Polish science, particularly during World War II.

The published set of lectures does not fulfil all the aspects of Professor Bolewski's very rich and versatile personality and activity. Nevertheless, the reviewed book represents a very valuable compendium of information, particularly of the period when Polish science was centrally directed. It should, however, be emphasized that Professor A. Bolewski took advantage of the situation by forming a modern, well-equipped center of mineralogical studies in Cracow. During these celebrations, a commemorating plate (Figure 1) in honor of Professor Andrzej Bolewski was unveiled at the entrance to the lecture room of his parent Department, which currently bears his name.



Figure 1: Plaque honoring Professor Andrzej Bolewski (1906–2002)

Wojciech Narebski, Cracow, and Zbigniew Wojcik, Warsaw

Social History of Geology in China

ZHANG, Jiuchen, *Geology and the Republic of China: 1916–1950. Geology and Society: A Study of the Geological Survey of China before 1950*, Shandong Education Press, Jinan, 2005, 286 pp. Jiuchen Zhang is an Associate Research Professor at the Institute for the History of Natural Sciences of the Chinese Academy of Sciences in Beijing. As far as I am aware, this is the most detailed book discussing the origins of geology and its founders in China, before the Chinese Communist Party took control of the country in 1949. Due to politics, discussion of geology and its founders in the Republic of China was a forbidden topic for a long time, probably until the 1990s. Even now, examination of this kind of subject is still not completely open to researchers.

Before 1949, China was controlled by the Nationalist Kuomintang (KMT) Government, after which it became the People's Republic of China. The two parties had been enemies for over seventy years. Chairman Mao once said: "we in the Communist Party absolutely support anything that the KMT does not like and *vice versa*." Under these circumstances, ordinary Chinese could not discuss facts or events relating to the KMT's time.

In fact, geology was introduced into China in the 1910s, Chinese geology being founded by several very famous geologists, who were senior officials and politicians as well as scholars. It has been said that "geology was the most developed and leading modern science in China during the KMT period" (Shuhua LI, 1941). So I am delighted that brave Ms Zhang has collected information to let Chinese readers know the facts. Even if I had not talked to her in September 2006, in Beijing, I could still imagine the difficulties she must have faced in the preparation of her book. However, it must be acknowledged that many other Chinese researchers had already published papers on geology and its founders in both the Republic of China and the People's Republic of China. These researches, to some extent, set up a good base for Zhang's detailed study.

Let me now summarize the contents of the book.

In her Introduction, Zhang points out that geology was the first modern science introduced into China and is still the most developed one in modern China. "If there had been no geology, all other sciences in China would have developed several years later. So geology meant more than any

other subject to modern scientific developments in China (Shuhua LI, 1941).” She also states that it is her intention to reveal the relationship(s) between scientists, academic organizations, and society in China. Yiou ZHANG, the former Director of the Department of Mining Businesses, Ministry of Industry and Commerce, pointed out in 1919: “Of all the organizations in China, the Geological Survey is the only one that is competent at an international level and also the only one that should be recorded in the academic history of China [for that period].”

Chapter 1: Modern Geology and Chinese Society

Features and social values. Geology in China influenced social sense and economic values at a time when Chinese society needed geology to help develop its modern industry. Geologists were needed to prospect for minerals, survey soils, and look for underground water and properties boundaries (“Geology started in China for its practical use”: Hongzhao ZHANG, 1937). Both the civil and world wars in China also promoted the introduction and development of Chinese geology. During World War II, geology was one of the most favored sciences for young Chinese to study and many top students chose geology as their field of study. But geology started in a very turbulent period in China and more than ten fine young pioneers in geology were killed during their investigations in field. Among these, Yisi MA was the only female. She knew Mandarin, English, German, French, Russian, and Japanese, all very well but was killed by bandits during her first field investigation, at the age of twenty-five. As an unwritten rule, the Survey did not employ female geologists. MA was an exception because she was so excellent. In addition to her language talent, she had been ranked first in twenty-eight examinations when she studied geology.

The Geological Survey of China's Reputation. The Survey's influence in China exceeded well beyond geology itself. Yuanpei CAI, a well-known educator and former principal of Peking University once commented that the Survey was “the first real scientific research institution in China.” Some Westerners in the 1920s, like J. W. Gregory and C. H. Peake, also thought that the Survey was the best scientific institute in the country. Before 1949, the Survey was a source of great national pride.

Chapter 2: History of Geological Survey of China

As the earliest and biggest scientific institute, the Survey was founded in 1916 (though some have maintained that it began in 1913) and was initially under the Ministry of Industry and Commerce, and then under several other different jurisdictions in the following years. Almost at the same time, the Institute of Geology, a school to train students in geology, was established in Beijing. Both the Survey and the Institute were under the same management of just a few geologists.

Due to the shortage of geologists during its first three years, only V. K. TING, the Survey's first Director, did field investigations, and these were only limited and in confined areas. The Survey was also, from the beginning, short of funds as well as staff. But several politicians, most of whom had studied abroad, played important roles in its foundation, either by funding or supporting its activities. They included Junwu MA, Jushi HE, Yiou ZHANG, and others.

The Institute of Geology started in 1913 but closed in 1916. Only one class of twenty-two students graduated, but most of them became leading geologists in the years that followed. The course lasted for three years and included geography, general geology, elementary mineralogy, petrology, paleontology, surveying, zoology, botany, chemistry and chemical analysis, physics, geohistory, structural geology, advanced mineralogy, metallurgy, mining technology, geology of mineral deposits, mapping, mechanics, theodolite survey, photography, and various field excursions. It was a comprehensive program.

During the period 1916–1927, the Survey's total staff was less than twenty and its major targets were prospecting for coal. But after 1920, more time was spent on paleontology. The geological library, museum, and laboratory were set up during this period. From 1928 to 1935, the Survey reached a new stage of development and received more funds from the Government and other organizations, as well as individuals. More graduates in geology from various universities joined, which made large-scale geological investigations possible. Paleontology became particularly popular in this period. Between 1935 and 1949, the Survey had more than ten divisions, with about 100 staff. In the winter of 1935, the Survey's headquarters moved to Nanjing, due to the Japanese invasion. The Beijing branch was set up in 1934. But in 1949–1950, the Survey was disbanded by the new Government, despite the fact that it provided most of the leading geologists, much geological data (geological library), equipment (laboratories), and a museum. It surely could have been useful to the new regime.

Chapter 3: Academic System and Orientation

Open academic system. The original Survey had its own independent targets, academic regulations, and organization. Only the top geologists who could pass its rigorous examinations were employed. The examinations included written papers, an interview, and the identification of minerals and rocks. The newly enrolled geologists had to spend about ten years in the field, prospecting as assistant geologist under the supervision of senior staff. Geologists were encouraged to publish geological papers and reports. In 1919, the *Geological Bulletin*, the first journal of the Geological Survey of China, was initiated. National and international academic interchanges were emphasized from 1930 and there was a weekly internal geological forum. Geological papers, reports and lectures were presented in English, German, or French. In its early years about half the graduates of the Institute of Geology were sent abroad to study geology. Several foreign geologists were also employed.

Academic orientations. The Survey had significant achievements, both theoretical and practical. They included the discovery of Peking Man (*Sinanthropus pekinensis*) at Zhoukoudian near Beijing, the recognition of the Yanshan Orogeny, and the construction of the Jiufeng Earthquake Station, the only one in east Asia at that time.

Chapter 4: The Influence of Academic Authorities

Founders. Three founders of modern geology in China, Hongzhao ZHANG, V. K. TING, and Wenhao WENG, had great influence, both in geology and in Chinese society.

ZHANG (1877–1951) studied geology in Tokyo during 1904–1911, taught geology at a university in Beijing after his return to China, and was appointed Director of the Geological Division, Ministry of Industry and Commerce, in 1912. He founded the Institute of Geology in 1913 and was Director of the Geological Division of the Survey in 1916. He established the Geological Society of China and was its first President (1922).

TING (1887–1936) studied in both Japan and Britain and gained a BSc in geology and zoology in 1911. He initially taught in a secondary school in Shanghai but was appointed Director of the Geological Division of the Department of Mining Business, Ministry of Industry and Commerce in 1913, where he founded both the Geological Survey of China and, along with Zhang, the Institute of Geology. He was the Survey's first Director till 1921. He then became General Manager of the Beipiao Coal Mine Corporation and President of the Shanghai Government's Office of Commerce in 1926. He was wanted (for capture, and probably killing) by the KMT in Guangdong Province in early 1927 and also by a powerful Chinese warlord later that year. However, he escaped harm and served as the President of the Chinese Academy of Sciences in 1934, but died of carbon monoxide poisoning, while surveying in Hunan Province, on 5 January, 1936.

TING was not only a geologist but also a famous scholar in Chinese culture and philosophy, and a successful social activist. He was active in the academy, politics, and economics. TING played the leading role in the foundation of the Geological Survey of China, raising considerable sums of money for this organization. Due to his strong influence in the Republic of China, the Communist Party has not thought well of TING, even though he did so much towards the development of modern Chinese geology.

Wenhao WENG (1889–1971) studied in Belgium from 1908 to 1912 and gained a PhD degree. He taught in the Institute of Geology after returning to China and worked for the Geological Survey of China from 1916, becoming Acting Director in 1922 and Director in 1926. He founded the Department of Geography at Qinghua University in Beijing and was for a time Acting Principal there. He was the third, fifth, eighteenth, and nineteenth President of the Geological Society of China. From 1932, WENG became one of the top officials of the Republic of China, serving as Secretary-General of the Committee of National Defence, Director of the Resources Committee, Minister of Economics Ministry, and eventually Prime Minister. Due to his top positions with KMT, he was wanted for capture by the Chinese Communists in 1948. However, he escaped to Hong Kong in 1949 and returned to China in 1951.

Regrettably, the new Government did not allow WENG to study geology, though he asked to do so. He liked geology so much that he refused to become the top official in the country when he was first invited to do so by the KMT. Without WENG, the Survey would not have been the most successful and influential academic institution in China. Similarly to Ting after 1949, WENG's great contributions to Chinese geology were not acknowledged for a long time.

Successors. Jiqing HUANG (1904–1995) took over from Weng and was Survey Director from 1938 to 1940. Then Zanzun YIN (1902–1984) was Acting Director (1940–1942), followed (1942–1950) by Chunyu LI (1904–1988). Other geologists who contributed significantly to early Chinese geology

included Zhuquan WANG, Zanheng ZHOU, Jiarong XIE, Jichen LIU, Qijuan TIAN, Senxun LE, Hengsheng WANG, Defeng HOU, Zhongjian YANG, Yazeng ZHAO, Jianchu SUN, Rongsen JI, Lanpo JIA, Wenzhong PEI, Liangfu YE, Yunzhu SUN, and so on. Many of them studied geology abroad.

Foreign Geologists. Due to the initial shortage of geologists, the Survey employed over ten foreign geologists, most of whom made significant contributions.

Johann Gunnar Anderson (1874–1960), the former Director of the Swedish Survey, who worked with the Chinese Survey from 1914 to 1924, discovering the Yantongshan iron deposit in Xuanhua. Anderson raised money for the Chinese Survey and even used his own money to help the organization when needed. He became Director of the Geological Museum of China.

Amadeus William Grabau (1870–1946), the American paleontologist, was Professor at Columbia University before working as chief paleontologist with the Geological Survey of China from 1920. Almost all Chinese paleontologists at that time were Grabau's students.

Davidson Black (1884–1934), a Canadian, was employed as Director of the Cenozoic Division of the Survey in 1927 and was responsible for studying the Peking Man fossils. He died of a heart attack in his office in Beijing.

T. G. Halle, a Swedish paleobotanist, worked with the Geological Survey of China from 1916 to 1917.

Pierre Teilhard de Chardin (1881–1955), the famous French geologist, theologian, and philosopher, carried out paleontological investigations and worked on the Peking Man remains.

Otto Zdansky (1898–?), an Austrian paleontologist, worked in China during 1925–1930.

Björger Bohlin (1898–1951), a Sweden paleontologist, worked in China in 1927.

Franz Weidenreich (1873–1948), a Germany scholar, studied Peking Man fossils for six years during 1935–1941.

R. T. Pendleton and *James Thorp* were American scholars who studied soils in China in the 1930s.

Chapter 5: Analysis of the Chinese Geologists' Team

Structure of the team. The Survey consisted of a special group of people who had good education backgrounds in modern science and subsequently became top officials. These few men became the authorities who determined the fate of Chinese geology. A number of younger geologists, from both the Institute of Geology and the Chinese universities, also became part of the team.

Levels of the team. The Survey initially had a simple structure, as there were so few geologists. But with more and more geologists joining, the structure became more and more complicated and different levels of the team appeared. Education backgrounds, papers and reports published, academic achievements, ages, seniority in the organization, social and international influences, and relationship with the authorities, were all factors that produced different levels of the team.

Value orientation of the team. The Survey's geologists, like everyone else, needed money to live on and also sought social recognition in the forms of academic rewards, high academic positions, publishing papers and/or reports, and even opportunities for study abroad.

Chapter 6: Overall Influence on Geology in China

More and more provincial geological surveys were established from the 1930s on. So the central Survey tried to establish criteria for mapping the whole country.

Attempt to unify academic regulations. The Survey tried to establish common geological standards for all the different Provincial surveys and institutes to follow, but it failed in this regard. On the other hand, it succeeded in unifying geological mapping and geological terminology.

Academic interchange and cooperation. The Survey had an open-door policy and shared its library, laboratory, and other resources with society as a whole. Its museum in Beijing was open to the public almost every afternoon. It also had close academic relationships with other Chinese geological institutes and universities that had departments of geology and/or geography.

Function of the Geological Society of China. The Geological Society of China was founded in 1922 and was reliant on the Survey up to 1949. In her book, Ms Zhang compares the Geological Society of China with the Geological Society (of London) in the UK. She also discusses the award and evaluation systems of the Geological Society of China.

Conclusions

How and why could the Survey achieve so much? Ms Zhang suggests several reasons:

Unique geology and social needs China has its own special geological formations and the society needed minerals for its industrial development and modernization.

Good overall arrangement and appropriate research orientation. The Survey paid attention to both geological theories and applications.

Academic authority. As mentioned above, the three pioneers in geology played important roles in developing modern geology in China.

International exchanges. Frequent international geological exchanges contributed to the Survey's success.

An academic centre. As the academic centre for geology in China, the Survey played a very important role in unifying academic regulations, management, organization, and the coordination and support of other academic institutions and universities throughout the country.

Though it disappeared after 1950, the influence of the Survey on Chinese geology is still felt today.

Appendices

Twenty-one geologists who worked with the Survey were visited by Ms Zhang and interviewed in person, and the geologists' descriptions of their experiences with the Survey are presented. All the geologists who worked for the Survey are also listed as Appendix II. Unfortunately, due to her time constraints, Ms Zhang was unable to provide résumés for many of the geologists. For example, Rongfu PEI, a graduate of Qinghua University in 1948, is now a Member of the Chinese Academy of Engineering and Research Professor of the Chinese Academy of Geological Sciences; but this is not mentioned. (Professor PEI was my instructor during my postdoctoral studies and this is why I know his current situation well.) Another example is Zhi ZHENG, who is now a retired research professor of the Chinese Academy of Geological Sciences. Such omissions might be rectified by Ms Zhang in the future.

The Book and its Author

In September 2006, in Beijing, Ms Zhang told me that her book would be better if she had not been pushed to finish the project according to a tight time schedule. She had already spent over three years on the book. But ZHANG is a perfectionist and thus I do not doubt the general accuracy of the information in her book. However, she was not fully in control of the project. Her book is the result of one of more than thirty secondary projects of the Chinese Academy of Sciences, and she had to follow the schedules and/or steps of the projects overall. As we all know, the national companies and organizations in China are controlled by one voice. In my view this is not the ideal way to write history of science. On the other hand, the project is one of such a large scale that it would be almost impossible to undertake it single-handed.

Ms Zhang also visited as many elderly Survey geologists as possible, many over eighty and some even over ninety years old. These contacts and memories were very important for her book.

I was a member of the Chinese Committee on the History of Geological Sciences before leaving China for Canada in 2000 and thus I know something of the history and origins of geology in China. And what I know is exactly reflected in Ms ZHANG's book. More importantly, I now know *more* about the history of geology in China from her book.

In summary, this is the most detailed book about the Chinese Survey published thus far. It discusses not only its history but also various aspects of the organization. The book is not directed towards any specific group of specialists and is most clearly written. Anyone who wants to understand Chinese history during the period 1910–1950 will find it useful, as it goes beyond just the history of geoscience.

Also, from this book, readers can know why there are so many corrupt academic activities in China in recent years. There was not this kind of shameful thing with the Survey in its first forty years.⁶

Jian-Zhao [Jim] YIN, Richmond, British Columbia, Canada (Chinese Member)

⁶ I first became acquainted with Ms Zhang at a lecture by David Oldroyd at the China University of Geological Sciences in Beijing in the late 1990s, when she acted as interpreter for David. It was not easy to be an interpreter and was difficult to translate for Dr Oldroyd since his topic included a variety of subjects, including geology, mineralogy, petrology, astronomy, history, philosophy, geography, sociology, politics, etc., etc. Though she is not a geologist, I thought that Zhang did very well. After the lecture, Zhang modestly told me that she did not do well. I told her that she was being too critical with herself. This is further evidence that Zhang is a perfectionist!

Chinese Version of *Thinking About The Earth*

YANG, Jingyi (translator), David R. Oldroyd (author), *Thinking About the Earth: A History of Ideas in Geology*, Shanghai Century Press Group, Shanghai, 2006, 530 pp.

It took me a long time to read both the Chinese and English versions of David Oldroyd's *Thinking about the Earth: A History of Ideas in Geology* (1996), translated by my friend Jingyi YANG in China. I have to admit that the reading was also a learning process for me, though the book is mainly about geosciences, in which I have been involved since 1982. The book includes so many subjects—for instance, history, religion, geography, philosophy, chemistry, mineralogy, petrology, lithology, paleontology, structural geology and tectonics, mining, metallurgy, geophysics, geochemistry, biology, astronomy, and Gaia—that there is much to learn from it. It was probably not easy for David Oldroyd to write the book, or easy for Jingyi YANG to translate it, for neither of them are professional geologists; and Oldroyd writes in his Introduction: “the task proved considerably more complicated than I anticipated. The materials on which I have drawn, or could draw, are exceedingly diverse, and in many cases excessively complicated.” Yet to the best of my knowledge this is the most detailed book about the general history of ideas in geology in the West (perhaps in the world, since modern geology originated in the West).

There are already several reviews about the book. So to break new ground, it may be a better idea for me to compare Chinese and Western ideas about the Earth. In fact, some of the book's content does remind me of Chinese legend/myth or ideas of creation of the Earth and heaven.

Oldroyd starts by discussing some ancient mythical ideas about the Earth's origin, but he doesn't mention China. For several thousands of years, Chinese believed that *Pangu*, a legendary figure or a Chinese god, created the universe, or more precisely speaking, Heaven and Earth. The Chinese version of creation of the earth and heaven was as follows. There was an original chaos, from which the Earth separated like a yolk in an egg. After 18,000 years, *Pangu* emerged from the yolk. With a giant stone axe, he separated the light from the heavy, giving rise to the earth and the blue sky. Events on Earth (such as the weather) depended on *Pangu*'s moods. There was lightning when he blinked his eyes and thunder when he snored. When *Pangu* eventually died, his head became the Tai Mountain in Shandong (eastern China); his feet became the Hua Mountain in Shaanxi Province (western China); his stomach became the Song Mountain in Henan (central China); his left arm became Heng Mountain in Hunan (south-central China); and his right arm became Heng Mountain in Shanxi (in north China). *Pangu*'s hair changed into trees, grasses, and flowers. After *Pangu*'s death, the Goddess *Nuwa* created human beings. Earth was for a long time believed to be square, while the heavens were round.

Such ideas, and analogous ones described by Oldroyd for other parts of the world, attempted to explain natural things that were not understood in terms of things that were understood. Like the West, early China had its own mythopoeic world view. There was minimal science at that time. So, although both mining and metallurgy in China have had a history of several thousand years, and ancient Chinese people noticed some geological processes, modern geology as a science was only imported from the West in the 1910s (see my review of ZHANG, p. 51).

However, the earliest known seismoscope was devised in China in AD 132 by Heng ZHANG (called Chang Heng by Oldroyd), a government official responsible for astronomy/astrology and the calendar of the eastern Han Dynasty (AD 25–220). His *Didongyi* allowed one to determine the direction of seismic impulses. It worked and detected an earthquake in northwestern China, over 500 km from where the instrument was located. Unfortunately, the original instrument has not survived, but replicas have been made.

Xiu PEI, a cartographer of the Western Jin Dynasty (AD 265–316), found many mistakes in the old Chinese maps and determined to remap China. After years of field investigations and library researches, he finished eighteen geographical maps, covering most of ancient China. He proposed that maps should be based on, and show, a registered scale. Azimuths, distances, elevations, directions, and the orientation of mountains, rivers, and roads should also be indicated. He was the first Chinese scholar to use produce scaled maps.

Hong GE, an expert on alchemy, chemistry, and Chinese medicine of the Jin Dynasty (AD 317–420), wrote in his book *On Fairies*: “Seas change into continents and continents into seas.” This was a very early intimation of cyclic thinking about the Earth. Zhenqing YAN (AD 706?–784), one of the leading calligraphers of the Tang Dynasty (AD 618–907), noticed fossils in rocks on a cliff and reached similar conclusions to Hong GE. Kuo SHEN (AD 1031–1095), a famous scholar and “scientist” of the Northern Song Dynasty (AD 960–1127), wrote a thirty-volume book discussing

(what we would call) astronomy, calendrics, mathematics, physics, chemistry, biology, geography, geology, medical science, history, archaeology, literature, music, and fine arts. During his investigations at Yandang Mountain (Zhejiang Province), he concluded that: “water weathering and erosion formed the mountain.” He also noticed fossils in outcrops over 500 km away from the sea in Hebei, and concluded that “seas change into continents by sediment deposition in water.” Shen KUO was the first to find oil in northern Shaanxi, and presciently believed that it would be “very useful, popular and important to human beings in the future.”

After more than thirty-five years of field investigation in different areas of China, Xiake XU (AD 1586–1640?) of the Ming Dynasty (AD 1368–1644) finished his *Travel Notes*, in which the distribution, classification, and genesis of the karst topography in southwestern China were described, discussed, and interpreted. But the early “geological” work produced in ancient China, mainly direct descriptions and inferences regarding geological phenomena, was scattered and unsystematic. From the 1860s, several foreign geologists from the United States, Russia, Japan, Germany, France, Sweden, etc., did limited geological surveys in small areas of China for various purposes, some of them economic. Then in April–July 1911, V. K. TING conducted geological reconnaissance in Yunnan and Guizhou Provinces, southwestern China, on his way back to China from Great Britain, where he obtained BSc degrees in both geology and biology. His was the first real geological survey by a Chinese geologist. But soon afterwards, in 1916, the Geological Survey of China was established and modern geology was imported from the West into China. So, although ancient Chinese did notice and tried to explain “geological” phenomena earlier than did Westerners, geology as a systematic science originated in the West and was not imported into China until the early twentieth century.

About the book’s potential audiences, I do not completely agree with YANG, who writes at the beginning of her translation that it is readable both for geologists and the general reader. I suggest that Chapters 1 and 2, and some portions of Chapters 3–8 and 12–13 will be relatively straightforward for the general Chinese reader, while major portions of Chapters 3–8 and Chapters 9–11 will not really be easy. In other words, geologists are the likely audience for Chapters 9 and 11, while physicists, geophysicists, and some geologists may be attracted to Chapter 10. Readers without specific geological knowledge will probably have some difficulty in understanding substantial portions of the book.

It is clear that YANG translated the book after reading every word carefully, and she has tried her best to retain the book’s original style. I also have read both the English and Chinese versions word by word. As mentioned, YANG is not a geologist and she apparently had some difficulty with the tricky work “survey,” which can have different meanings in different situations. For example, Chapter 5 “The Earth *Surveyed* and Geologically Mapped: the Territorial Imperative,” has been translated as “The Earth *Explored* and Geologically Mapped.” Based on the content of the chapter, I suggest that the word *survey* here is closer to the word *investigate* than to the word *explore*. In different paragraphs of the same chapter, “survey” was variously translated (not very accurately) into “investigate/investigation,” “explore/exploration,” and/or “measure/measurement.”

Another possible problem in the Chinese version is that some very unfamiliar Chinese words and/or characters are used. When I discussed the book with my two Chinese friends in Beijing, in 2006, both of them did not know how to read one Chinese character in the very title of the book, though both have masters degrees and one has been a senior journalist for over thirty years. I had the same problem with the same Chinese character when I first got the book. As another example, a very rare Chinese word is used for the English term “precursor.” The word “mines” is translated into “mine shafts.”

In spite of such minor errors, I believe that this is a really good book, which should become a reference book for students and teachers of geology at different levels. I have benefited a lot from reading it and am happy that China has matured and produced serious scholars like YANG, who has been patient enough to undertake the considerable task of translating the book. Even so, I wonder how many people will read it as carefully and seriously as the translator and I have done. China’s economy has been developing at a remarkable rate in the last twenty years and I am very happy with this. But more and more Chinese think it a waste of time to read academic books, I hope I am completely wrong in saying that, so far as this book is concerned. It deserves a wide audience.

Jian Zhao (Jim) YIN, British Columbia, Canada

A Fascinating and Troubled Life

Giormani, Virgilio and Torrens, Hugh, *Il conte Alvise Zenobio (1757–1817): Un patrizio veneto tra agio e avventura*, Istituto Veneto di Scienze, Lettere ed Arti, Venice, 2006, 267 pp.

This book reconstructs the life of the Venetian Count Alvise Zenobio since his birth in Venice until his death in London. Giving justice to the trajectory of the central personage, the book was written in a partnership between an Italian and an English researcher, who had collected a vast documentation in archives and libraries, which solidly supports the appealing narrative.

Zenobio's history is exemplary for several reasons. On the political side, the historical period when his life was lived testified to deep changes and agitations, either in Europe, where he had his home, or on other continents. It is enough to remember the independence of the United States, the French Revolution, or the rise and fall of Napoleon. On the intellectual and scientific front, the Enlightenment and its unfolding as regards ideas and institutions were substantial, with nuances and characteristics proper to each country, including former European colonies. And this entire process was happening simultaneously to the Industrial Revolution. This means that the book will interest a wider audience than just historians of (geological) sciences or technology. I shall, for obvious reasons, emphasize mineralogical and scientific points in this short review.

Seventeen chapters and three appendices, plus the list of manuscripts, and a bibliography compose the book. It begins with the familiar treatment of genealogy, retracing the family to the fifth century. It continues with Zenobio's birth, loss of the parents, attempts to set up a marriage for his sister, and arrangements for his trips around Europe—particularly to revolutionary France, and to England. The other chapters follow his projects, his arrest in London, his stay in and expulsion from France, his banishment and rehabilitation in his motherland, and how he spent the rest of his life in England. In the chapter dedicated to his projects, it is very interesting to know about the fact that he hired the Welsh prospector John Williams (1732–1795), already studied by Hugh Torrens, in order to find ores, coal in particular, on his properties in the Tyrol and in the Veneto. Alvise Zenobio was inspired by the example of Great Britain, where, according to its words, "*la ricchezza dell'Inghilterra viene soprattutto dalle immense miniere di questo carbone, mentre si lavorano ogni sorte di manufatture che han bisogno di fuoco a poca spesa*" ('the wealth of England comes above all from the immense mines of this coal, while they work every kind of manufacture that need fire at little expense'; p. 61). Williams was successful in his quest, which rendered Zenobio euphoric.

Other relevant points, which testify to his being in tune with the spirit of his time, are: first, the acquisition and donation of thirteen boxes of scientific instruments he made to the museum of La Specola, as well as to the laboratories of physics and chemistry of the Padova university, while incarcerated in London; and second, his plans to introduce the steam machine in his home country, to drain swampy lands.

His imprisonment is a delicious, hilarious story that deserves some lines here. Count Zenobio was highly sympathetic to the fall of the *Ancien Régime* in France—although having strongly condemned the French government during the Terror—and was enthusiastic regarding liberal and/or republican ideas in politics, as well as strongly opposed to Napoleonic expansion. This is clear in the letters he addressed from Britain to his countrymen, carefully reproduced in the appendices of the book. While in London around 1792–94, he got involved with Thomas Hardy, John Horne Tooke, and others, who advocated deep and progressive political reforms in England. Some of these men were deported by the government, and Zenobio was "kindly requested" to leave the country. Wanting to stay, he publicized his debts in the newspapers, forcing him to go to jail for that reason. Friends who visited him in prison were very surprised to find him doing fine, almost happy!!! The ironic title of this chapter (pp. 71–121) tells us everything: "*Meglio carcerato che espulso*" ("Better imprisoned than expelled").

Without doubt, Count Alvise Zenobio was a man of his epoch, serving at the same time as rule and exception, due to the peculiarity of his trajectory. When following his life in detail throughout the book, it is impossible to separate the diverse sides of his existence, and they remain intertwined in the pages printed, as it had been while he was still alive.

Silvia Figueirôa, Campinas-SP, Brazil

Bursting the Limits of Time!

Rudwick, Martin J.S., *Bursting the Limits of Time. The Reconstruction of Geohistory in the Age of Revolution*, University of Chicago Press, Chicago & London, 2005, 708 pp.

Martin Rudwick's long-awaited book on the attempts of reconstruction of the 'geohistory' (also defined as "deep or prehuman history") of the Earth during the crucial decades between the late 18th

and the early 19th century, opens the way to a new reconsideration of the meaning and development of the fundamental concept of time in the history of the geological sciences. Based on material used for a series of lectures delivered at Trinity College (Cambridge) in 1996, but widely enlarged during the following years, this work should be regarded as much more than a simple revision of a relevant part of Rudwick's research already expressed in his previous books, from *The Meaning of Fossils* to *Georges Cuvier, Fossils, Bones, and Geological Catastrophes*.

Bursting the Limits of Time is in fact a history of geology—although not comprehensive, as stated by Rudwick—which may also be considered “deeply unfashionable,” because “it focuses on the details of the scientific work itself” (p. 6) during the so-called “age of revolution.” That is to say, the six decades between the American Revolution of 1776 and the European revolutionary movements of 1848, the era also generally considered the most significant period for the establishment of geology as a science. Thus, some historians could fall into the pitfall of considering this book only an ‘internal’ history of a science, typically written by a scientist and certainly not incorporating the social, political, or economic contexts of the period studied: but this is only partially true. Being a solid piece of scholarship, Rudwick's book combines an impressive range of primary and secondary sources—including printed and unpublished material, but also cartography, geological sites and museum specimens—in order to offer a *synthesis* (author's definition) which still goes beyond 700 pages, because one cannot always reduce and simplify within a ‘standard’ editorial size the historical interdisciplinary complexity of the development of an essential scientific concept. Moreover, the declared emphasis on the content of the scientific work does not imply a lack of interest for the social context and the crucial changes affecting the scientific life and practice by political or economical revolutions. For example, the troubled years which followed the French Revolution are analyzed in chapter 6, significantly entitled “A new science of Geology?,” which deals with the works by Johann Friedrich Blumenbach, Jean-André De Luc, Nicolas Desmarest, Horace Bénédict de Saussure, Jean-Claude de La Métherie, and above all with Déodat de Dolomieu's definition of the new science in a *geohistorical* dimension.

Perhaps the definition of the scientific community of Earth scientists in the late 18th century (chapter 1) may seem a little too rigid. According to Rudwick, “prominent savants with international reputation” were definitively more influential in making early geological studies than a mixed ‘lower class’ of minor figures. But here it is difficult to see at the same level local scholars (not always minor because of their provincial status, and well able instead to assemble valuable museums of specimens collected in the field), technicians and miners (often very useful for the laboratory and the fieldwork of the major scientists), with “women of all social classes,” wealthy patrons, artists, publishers and peasants, who actually played in these years a less significant role.

On the other hand, it is very effective to have the description of how studies on the different features of the Earth's surface based on increasingly detailed fieldwork—which led to the development of physical geography (with a specific cartography) and geognosy—emphasized the role respectively of two-dimensional spatial distributions and three-dimensional structural relations of rock masses, but also started to show the inadequacy of the “traditional short timescale” based on Biblical chronology (chapter 2). Afterwards, Rudwick treats the genre of “geothory” (or “theory of the Earth”) by examining the distinguished cases of Buffon, Jean-André De Luc and James Hutton, as well as some less-known “Neptunist theories,” such as that of Peter Simon Pallas (chapter 3).

However, it is in Chapter 4 that the author introduces the central thesis of his book, which suggests that “the sciences of the earth became historical by borrowing ideas, concepts, and methods from human historiography” (p. 181), not because these sciences were based on the “geothories” built on “philosophical” or “conjectural” histories. Consequently he proposes a revaluation not only of the chronologies, but above all of the various genres of “antiquarian” erudite histories, written on “detailed concrete evidence, whether texts or artifacts” and considered basic elements of the process of historicization of the Earth. The question of fossils, defined as precious “nature's documents” and problematic sources at the same time, is also convincingly treated in detail within this process (Chapter 5), as well as the role of volcanoes and rock formations for the definition of the concept of “epoch,” mainly in the French literature of the late 18th century.

Most of the second part of the volume (Chapters 7–10), is devoted to the work of some major figures of French and English geology in the first two decades of the 19th century, in particular Georges Cuvier, Jean Baptiste Lamarck, Alexandre Brongniart, William Smith, and William Buckland. According to Rudwick's perspective on the reconstruction of geohistory, Smith's use of fossils for identifying specific formations in a geognostic structural order, but not in a temporal

narrative, appears to be less relevant than "Cuvier's new and characteristically perceptive understanding of the importance of the secondary formations and their fossils" (p. 468). Moreover, Cuvier and Brongniart also used the same fossils in order to indicate environmental conditions and "reconstruct a detailed local geohistory for the Paris region and for the relatively recent portion of geohistory that the Parisian formations evidently represented" (p. 484). Therefore it was Cuvier, concludes Rudwick, who aimed to burst the limit of time, linking geognostic fieldwork with the history of quadrupeds, while adopting the methods of human history like a "nature's antiquarian." The following researches on Tertiary stratigraphy and geohistory, undertaken by scientists such as Brongniart and Gian Battista Brocchi, up to Buckland (in spite of his criticized adoption of a "geological deluge") showed how this attempt could be explained and realized.

Besides the reconstruction of the long way toward the definition and the acceptance of the concept of geohistory among the European scientific community, certainly one of the main points of Rudwick's book is the final reassessment of the figure of Georges Cuvier, which establishes a possible new historiographical comparison with Charles Lyell's work.

The high quality of *Bursting the Limits of Time* also emerges from its deep, detailed, and truly documented approach to the "historicization of the earth" made by an 'intellectual' elite of scientists in order to achieve first the perception and later the knowledge of geology as *nature's own history*, well beyond the generalization of the so-called conflict between science and religion.

This is a book of great value and will certainly become a milestone in the historiography of geology, not only because of its impressive size, which shows the painstaking research work undertaken by Martin Rudwick during the last three decades, but above all for the importance of its thoughtful conclusions.

Ezio Vaccari, Varese

NOTES AND QUERIES

A New Book on Hugh Miller

A new book on *Hugh Miller: Stonemason, Geologist, Writer*, by Michael A. Taylor (Principal Curator of Vertebrate Palaeontology in National Museums Scotland), will be published by NMS Enterprises Limited. The publication date is April 2007. Contact publishing@nms.ac.uk for further details.

Born in Cromarty in 1802, Hugh Miller, self-educated stonemason turned bank worker, rose to become editor of *The Witness* newspaper. Scathing, lyrical and penetrating by turns, he condemned injustice and abuse wherever he saw them. He attacked the Highland Clearances and supported the freedom of the Church of Scotland. Miller's writings on making the best of one's life inspired Scots from John Muir to Andrew Carnegie.

A fine geologist, Miller brought many to the joys of science, helping to convince worried Victorians that geology was not an unchristian science. Although critical of pre-Darwinian evolutionary notions, Miller asserted that the scientific evidence in the rocks was truth as valid as that in the Bible.

This new biography, quoting generous chunks of Miller himself, covers his full range from stonemason through geologist and editor, to husband and father, and reveals the man of whom Professor Sir Archibald Geikie said: 'He clothed the dry bones of science with living flesh and blood.'

Kate Blackadder, for NMS, Edinburgh

World Heritage Sites:

A Word from the Secretary-General of IUGS

The following message was dated 10 April 2007:

In June 2006, the International Union of Geological Sciences signed an agreement with IUCN (The World Conservation Union) to provide geological assistance in the review and evaluation of geological sites that have been nominated for World Heritage site designation. IUCN recognizes the importance of sound geoscientific expertise in this process and wants to ensure that qualified reviewers are involved in the assessment process. To this end, IUCN seeks the expertise of geologists to provide "desk top" evaluations of the nominations.

From the IUGS perspective, we will provide names of suitable reviewers directly to the IUCN that best match the topic of specializing under consideration. The IUCN normally requests several reviews for each nomination and generates conclusions based on these multiple reviews.

Evaluations are normally undertaken in the spring of each year. Several nominations relevant to

geology have been submitted for 2007 and the process of evaluation will begin shortly.

IUGS will be coordinating this process in the next few weeks for geologically relevant submissions. We expect to develop a list of contacts/specialists that can be approached for evaluations.

If you are interested in reviewing geologically relevant nominations that are candidates for the World Heritage list of UNESCO please contact Dr Peter Bobrowsky (Secretary-General of IUGS) immediately at pbobrows@nrcan.gc.ca . Please identify your primary field of interest and expertise or regional area of study in your reply.

Volunteering your services and technical expertise for the long term preservation and conservation of geological sites is a significant contribution to the IUGS mission to educate and raise the awareness and importance of geology in the eyes of decision makers, the public and future generations.

I look forward to your replies.

Peter Bobrowsky
IUGS Secretary-General, Geological Survey of Canada
601 Booth Street, Ottawa Ontario K1A 0E8, CANADA
tel: +1 613 947 0333; fax: +1 613 992 0190

A Potential GeoHeritage Journal and the ProGEO Initiative

The following communications came from Bill Wimbleton, just as many INHIGEO members were heading to Vilnius, Lithuania, for our annual meeting in July 2006, Bill's commentary and his outline of the Geoheritage journal may be of interest to a number of you.

ProGEO (The European Association for Conservation of the Geological Heritage: affiliated to IUGS) has been in discussion with the major publisher Springer for some months, over our idea to create and launch a new journal called by us *Geoheritage*. There is currently no professional journal that covers this wider topic and our interests.

We have put forward the notion of a serious peer-reviewed periodical. It would be the only one of its kind. Our idea is that it will cover subjects much wider than conventional geosite conservation, though there would still be much to say about all designations—from geosites to National Parks and WH sites, and we would hope to cover the spectrum from on-site science, GSSPs, management and physical conservation through to interpretation, education and tourism. Included in this are sites and areas that are key in the development of science, so I hope you will feel, as we do, that a connection with INHIGEO is necessary. ProGEO's aim is to form a partnership of key organisations to take the project forward. We already have enlisted the support of other IUGS bodies.

Though ProGEO has come up with the idea, and the scope, this would be a global enterprise, requiring participation from individuals and organisations worldwide. For this project to be a success, we need a number of key people with their finger on the national and regional and specialist pulse to act as editors. If we are to succeed, it requires not only single people, but groups to write, edit or promote the writing of papers for the journal.

I hope NHIGEO can be involved as a partner in this project.

Bill Wimbleton, ProGEO Executive Secretary

The *Geoheritage* journal is an international journal dedicated to discussing all aspects of our global geoheritage, both *in situ* and portable. The journal will invite all contributions on the conservation of sites and materials—use, protection and practical heritage management—as well as its interpretation through education and tourism. The journal wishes to cover all aspects of geoheritage and its protection. Key topics are:

- Identification, characterisation and quantification of geoheritage;
- Definition, assessment and management of geosites—geological and geomorphological;
- On-site science, geological and geomorphological research;
- Global scientific heritage—key scientific geosites, GSSPs, stratotype conservation and management;
- Scientific research and education, and the promotion of the geosciences thereby;
- Conventions, statute and legal instruments. national and international;
- Integration of biodiversity and geodiversity in Nature Conservation policies;
- Geological heritage and Environmental Impact Assessment studies;
- Sustainable development, community action, practical initiatives, geoparks;

- Environmental issues, mineral resources and conservation, the built heritage, use of natural materials;
- Conservation in the natural world, Man-made and natural impacts, climate change;
- Geotourism definitions, methodologies, and case studies;
- International mechanisms for conservation and popularisation—World Heritage Sites, National Parks etc;
- Materials, data and people important in the history of science, museums, collections and all portable geoheritage;
- Interpretation, education and tourism;
- Pedagogical use of geological heritage—publications, teaching media, trails, centres, on-site museums;
- Linking the United Nations Decade of Education for Sustainable Development (2005–2014) with geoconservation;

The journal will publish research papers, review articles and short notes, as well as comments on papers already published in this journal. Occasionally, concise meeting reports and news of interest to the geoconservationist and environmental community will be published. The expectation is to have four issues per year, with colored illustrations, for an annual subscription of 45 Euros. Start-up date is 2008. Editors are Jose Brilha (University of Minho, Portugal) and William A.P. Wimbledon (University of Bristol, UK). INHIGEO members are invited to consider submitting papers. Contact Bill Wimbledon at <B.Wimbledon@ccw.gov.uk>.

The Discovery of *Charnia masoni*

It is nearly fifty years since I became involved in Precambrian fossils. In 1957 a local schoolboy, Roger Mason, came into the infant Geology Department at Leicester University with a brass-rubbing type drawing of a fossil he and two rock-climbing friends had found in a long-disused quarry in the Precambrian rocks of Charnwood Forest.

At that time there were hardly any fossils of Precambrian age known anywhere and most of those raised doubts about their interpretation. I just happened to be the only person present in the Department that day and I was sceptical to say the least. Roger went away and brought in his father, whom I knew to be both a part-time lecturer in the University College and a minister of religion. So I could not ignore him and we promptly drove out to Charnwood and there it was—a frond-like impression on a bedding plane in volcanoclastic sediments. A quick search soon revealed other impressions of fronds and circular discs on the same bedding plane. I took photos and later showed them to my former lecturer Peter Sylvester-Bradley, then a member of staff at Sheffield University, and later to become our first Professor at Leicester. He encouraged me to write up a description for publication: he was then editor of the *Proceedings of the Yorkshire Geological Society*; hence its first appearance therein.

I named the two frondose impressions *Charnia masoni* and *Charniodiscus concentricus*. With no other fossils to compare I provisionally suggested they might be algae—seaweeds. Within months of publication in the *Proceedings of the Yorkshire Geological Society* in 1958 a note from Professor Martin Glaessner of Adelaide in South Australia appeared in *Nature* (ca September, 1958). Quite unknown to me he and his colleagues had been working on comparable fronds, discs, and other impressions in the Pound Quartzite near Ediacara, some four hundred miles north of Adelaide. My publication beat him to it, and so the name *Charnia* has priority.

Glaessner's interpretation was that the impressions were sea-pens, an obscure group of Coelenterates, related to anemones and corals. This interpretation has been followed by most other researchers and I support it, though there are still some problems.

The unexpected discovery in Charnwood Forest has taken me round the World, including a visit to one of the Ediacaran localities, Brachina Gorge, with Glaessner's assistant Mary Wade. The Ediacaran fauna is now known from all the continents, but particularly from Newfoundland, Russia, China, Namibia and South Australia, all in late Precambrian rocks.

When the University introduced Study Leave in 1965, my name came out of the hat first and I planned a visit to the Grand Canyon where alleged Precambrian brachiopods had been found in the 1880s, though the locality had not been visited since then. In 1966 Bill Breed and I were able to relocate them. But my visit to the bottom of the Grand Canyon failed to reveal any fossils comparable to those at Charnwood Forest: it later turned out that these strata were too old (around 800 million years). The alleged brachiopods turned out to be nothing of the sort. They were the mega-microfossils

(acritarchs) but their name *Chuaria circularis* has stuck. The same rocks yielded numerous organic-walled microfossils, but that is another story.

Age determinations raise uncertainties about the Charnian fossils, but the consensus is that the fauna ranges from about 575–550 million years old, i.e., very latest Precambrian (= Neoproterozoic). Recently Ediacaran has been formally recognized as a geological period of equal status to Cambrian etc. Subsequently other fossil impressions have been found at other localities in Charnwood Forest and many others have been found overseas so that the list of Ediacaran fossils now runs to more than a hundred species. Few show any clear relationship to the much better known Phyla of Cambrian and later rocks, so it raises questions of whether the Ediacaran fauna became extinct or evolved rapidly. There is also a question of their relationship to 'snowball Earth' when virtually the whole planet was allegedly frozen and glaciated between around 800 and 600 million years ago. Did the Ediacaran fauna evolve from microfossils suddenly on deglaciation, or will pre-glacial examples be found one day?

Trevor D. Ford, Leicester

The Geological Institute of Romania (GIR): A Century of Research and Survey

The Geological Institute of Romania (GIR) was established in 1906, through a Royal Decree of Carol I. The GIR succeeded the Geological Bureau, which functioned between 1882 and 1889. The Geological Bureau was the first institution attempting to conduct a geological survey of Romania. As the major national institution of research and surveying, the GIR was preceded only by the Central Meteorological Institute, established in 1885. A report signed by the famous Popovici Hatzeg, in 1902, stated the necessity to create the GIR as an institution.

Establishing the GIR was understandable at the time, but was not the first exploit in Romanian geology. The first geological course in Romanian was given by Ion Ghika at the "Academia Mihaileana" in Iasi in the years between 1840 and 1843. The setting up of the first Chair in geology at the University of Iasi occurred in 1860, followed by one in Bucharest in 1864. The first geological paper published in Romanian was written by Cobalcescu (1862) and the first geological map on the Romanian territory was produced by von Hauer and Stache (1863). The establishment of the Geological Institute of Romania was an important Romanian achievement, since few other countries (i.e., the Austrian, British, French, and Russian Empires) preceded Romania in having such institutions. The Geological Institute of Romania developed skills in solving problems related to survey activity and to basic research, but also succeeded in preserving the geological patrimony.

Establishment of the GIR was the consequence of the growth in knowledge of the Romanian underground, and of the social need related to the bloom of the mining and drilling industries. The primary task for the GIR was carrying out geological mapping of the country. The institution was conceived as an instrument to assure a strategic approach to Romanian geology.

The GIR's first exploits were wide-ranging. It helped in the organization of the International Petroleum Congress (1907), defined and documented piercing folds (Mrazec, 1907; 1927; 1935), outlined the nappe structure of the South Carpathians (Munteanu-Murgoci, 1910), elaborated the theory of catalytic petroleum cracking (Edelcanu, 1912), and consolidated the public image of the institution, which was perceived as the primary institution in earth sciences research.

After the First World War, the GIR was confirmed as the leading institution in geological cartography, but also in the development of several fields in the basic sciences of mineralogy, paleontology, petrology, stratigraphy, sedimentology, paleobotany, soil sciences, etc. After a stagnation period caused by the Second World War, the GIR was disbanded in 1950, and its buildings, laboratories, and collections were taken over partly by the Geological Committee and partly by the Geological Enterprise for Prospecting.

Re-established in February 1960, the Geological Institute of Romania reprised its role in geological mapping, having as important outputs the geological maps of Romania at the scales of 1:1,000,000, 1:200,000 (51 sheets), and 1:50,000 (140 sheets). Also produced were the tectonic, metallogenetic, mineral resources, and soil maps of Romania at 1:1,000,000, as well as a lot of specific geophysical maps at different scales. Exploits in the fields of various base sciences in geology, such as the early acceptance of the plate tectonic concept to explain Romanian geology (Radulescu and Sandulescu, 1972) or the theory of polymetamorphic events in metamorphic terrains (Bercia, 1974) consolidated its position as a leader in geological sciences.

In 1974, by joining the Institute of Applied Geophysics, the GIR was renamed the Institute of Geology and Geophysics. This name was kept until early 1994, when the institution regained its initial name. It was a period of centralization of the research activity in geology, initiated by the absorption

of the Geological Section of the Institute of Geology and Geography of the Romanian Academy. This period was followed by the departures of two research collectives which formed new research institutions: the Department of Seismology, in 1977, which formed the current Institute of Earth Physics, and the Department of Marine Geology, in 1994, which founded the present Institute of Marine Geology and Geo-ecology. During the last decades of the twentieth century, the Geological Institute of Romania developed skills in solving the problems related to survey activity and to basic research, but also in preserving the country's geological patrimony.

The historical building of the GIR, on Kiseleff Boulevard, build in 1906–1908, under the direction of the famous architect V. Stefanescu, now hosts the Geological Museum, which was opened to the public on 10 April 1990. Monumental collections, reaching more than 72,000 specimens, from which about 6,500 are exposed in thirty-three exhibition rooms, represent a treasure of both scientific and esthetical interest. The scientific administration of the National Core Repository, hosting more than 60 km of systematized cores, pertaining to about 800 boreholes, is another valuable patrimonial activity.

A huge library, the National Geological Library, includes about 300,000 volumes. It is the largest library of this kind in Romania, but also in Southern and Central Europe. As well as containing the documentary archives, with more than 38,000 unpublished reports and studies, the library increases the patrimonial role of the Geological Institute.

The recent adhesion to the EuroGeoSurveys organization, in February 2006, consolidated the GIR's image. Managerial priorities, such as staff recruiting, optimizing and stabilizing on-going operations, improving the analytical and logistical facilities, and expanding international cooperation have profited from the merger.

The Geological Institute, relying on people and generations, has created a team spirit and a strong desire to follow the path opened by the remarkable personalities that marked the history of the institution: the former directors Ludovic Mrazec, I. Popescu Voitesti, Gheorghe Macovei, Miltiade Filipescu, Grigore Raileanu, Iosif Bercia, but also T.P. Ghitulescu, I. Gavati, Sabba Stefanescu, and so many others.

(The commentary above is a shortened version of a presentation given by Stefan Marincea, of the Geological Institute of Romania, in 2006.)

Hutton's Edinburgh

A website of potential interest to many readers of this newsletter concerns James Hutton (1726–1797), his historically-rich home of Edinburgh, and elements of the Scottish Enlightenment. All of that has been summarized in an article by Donald B. McIntyre, previously published in *Earth Sciences History*. The article is available, with permission from *ESH*, on Donald's website www.mcintyre.me.uk in a .pdf version that contains March 2007 updates in formatting and presentation. Once in the site, go to "Geology" and then "James Hutton's Edinburgh," clicking on the .pdf site if desired. The current .pdf version of the original 57-page paper is searchable for names and topics.

Histoires de la Terre

A conference on *Histoires de la Terre* was held at the University of Sheffield (UK) during early April 2007. One aim of the session was to bridge the gap between the humanities and the sciences. The conference investigated how Enlightenment and post-Enlightenment work in the earth sciences impacted French and Francophone literature. A fuller report is anticipated for next year's *INHIGEO Newsletter*.

A Link to the Complete Works of Charles Darwin and a Spanish Vision of Creationism and Evolution

One of our evolutionarily-attuned INHIGEO members, Leandro Sequeiros (Granada, Spain), notes that the readership of this newsletter might wish to visit a fine website featuring "The Complete Work of Charles Darwin Online." The site is <http://darwin-online.org.uk>. It is currently operational and is a rich source of Darwinia.

For a Spanish vision of "Creation without supernatural connotations: the idea of creation and evolutionary thinking during the nineteenth century," Leandro Sequeiros calls attention to the article (p. 143–156) by Dr Miquel de Renzi (Valencia University), in Molina, Carreras, and Puertas (eds), 1998, *Evolucionismo y Racionalismo*, published in Zaragoza by the Institución 'Fernando el Católico' (C.S.I.C.). If you would like a copy you may write to miquel.de.renzi@uv.es

En Busca del Fénix—An Overview of Science in Latin America

For those who may be interested, the book *En Busca del Fénix: La ciencia y su historia en América Latina* was freely available as a pdf download from <http://www.ictal.org/docs/downloads/rfernos/Fenixb.pdf>. Please note that the link may be inoperative by the time you receive this newsletter, but a hardcopy version can still be acquired. The book is a general history of science survey, from the Mesoamerican period until the present. The pdf version contains 392 pages, while the book format (available from Amazon or Barnes and Noble) has 480 pages.

Boletín de la Comisión de Historia de la Geología de España

Anyone with interests in the history of geology in Spain is directed to the *Boletín de la Comisión de Historia de la Geología de España*, produced by the Sociedad Geológica de España. The informative and illustrated bulletin is under the direction of INHIGEO member Leandro Sequeiros (Granada). Inquiries can be made to lsequeiros@probesi.org.

History of Science in Southeastern Europe

Editors Yannis Karas and Efthymios Nicolaidis have developed an attractive and informative newsletter of possible interest to members of INHIGEO. The newsletter presents an overview of history of science being done in the countries of southeastern Europe. It is published under the auspices of the National Hellenic Research Foundation (INR) and the National Observatory of Athens (IAA). Current and past issues may be consulted by going to www.eie.gr/hasi, associated with the Hellenic Archives of Scientific Instruments. Click on "Newsletter" under the "Information" heading. The newsletter is also available in printed format (contact Professor Nicolaidis at enicola@astro.noa.gr). The issue for February 2007 (No. 9; sixteen pages) includes discussions of such topics as the Museum of the Observatory in Athens, notions of physics in natural philosophy, Ottoman natural and applied science, a Turkish website in history of science, a number of articles concerning the history of Greek science, a commentary on the history of science in Croatia, and reports of activities of the IUHPS/DHST (International Union of the History and Philosophy of Science/Division of History of Science and Technology).

50th Anniversary of IHEG and 80th Birthday of Academician Zhang Zonghu (16 June 2006, P. R. China)

The Institute of Hydrogeology and Engineering Geology was established in 1956, in Beijing, under the Ministry of Geology. In 1965, it was relocated to Zhengding county (northern suburbs of Shijiazhuang city, capital of Hebei province). At the end of the 20th century, it was renamed the Institute of Hydrogeology and Environmental Geology (IHEG) under the Ministry of Land and Resources. During the past 50 years, the Institute has produced outstanding achievements in many areas of investigation and research, such as regional hydrogeology, groundwater resource evaluation, hydro-geochemistry, geothermal research, isotopic hydrogeology, loess deposits and climatic change in the Quaternary, urban geology, groundwater development for agriculture, etc. It is the leading research institute in hydrogeology, engineering geology, and environmental geology in P.R. China.

Academician Zhang Zonghu served as Director of this institute in the 1980s. He was born in 1926, in Hebei province. He is a specialist in the fields of Quaternary geology, hydrogeology, engineering geology, and environmental geology. He is Chief Editor of the "Map of Quaternary Geology of China and adjacent areas" (scale 1:2,500,000; published in 1990) and author of several monographs on loess deposits in China. He was elected as a member of the Chinese Academy of Sciences in 1980, and a member of the Chinese Academy of Engineering Sciences in 1993. Zhang has been working with the IHEG for 50 years, since its establishment.

On 16 June 2006, in Zhengding, more than 100 guests (including former staffs of the institute) attended the ceremony, which included scientific reports, exhibitions, and other activities. Two books were published before this ceremony: one dedicated to the Institute (technical and commemorative papers); the other to Academician Zhang Zonghu (historical photos are included). All attendants hope for further prosperity of the Institute and for a long life of Academician Zhang Zonghu, the leading scientist of this Institute.

JI Chuanmao, Beijing

German Society for History of Geophysics and Cosmical Physics

A society for the history of geophysics and cosmical physics has been founded. The society published a journal entitled *Contributions for the history of geophysics and cosmical physics*, which is open to all authors. It is a discussion forum for the interdisciplinary discussion of problems in history and philosophy of geosciences and its sub-disciplines. Topics can include solar-terrestrial physics and its special problems in development and history, as well as space physics.

A recent volume has been published under the title *Pathways to Science* and includes authors such as Sir Ian Axford, Syuin-I. Akasofu, Sir Allan Cook, David Oldroyd, Giovanni Gregori, Helmut Moritz, formerly president of IUGG, and many others. The authors described how they made their way to science, especially to geophysics. A further study dealt with the aurora of 17 March 1716 and includes the original text by Ch. Wolff, G. Langhaußen, and C. Kirch.

Another purpose of the commission is to collect old instruments, biographical notes, scientific correspondence (e.g., selected letters of the seismologist Emil Wiechert with Hendrik A. Lorentz [Nobel Laureate] and Arnold Sommerfeld [theoretical physicist]). Accounts of Wiechert's contributions have been published by Wilfried Schröder (*Archive Hist. Ex. Science*, 1982ff) and a comprehensive book on the life and work of Wiechert has been published by Wilfried Schröder (*Emil Wiechert: Geophysicist, Physicist and Organizer in International Science*, 2000; see also: <http://verplant.org/history-geophysics/Wiechert.htm>). Another topic is the research on the German-American relations, e.g., the cooperation between Bauer and Wiechert and others. Parts of the work of Hans Ertel, the founder of the well-known "Ertel's Potential Vorticity" and other leading results in geophysical hydrodynamics have been published, which includes his classical works on the potential vorticity and its application in geophysical hydrodynamics, the Ertel commutative formulae, the Ertel potential theorem, etc. His work in physical oceanography, physical hydrography, coastal research, and theoretical geomorphology will be published as soon as possible (for more about Ertel, visit http://verplant.org/history-geophysics/hans_ertel.htm). Another point is the development of the ideas of the International Geophysical Year (IGY), the discussion and cooperation between Bartels and Chapman, the influence of Bjerknes, Ertel, Nicolet, Berkner, Coulomb, and others, evidencing the world-wide cooperation and interchanges during the first and second international polar years. Chapman was mostly interested in auroral data from middle and low levels and since the IGY work on this topic has increased (Chapman, Paton, Hoffmeister, Schröder, and others). A special study is under preparation, including the aspects of increased airglow and noctilucent clouds. The work by James Paton and the German Cuno Hoffmeister has been studied, including developments made by the research of Fogle, Chvostikov, Schröder, Saronov, Vasilyev, Villman, and Witt. Also, ideas about the solar wind, from the data collected by Hoffmeister from comet tail measurements, and later conclusions by Ludwig Biermann, are studied and will be published in the journal of the commission.

The lives of other German geophysicists have also been recorded, including Julius Bartels, Ludwig Biermann, Hans Ertel, Max Eschenhagen, Leonhard Euler, Wilhelm Foerster, Carl-Friedrich Gauß, Beno Gutenberg, Carl-Friedrich Gauß, Hermann von Helmholtz, Cuno Hoffmeister, Alexander von Humboldt, Johann von Lamont, Helmut E. Landsberg, Otto Jesse, Adolf Schmidt, Wilhelm Weber, Alfred Wegener, and others.

The commission published the journal *Beiträge zur Geschichte der Geophysik und Kosmischen Physik* (*Contributions for the history of geophysics and cosmical physics*) which contains papers in English, French, and German. The last books are *Lectures in Geophysics and Physics* (with a paper by D.K. Cole), *Meteorological and Geophysical Fluid Dynamics* (a book to commemorate the anniversary of the birth of Hans Ertel), *Einstein and Geophysics*, and a discussion volume on *Natural Science, Philosophy and Religion*. Wilfried Schröder has published a book on *Case studies on the Spörer, Maunder and Dalton Minima* (2005).

The society welcomes comments, suggestions from all colleagues. Contact Wilfried Schröder, Geophysical Commission, D-28777 Bremen, Germany <Geomoppel@t-online.de>

The Leibniz Society

The *Leibniz Sozietät* was founded in 1993 by members of the Academy of Sciences in Berlin. They see their work as continuing the tradition of the old Berlin Academy of Sciences. One of the main areas of work is historical research in the history of the Berlin Academy and the different disciplines. During recent years the Sozietät has held some international conferences on such topics as Albert Einstein in Berlin and Immanuel Kant. The 300th anniversary of the Berlin Academy was commemorated, as was the birthday of Professor Hans-Jürgen Treder, who is a specialist in history of

science and physics. A meeting was arranged in 2006 for Peter Bormann which also included topics from Geology. Material from that meeting will be published in *Sitzungsberichte*. For 2007, meetings are planned on the International Geophysical Year, 50 years ago, and on international rocket and satellite programs and their application since the IGY.

The *Leibniz Sozietät* published *Sitzungsberichte* and *Abhandlungen*. The journal *Leibniz intern* is published quarterly, and it can be ordered from leibniz-intern@leibniz-sozietat.de. The publications are published by the Trafo Verlag, Berling (www.trafoberlin.de). The homepage of the Society is <http://www.leibniz-sozietat.de>.

The current president is the astronomer Professor Dieter B. Herrmann and the past-president is philosopher Professor Dr Herbert Hörz.

Wilfried Schröder, Bremen

The Varying Sun

At the European Geological Union (EGU) Assembly, to be held in Vienna, Austria, in April 2007, we hope to have a session on "The Varying Sun." Potential topics include: solar minima; length of solar cycles; sun models and theories; auroras and geomagnetic data during solar variable times, and climatological studies. Oral and Poster presentations are possible. Please consult the EGU web page for details. This note has been supplied by Wilfried Schröder, Geophysical Institute, Hechelstrasse 8, D-28777 Bremen, Germany (Geomoppel@t-online.de). All specific questions about the meeting should be addressed to Christine Amory-Mazaudier (France) (christine.mazaudier@cetp.ipsl.fr). Persons interested in the general topic of the varying sun should be aware of the book by Wilfried Schröder, *Case studies on the Spörer, Maunder and Dalton Minima*, published in Bremen, 2005.

Four Centuries of Geological Travel: The Search for Knowledge on Foot, Bicycle, Sledge and Camel

Patrick N. Wyse Jackson (ed.)

Forthcoming from the Geological Society of London, this volume is to be published as one of the Geological Society Special Publications series. It will appear in August or September 2007. It contains twenty-eight papers presented at the INHIGEO symposium held in Dublin in July 2003. Copies will be sent to all the delegates who attended the Dublin meeting. Following publication, others may order copies direct from the Geological Society of London's on-line bookstore: <http://geolsoc.org.uk/bookshop>.

Because the book summarizes an INHIGEO event and includes many INHIGEO authors, we (Patrick Wyse Jackson, as Book Editor, and Ken Bork, as *Newsletter* Editor) are providing here a full preview of the Contents of the Special Publication.

Introduction

Patrick N. Wyse Jackson: Global peregrinations: four centuries of geological travel.

Instructions for geological travellers

Ezio Vaccari: The organized traveller: scientific instructions for geological travels (18th–19th centuries).

Britain

Ellen Tan Drake: The geological observations of Robert Hooke (1635–1703) on the Isle of Wight.
Christopher J. Nicholas and Paul N. Pearson: Robert Jameson on the Isle of Arran, 1797–1799: in search of Hutton's 'Theory of the Earth.'

Europe

Marianne Klemun: Inscription and fact: 18th century mineralogical books based on travels in the Habsburg regions, the Carpathian Mountains.

Claudia Schweizer: Geological travellers in view of their philosophical and economical intentions: Johann Wolfgang von Goethe (1749–1832) and Caspar Maria Count Sternberg (1761–1838).

Kenneth L. Taylor: Geological travellers in Auvergne, 1751–1800.

Dennis R. Dean: J.D. Forbes and Naples.

Martina Kölbl-Ebert: The geological travels of Charles Lyell, Charlotte Murchison and Roderick Impey Murchison in France and northern Italy (1828).

Ana Carneiro: Sharing Common Ground: Nery Delgado (1835–1908) in Spain in 1878.

Patrick N. Wyse Jackson: Grenville Arthur James Cole (1859–1924) the cycling geologist.

Greenland

Alfred Whittaker: The travels and travails of Sir Charles Lewis Giesecke.

Russia and the Caucasus

Friedrich Naumann: Alexander von Humboldt in Russia: the 1829 expedition.

Eugenij E. Milanovsky: Hermann Abich (1806–1886): “the father of Caucasian Geology” and his travels in the Caucasus and Armenian Highlands.

Africa

Philippe Taquet: On camelback: Rene Chudeau (1864–1921), Conrad Kilian (1898–1950), Albert Felix de Lapparent (1905–1975), and Theodore Monod (1902–2000), four French geological travellers across the Sahara.

Ursula B. Marvin: Théodore Andre Monod and the lost Fer de Dieu Meteorite of Chinguetti, Mauritania.

Atlantic islands

Leonard G. Wilson: The geological travels of Sir Charles Lyell in Madeira and the Canary Islands, 1853–54.

Manuel S. Pinto and Annette Bouheiry: The German geologist Georg Hartung (1821–1891) and the geology of the Azores and Madeira islands.

Paul N. Pearson and Christopher J. Nicholas: Charles Darwin’s geological observations at Santiago (St. Jago), Cape Verde Islands.

North America

Robert H. Silliman: Naturalists from Neuchâtel: America and the dispersal of Agassiz’s scientific factory.

Antony R. Orme: Clarence Edward Dutton (1841–1912): Soldier, Polymath, and Aesthete.

David A.E. Spalding: Two Tyrrells cross the Barren Lands of Canada: 1893.

South America

Silvia F. de M. Figueirôa, Clarete P. da Silva and Ermelinda M. Pataca: Investigating the colonies: native geological travellers in the Portuguese Empire in the late 18th and early 19th centuries.

Sandra Herbert: Doing and Knowing: Charles Darwin and other travellers.

The antipodes

Wolf Mayer: The quest for limestone in colonial New South Wales, 1788–1825.

David Oldroyd: In the footsteps of Thomas Livingstone Mitchell (1792–1855): soldier, surveyor, explorer, geologist, and probably the first person to compile geological maps in Australia.

Mike Johnston: 19th century observations of the Dun Mountain Ophiolite Belt, Nelson, New Zealand and trans-Tasman correlations.

Japan

Michiko Yajima: Franz Hilgendorf (1839–1904) introducer of evolutionary theory to Japan around 1873.

Geophysical travellers

Gregory A. Good: Geophysical travellers: the magneticians of the Carnegie Institution of Washington.

The INHIGEO Virtual Library: The Project and a Call for Contributions

This project was conceived by Professor Nicoletta Morello in 2005 in order to establish a new INHIGEO virtual library in Genoa in collaboration with the Department of Modern History of the University of Genoa and the Institute of History of the Mediterranean Europe of the CNR (Italian National Research Council). This project has now been taken over by Professor Ezio Vaccari, together with the librarian and researcher of the CNR section located in the University of Genoa, Dr Grazia Biorci, for continuing Nicoletta’s work in this area.

The institutions now involved are the Genoa section of the Institute of History of the Mediterranean Europe (ISEM) and the Main Research Center (ARIGE) of the CNR in Genoa, the Department of Modern History of the University of Genoa (DISMEC) and the Department of Computer Science and Communication (DICOM) of the University of Insubria (Varese, Italy)

The aim of the project is to create an on-line database of the publications of INHIGEO members, according to the following standards for cataloguing and classification: ISBD (International Standard Bibliographic Description), RICA (Italian Regulations of Author Cataloguing), Library of Congress, Dewey decimal classification. The database will be a sub-database of the on-line catalogue of the ISEM Library in Genova (specialized in history of technology and history of science) and will provide a *document delivery* service, only of the INHIGEO material. The database, which has been realized by Dr Roberto Di Cintio and Dr Roberta Maggi (ARIGE), will be separate from the main

database of the ISEM library with appropriate *tags*. However, subject searches for monographs and periodicals of reciprocal interest may be recovered from both databases. The on-line catalogue of the ISEM Library in Genoa may be consulted at the following address:

http://bibliocnr.area.ge.cnr.it/cataloghi/isem_ge/.

The project will be realized in three different phases:

First phase: Collection of the material.

This first phase implies the effective help of all the INHIGEO members who are interested in having their publications shown and made available to other researchers and experts.

Members will be asked to send, in digital format if possible, articles, books, catalogues, and whatever material they may think worthwhile to be collected and shared within a specialized virtual library on the history of geology. However, printed papers and books will also be very much appreciated and will be part of a planned special section of the ISEM Library in Genoa.

It would be useful if INHIGEO members also include a short abstract relative to each publication they send, which then may be consulted directly on-line within the catalogue record.

Second phase: Cataloguing of the material.

The publications will be catalogued using the same system of the ISEM Library in Genoa (catalogue records with PDF files of indexes and abstracts) and they will have an identification *tag* so that only these articles and essays, may eventually be sent electronically to other members of INHIGEO in *full text*. The catalogue will be put on-line with the creation of a link within the INHIGEO web-page c/o IUGS web-site and later within the official INHIGEO website, when it is established. The official language of the catalogue will be English. The catalogue will be constantly updated, particularly in relation to the annual publication of bibliographical lists given in the *INHIGEO Newsletter*.

Authorization from the author will be required before material is made available on the *document delivery* service.

Third phase: Realization of the *document delivery* service.

Once all the material sent by INHIGEO members has been collected, organised and catalogued, the library will be able to offer a *document delivery* service. Requests will only be accepted via e-mail or through the website from INHIGEO members or scholars presented by a member.

Articles and short essays will be delivered weekly by e-mail. It will not be possible to send entire books, but only a maximum of 20% of the pages of a volume (according to Italian copyright laws).

It is hoped that within a couple of years, the library will work efficiently and will consist of approximately 1,500 catalogued publications and 20–50 documents delivered per month.

The organization and maintenance of the website will be done by the permanent staff of ISEM (Grazia Biorci) and ARIGE in Genoa, with the collaboration of DISMEC and DICOM (Ezio Vaccari). The cost of the initial elaboration of received data, with the temporary employment of a Ph.D. student in history of geology, will be covered by some existing CNR funds. However, further funds will be found to cover the other stages of the project, in the form, for example, of short fellowships. Graduating students may also complete their *stage* requirements by working on the project, which does not require external funding.

External funding institutions, such as Italian Banks and Foundations, are being contacted. However, any financial contributions from INHIGEO or other related associations (IUGS, IUHPS, . . .) would obviously be welcome, since this initiative was started on a volunteer basis.

Ezio Vaccari, Varese

A Message to INHIGEO Members from the Virtual Library Organizers

Dear INHIGEO Member,

We are pleased to inform you that the project “INHIGEO Virtual Library” started in the early months of 2007. All INHIGEO members interested in inserting their publications in the *INHIGEO Virtual Library* are cordially invited to send their works either in PDF format or printed on paper (photocopies are also accepted).

We ask every author to be very precise in sending all the necessary bibliographical information for each paper, book, or article. It is crucial that the following information is clear and complete.

For books and monographs we would ask you to specify:

Title; Name(s) of the author/authors; Name(s) of the editor/editors; Publication year;
Publisher; Publication place; ISBN (if known).

For articles in journals:

Title of article; Journal title; Volume number; Number of issue; Year of publication; Name(s) of author/authors; Publisher; Publication place; ISSN (if known).

For contributions in books or encyclopaedias

Title of article; Name(s) of the author/authors; Name(s) of editor/editors; Publication year; First and last page numbers of article; Publisher; Name of encyclopaedia or Book title.

For book reviews

Title; Name(s) of author/authors; Journal title; Year of publication; Volume number; Number of issue; First and last page numbers of review; Publisher

For conference proceedings and posters:

Title; Name of author/authors; Year of publication year; First and last page numbers; Publisher; Title of conference

For University or Departmental publications:

Title of institution; Title of publication; Name(s) of author/authors; Year of publication; First and last page numbers; Name of publisher; Date of publication

For Technical reports:

Title of article; Name(s) of author/authors; Publisher (university or department); Date of publication; Report number.

The omission of one of the foregoing data may unfortunately invalidate the possibility of insertion of the bibliographic record in the *Virtual Library*. In any case, we will support you by asking for the missing data before recording the publication. All the original papers you may send us will, if you don't wish to have them back, be stored in the ISEM-CNR Library in Genoa.

We should like to inform all INHIGEO members that all the works stored and catalogued within the *Virtual Library* can be delivered only to accredited people (i.e., INHIGEO members) who ask for such service. Nobody will be able to download autonomously any paper from the *Virtual Library* website and the document delivery service will respect the international laws on copyright.

Authors can decide to send abstracts of the works they intend to have collected in the *Virtual Library*. These abstracts will be readable directly in the catalogue card either of the book, journal issue or article etc.

You can find a sample of what has been already recorded in the *Virtual Library* (a portion of Professor Nicoletta Morello publications) by visiting the following website: <http://inhigeo.area.ge.cnr.it>.

If you are interested in participating to this project, please send us your publications.

Please, send to the following address *printed* papers, extracts, books, articles, conference proceedings etc.:

Biblioteca ISEM CNR
c/o DISMEC
Via Balbi 6
16126 GENOVA ITALY

And to the following e-mail address papers, extracts, books, articles, conference proceedings etc. in PDF Format: Fgerali@isem.cnr.it

For any further information please don't hesitate to contact us at the following e-mail addresses: Fgerali@isem.cnr.it; graziabiorci@unige.it

Ezio Vaccari, Grazia Biorci, Francesco Gerali, Genoa (Italy), March 2007

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COUNTRY REPORTS

Australia

The main INHIGEO activity in 2006 for David Branagan was attendance at the Vilnius meeting, where he presented a paper on the Cainozoic in Australia. The field trip was taken through Lithuania, Latvia and Riga, with notice of Australian connections in Latvia and Estonia (work of A.A. Opik) and the brown coal deposits, which interested Australian geologists. A subsequent visit to Poland gave an opportunity to visit the Kosciuszko Monument, related to the work in Australia of P.E. Strzelecki, who

named Australia's highest peak in memory of Kosciuszko. The salt mines near Krakow were also visited—another link with Strzelecki, through the scientists Goethe and Staszic, who influenced him.

Because of interest in the Australian geologist Edgeworth David, following the publication of Branagan's biography in 2005, he gave invited presentations on his life in Sydney, a number of New South Wales country centres and interstate, and spoke on the radio throughout Australia. Papers were also given on the life and work of the geochemist V.P. Sokoloff (1904–1996); the Russian oil and uranium enthusiast Captain Eugene de Hautpik (who visited Australia in the 1920s), and the work of the geologist Alfred R.C. Selwyn in Canada from 1870.

Branagan's main work of the year was the completion of a long paper (jointly with D.R. Moore of the UK) on W.H. Fitton's study of the rocks collected on the expeditions of P.P. King (accompanied by the botanist Allan Cunningham), between 1818 and 1822, relating to the mapping of the coasts of Australia. This has been accepted for publication.

Considerable time was spent on assessing (through a Commonwealth Heritage Grant) the Library of the Royal Society of New South Wales, which owed its origin largely to the efforts of the geologist/mineralogist/chemist Archibald Liversidge (1847–1927). Among the treasures of the Library is an original copy of *Opuscula* (including *De natura fossilium*), a seminal work by Georgius Agricola (Georg Bauer) (1494–1555), one of the 'greats' of Renaissance Science. This volume was published in 1546, some eleven years prior to the posthumous publication of his more famous *De re metallica*.

Barry Cooper (in conjunction with Jim Jago, University of South Australia) has prepared a history of Cambrian investigations in South Australia, with particular reference to biostratigraphy. The study was designed to support the 11th International Field Conference of the Cambrian Stage Subdivision Working Group held in Adelaide, Leigh Creek and at classical Cambrian field locations in the Mount Lofty and Flinders Ranges in South Australia from 14 to 24 August 2006 at the behest of Cambrian Subcommittee of the International Commission on Stratigraphy and supported by the Geological Society of Australia. The research was first presented as a general lecture to conference delegates and to the local community at Leigh Creek, and has been subsequently submitted as a paper in the Conference Proceedings, which will be published as a Memoir of the Australasian Association of Palaeontologists.

Barry has also started research on historic uranium investigations in South Australia, with emphasis on the post-1965 discovery of sedimentary uranium. This study has led to a reassessment of the early history of uranium study in South Australia by scientists such as Douglas Mawson and William H. Bragg, who both later became prominent in other scientific endeavours (polar exploration and X-ray physics respectively). (Incidentally, Gavin Mudd, an Engineer at Monash University, Melbourne, has recently published an excellent review paper on the early history of uranium investigations in Australia in *Historical Records of Australian Science* (2005).)

Barry and Jim Jago also have plans to study the career of Robert Bedford (1874–1951), his contribution on Cambrian Archaeocyatha and his tortuous relationship with Mawson. (Historian Derek Monz is currently investigating Bedford's contribution to the Museum Association of Australia.)

Barry continues his interest in the history of building-stone use in Australia with specific focus on South Australia. Recent research confirms that stone construction in nineteenth-century South Australia, in contrast to other Australian colonies, was facilitated by explicit instructions to the founding colonists regarding building stone whilst the early introduction of the Building Act (1856) prohibited the use of burnable construction materials in early Adelaide.

Ongoing interest occurs in the contribution of the prominent South Australian geologist Reginald Sprigg (1919–1994), discoverer of the Ediacara fauna. As well as those contributions made by other INHIGEO members in Australia, a new biography of Sprigg is in preparation by historian Dr Kristin Weidenbach.

Tom Darragh has been working for the whole of 2006 on the four diaries of the German explorer Ludwig Leichhardt, covering the period December 1842 to July 1844. The draft transcription of the diaries was compared with the originals held in the Mitchell Library and corrections made. The translation was finished and revision started. Research on the people and places mentioned has also begun. All the labels on the plants held in the National Herbarium of Victoria collected by Leichhardt in the period covered by the diaries have been examined and a start made to correlate the plant information with the diaries. Rod Fensham of the Queensland Herbarium has started work on the plants and the Queensland places mentioned in the text.

Wolf Mayer attended, and gave a paper at, the INHIGEO conference at Vilnius. He has been conducting further research into the scientific work of members of the Baudin Expedition, working in

Australian institutions as well as the *Muséum national d'histoire naturelle* at Paris and the *Muséum d'histoire naturelle à Le Havre*. A paper on the work in Australia of two of the expedition members, Louis Depuch and Charles Bailly, was published in the *Travaux du Comité Français d'Histoire de la Géologie* in 2005.

David Oldroyd also attended the INHIGEO conference in Vilnius and is currently co-editing the volume of papers that is to be published by the Geological Society of London as an outcome of the meeting. Following the excursion through the Baltic States, he was fortunate to be able to make an interesting journey in Russia (see p. 22), guided by Zoya Bessudnova (without whom he would surely have got lost). His book *Earth Cycles* was published by Greenwood Press in June, and Turkish and Chinese translations of his *Thinking about the Earth* have appeared recently, both publications being facilitated by INHIGEO Members (Celâl Şengör and YANG Jing-Yi—who undertook the arduous task of producing the Chinese translation), (See p. 56) David has continued to provide considerable assistance to the IUGS's journal *Episodes*. He spent some time on coordinating the writing of an article on the development of seismology from 1755 to 1855, as an outcome of the INHIGEO meeting in Prague, and this should appear in *Earth Sciences History* in 2007. He has been currently worrying his head about the history of the river systems in New South Wales for the 'Vilnius Volume,' but took some 'time off' earlier in the year to write an essay on the current 'history wars' in Australia about the extinction of the Tasmanian Aborigines.

Susan Turner's invited history of the International Geoscience Programme (IGCP) was published by UNESCO in November 2006. This is a summary of work begun in 2002 and further detailed accounts of the various phases of preparatory work before the formal start of the IGCP in 1972 are planned.

With Lithuanian INHIGEO colleague Algimantas Grigelis, she prepared a special essay for the 75th birthday celebration of Dr Valentina Karatajute-Talimaa. Her paper on the Australian women's history was accepted for the Geological Society of London Special publication on the *Role of Women Geologists*, edited by Professor Cynthia Burek and is expected in 2007.

Working in Germany, she had the chance to have discussions with Professor W.-E. Reif and Dr Michael Maisch, and, with the assistance of C.-D. Jung, is preparing a paper on the correspondence between Professor Dr Friedrich Baron Hoyningen (better known as Friedrich Freiherr von Huene) (1875–1969) and the director of the Queensland Museum, Heber Longman (1880–1954), regarding the description of the first dinosaurs from Australia. She hopes to talk about von Huene and Longman at the Eichstätt meeting of INHIGEO in 2007. She also sorted out the whereabouts of the archives of Professor Alfred Eisenack and his correspondence with Isabel Cookson. Eisenack's palaeobotanical microscope was featured in a special exhibition for Museums Day, on the collections of the University of Tübingen museums called '38 Things' (Harms, V., Korff, G. and Michels, A., *Achtund Dreissig Dinge. Schätze aus den Natur- und Kulturwissenschaftlichen Sammlungen der Universität Tübingen*—an exhibition of thirty-eight items in the Kleiner Senatssaal, Neue Aula, 18 May, 2006, Universität Tübingen, 2006).

Sue and David Oldroyd have a paper submitted to a University of Chicago Press volume, *Paleontology at the High Table*, on the significance of the Ediacara fauna and the work of Reginald Sprigg, Martin Glaessner, Mary Wade, and others.

Rowl Twidale has been helping with the editing of the papers for the 'Vilnius volume' and has provided a paper for it on the history of dune studies in Australia.

Report reproduced from *The Australian Geologist*, December 2006:

The Earth Sciences History Group (ESHG) has been located in Melbourne since late in 2002, a period of four years. Five *Newsletters* have been published: No. 32 in December 2002; No. 33 in September 2003; No. 34 in September 2004; No. 35 in April 2005; and No. 36 in June 2006 (see the ESHG web site for further details). At the Australian Earth Sciences Convention 2006 held in Melbourne, in the History and Heritage section on Monday, 3 July, papers with historical content were: David Branagan on 'Alfred Selwyn—The Post-Victoria Years in Canada (1870–1903)'; Guy Holdgate on 'Stirling and the Coaly Coast: The Discovery of Black Coal in Victoria'; John Long on 'Swimming in Stone: The History and Significance of the World Famous Gogo Fish Fossil Sites, North Western Australia'; Doug McCann on 'John Walter Gregory and his 1906 publication *The Dead Heart of Australia*'; Roger Pierson on 'The Bacchus Marsh Council Trench: Its Geological Significance and Recent Conservation'; and Dermott Henry on 'Museum Victoria's Geological Collections: A Community Resource.'

On Sunday, 2 July, the day before the conference and in cold and rainy conditions, *Bernie Joyce* and *Doug McCann* ran a field trip (F6) on 'History, Heritage and Urban Geology of the Inner City of Melbourne and its Northern Suburbs.' Royal Park, just north of Melbourne, is an ideal area to demonstrate the geology of inner Melbourne. The famous Royal Park railway cuttings, dating from 1882, are important in the history of local geology. During the nineteenth century many school and university students, as well as field naturalists and others, made collecting visits to the area with geologists such as T.S. Hall and G.B. Pritchard. The cuttings are now listed geological heritage sites. Details of the area and the cuttings, and reproductions of several original papers and old photographs, were included in a manual which also featured colour geological maps of the area back to the 1860s (see the ESHG web site for details).

The Geological Society of Australia Council also met on 2 July 2006 in Melbourne, and the ESHG Secretary Guy Holdgate attended, in order to represent the ESHG and speak to the Group's detailed report to Council, covering the period from February 2004 at Hobart to July 2006 in Melbourne (see the ESHG web site for the text of the report and a financial statement by ESHG Treasurer Roger Pierson).

David Oldroyd, Sydney

Austria

General remarks

Since the year 1999 a working group for the study of earth sciences history has been active in Austria. This group, the *Working Group for the Study of Austrian History of Earth Sciences*, is part of the Austrian Geological Society (OeGG) but is also supported by the Austrian Society for History of Sciences (OeGW, working group "History of Geosciences") and the Montanhistoric Association for Austria (MHVOe). The presidency of the working group had changed over time, and recently Johannes Seidl (Archives of the University of Vienna) took over the presidency. This INHIGEO report covers 2004 and 2005, which lacked an Austrian summary, as well as 2006.

Activities

I. Conferences

2004: A commemoration ceremony on the occasion of the 90th anniversary of the death of Eduard Suess was held on 26 April 2004, in the festival room of the Austrian Geological Survey in Vienna.
2005: The "8th International Symposium on Cultural Heritage in Geosciences, Mining and Metallurgy (Libraries, Archives, Collection)" was organized together with the "5th Symposium on History of Earth Sciences in Austria" on 7 October 2005 in Schwaz (Tyrol, Austria). About 100 participants coming from twenty foreign countries attended this meeting. An abstract volume containing eighty contributions (oral and poster presentations) was published; a proceedings volume published within the frame of the journal *Geo.Alp* is still in print.

The meeting "Barbara-Gespräche 2005" ('Barbara discussions') was held on 17–18 November 2005 in Payerbach (Niederösterreich, Austria). Special attention was given to Georgius Agricola, whose 500th anniversary of death was celebrated by a series of lectures entitled "History of mining and earth sciences in the 16th century." This conference, which included about sixty participants, was organized by the Payerbach Geo-School, in cooperation with the Austrian Geological Survey and the Geological Service of Niederösterreich. An abstract booklet was provided at the conference.

2006: At the end of 2006, during 1–3 December, the "Working Group for the Study of Austrian History of Earth Sciences" convened its 6th conference. The general title of the symposium was "Eduard Suess (1831–1914) and the development of Earth Sciences over the periods of 'Biedermeier' and 'Sezession'." About 110 persons participated in this conference, which was held at the Geological Survey in Vienna. Twenty-four talks were given and twelve posters were presented. As a special social event a "Barbara Umtrunk"—holy Barbara was celebrated with a drink!—was organized in the reading room of the library of the Geological Survey. On the last day of the meeting excursions visited the archive and collections of the Vienna Natural History Museum and the apartment house of Adalbert Stifter. Prior to the conference a volume containing thirty-six abstracts was printed. A proceedings volume will be published.

II. Lectures

Apart from lectures given at several conferences, the members of the working group also held individual lectures in Austria, which were partially published.

III. Publications of members of the working group

- Cernajsek, Tillfried, 'Die Schloenbach-Reisestipendien-Stiftung: ein wertvoller Beitrag für die geowissenschaftliche Forschung und Acquisition für die Sammlungen der Geologischen Reichsanstalt in Wien,' In: Winkler-Prins, C.F., and Donovan, S.K. (eds), *Proceedings of the 7th International Symposium Cultural Heritage in Geosciences, Mining and Metallurgy: Libraries, Archives, Museums, "Museums and their collections,"* held at the National Naturhistorisch Museum, Leiden (The Netherlands), 19–23 May 2003, *Scripta geologica*, 2004, Special Issue 4, 65–77.
- Cernajsek, Tillfried, 'Dr Friedrich Hans Ucik, 2 Mai 1942–10 November 2005,' *Jahrbuch der Geologischen Bundesanstalt*, 2006, 146/1–2, 23–30.
- Cernajsek, Tillfried and Seidl, Johannes, 'Zur Problematik der Nachlasserschließung von Naturwissenschaftlern: Die Bibliothek der Geologischen Bundesanstalt als Stätte der Nachlassbearbeitung von Geowissenschaftlern am Beispiel von Ami Boué (1794–1881),' In: Cernajsek, T. and Seidl, J. (eds), *Zwischen Lehrkanzel und Grubenhunt. Zur Entwicklung der Geo- und Montanwissenschaften in Österreich vom 18. bis zum 20. Jahrhundert*, *Jahrb. Geol. Bundesanst.*, 2004, 144/1, 15–26.
- Hammer Vera, M.F., and Pertlik, Franz, 'Josef Emanuel Hibsich (*26.3.1852 Homole, Tschechische Republik, † 4.11.1940 Wien), Sein wissenschaftliches Wirken nach dem Ersten Weltkrieg in Österreich,' *Ann. Naturhist. Mus Wien*, 2004, 105 A, 29–44.
- Hammer Vera, M.F. and Pertlik, Franz, 'Karl Hlawatsch (*25.11.1870 Wien, †17.12.1947 Wien): Ein verdienstvoller Mitarbeiter an der Mineralogisch-Petrographischen Abteilung des Naturhistorischen Museums Wien (Eine Biographie mit Schriftenverzeichnis),' *Ann. Naturhist. Mus. Wien*, 2006, 107 A, 1–22.
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- Hubmann, Bernhard, and Cernajsek, Tillfried, *Die Steiermark im geologischen Kartenbild. Begleitheft zur Ausstellung an der Grazer Universitätsbibliothek*, Universitätsbibliothek Graz, 2004, 40 pp.
- Hubmann, Bernhard, and Cernajsek, Tillfried, '175 Jahre geologische Karte der Steiermark,' *Mitt. naturwiss. Ver. Stmk.*, 2005, 134, 5–22.
- Hubmann, Bernhard, Moser, Bernd, Messner, Friedrich, and Erhart, Christoph, 'Kulturgeologie der Stadt Graz,' *Exkursionsführer Pangeo 2004*, *Inst. Erdwiss. Graz*, 2004, 29 pp.
- Jontes, Lieselotte, 'Bergstudenten: Studentenleben im alten Leoben,' *Ausstellungskataloge / Universitätsbibliothek der Montanuniversität Leoben*, 2004, 15 pp.
- Jontes, Lieselotte, 'Die ersten Leobener Studentinnen: ein Beitrag zum Frauenstudium in Österreich,' *Res montanarum*, 2004, 34, 65–73.
- Jontes, Lieselotte, 'Reiselust: vom Reisen in alter und neuer Zeit; Ausstellung in der Gangalerie der Universitätsbibliothek, Juni–September 2004,' *Ausstellungskataloge/Universitätsbibliothek der Montanuniversität Leoben*, 2004, 30 pp.
- Jontes, Lieselotte, 'Georgius Agricola (1494–1555): zum 450. Todestag des Begründers der Montanwissenschaften, Ausstellung in der Gangalerie der Universitätsbibliothek, Oktober bis Dezember 2005,' *Ausstellungskataloge/Universitätsbibliothek der Montanuniversität Leoben*, 2005, 27 pp.
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- Klemun, Marianne, 'Die Gestalt der Buchstaben, nicht das Lesen wurde gelehrt, Friedrich Mohs' "naturhistorische Methode" und der mineralogische Unterricht in Wien,' – Mensch – Wissenschaft – Magie, *Mitteilungen der österreichischen Gesellschaft für Wissenschaftsgeschichte*, 2004, 22 (2002), 43–60.

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- Lobitzer, Harald, Kadletz, Karl, and Schedl, Albert (eds), "'Grenzenlos": Forschungen von Mitarbeitern der Geologischen Reichsanstalt/Bundesanstalt außerhalb Europas,' *Ber. Geol. Bundesanst.*, 2005, 62, 140 pp.
- Pertlik, Franz, 'Die Verdienste von Karl Becherer um die Mineralogie Österreichs. Eine Hommage anlässlich der Vollendung seines 80. Lebensjahres,' *Mitt. Österr. Miner. Ges.*, 2006, 152, 31–40.
- Pertlik, Franz, 'Synopsis der unter der Anleitung von Albrecht Schrauf an der Universität Wien verfassten Dissertationen,' In: Cernajsek, T., and Seidl, J. (eds), *Die Anfänge der universitären erdwissenschaftlichen Forschung in Österreich: Eduard Sueß (1830–1914) zum 90. Todestag.*, *Jahrb. Geol. Bundesanst.*, 2006, 146/3-4, 245–252.
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- Cernajsek, Tillfried, Hauser, Christoph, Vettors, Wolfgang (eds), *8th International Symposium on "Cultural Heritage in Geosciences, Mining, and Metallurgy, Libraries, Archives, Collections" and 5th Symposium on "History of Earth Sciences in Austria," (3–7 October 2005)* Schwaz, Ber. Geol. Bundesanst., Vienna, 2005, 65, 197 pp.
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Documentations

In the years 2004 to 2006 more than two hundred papers on the history of the earth sciences in Austria were published. The abundance of the literature quotations would exceed the extent of the activity report given herein. It may be pointed out that in Austria three bibliographic files deal with science-historical and biographic contents and may be pursued on the InterNet:

1. <http://www.geolba.ac.at> (questions can be addressed directly to HR Dr T. Cernajsek (tillfried.cernajsek@geolba.ac.at))
2. <http://www.uni-klu.ac.at/oehb/> (Austrian historical bibliography: This file covers all historical publications concerning Austria, including history of the sciences)
3. <http://www.unileoben.ac.at/bibliothek> (documentation containing all literature on Austrian mining history; inquiries can be directly addressed to Mrs. HR Dr L. Jontes: jontes@unileoben.ac.at)

Tillfried Cernajsek, Vienna; Bernhard Hubmann, Graz; and Johannes Seidl, Vienna

Belarus

Scientific Conferences

On 2–7 April 2006, in Vienna, the General Assembly of the European Geological Union (EGU) was held. Belarusian scientists presented two reports during the session on the "Precambrian Lithosphere": (1) "The evolution of the high velocity lower crust beneath the Fennoscandia-Samaria Suture Zone (FSSZ), the crust mantle transition, and AMCG-magmatism"; (2) "Structure of the Precambrian lithosphere along the CELEBRATION 05 profile: constraints from geological and non-seismic data." (See: EGU Assembly, Vienna, 2006, *Geophysical Research Abstracts*, Vol. 8.)

Belarusian geologists also took part in the work of the following meetings: (a) The 39th Tectonics meeting on "The Regions of Active Tectogenesis in Contemporary and Ancient Earth History," held in the Geological Department of the Moscow State University, named after M.V. Lomonosov (1–3 February 2006); (b) The 52nd Session of the Paleontologists Society at the Russian Academy of Sciences, titled "Contemporary Paleontology: classical and non-traditional," which was held in Saint -Petersburg (3–7 April 2006); (c) International Scientific-technical Conference on "Oil and Gas of the Arctic," held in Moscow (27–29 June 2006); (d) an international meeting on "Geology, Petrology, Mineralogy and Genesis of Alkaline Rocks" (Miass on the Urals, 18–23 September 2006); and (e) the XVII Scientific Readings were held at the Institute of Geochemistry and Geophysics of the Belarusian National Academy of Sciences, in memory of the outstanding scientist and academician G. I. Goretski.

Jubilees.

In 2006, the Belarusian Geological Society celebrated the following important anniversaries: 75th birthday of geophysicist Dr German Karatayev; 85th birthday of paleontologist Vera Akimets; 75th birthday of geochemist Dr Vladlen Kuznetsov; and the 70th birthday of tectonicist Dr Victor Konishchev.

Publications

A shortened version of the “Decision of the Belarusian Republican Stratigraphical Meeting” was published in the journal *Lithosphere* (Minsk, 2006, Number 1). The full version will be published as a separate edition, together with the stratigraphic schemes, after their being approved.

Memorable dates.

It has been 125 years since the birth of Professor Aleksander Rozin (1881–1942), an outstanding Belarusian geologist, Corresponding Member of the Belarusian Academy of Sciences (1940), and the USSR State Prize winner (1952) for the discovery of potassium deposits on the territory of Belarus. It is also 100 years since the birth of the remarkable geologist Grigory Bykov (1906–1940), who was the discoverer of a big Sokolovo-Sarbayski iron ore basin in North-West Kazakhstan.

The journal *Lithosphere* (Minsk, 2006, Number 2) carried an article by V.A. Ermolenko about Rozin and Bykov.

It has been 95 years since the birth of academician Andrey Trofimuk (1911–1999), a member of the Academy of Sciences of the USSR. He was a prominent geologist and oil-industry specialist on the world scale, three times the USSR State Prize Winner, a Socialist Labor Hero (1941), and the organizer of the exploration of the Western Siberian oil and gas region. An article about Trofimuk was published by academician R.G. Goretski in the journal *Lithosphere* (Minsk, 2006, Number 1).

Losses to science

An outstanding Belarusian geologist, Dr Aleksander Semyonovich Mahnach, died at the age of 88 (17 October 2006). He was an academician of the Belarusian National Academy of Sciences, a Belarusian State Prize Winner, a professor, and had been head of staff of the Institute of Geochemistry and Geophysics of the Belarusian National Academy of Sciences.

Dr Feliks Yulianovich Velichkevich died at the age of 64 (1 August 2006). He was a professor, a biologist, and, as Mahnach, was head of staff of the Institute of Geochemistry and Geophysics of the Belarusian National Academy of Sciences.

Dr Valentin Aleksandrovich Vachrushev, professor of geology at Gomel State University, died at the age of 87.

Valeri Ermolenko, Minsk

Bolivia

Last year, two delayed publications were issued. (1) In the yearbook of *Bolivian Studies, Archives and Bibliography* (edited by the National Archive and Library of Bolivia, in the city of Sucre), No. 11 (corresponding to 2005), the contribution by Carlos Serrano appeared, entitled, “Something else about hospitals in Potosí during the Colonial Period,” together with another 25 different national and foreign authors, who have worked in that repository. Among other works, which are related to the mining activity of the Villa Imperial of Potosí and Charcas, several stand out: Carlos Carcelen’s (Perú) on the indigenous parishes (16th–17th centuries); those of anthropologists José Cruz (Argentina), Pascale Absi (France) and Sergio Fidel (Bolivia), which deal with the occupation of Potosí before the Spaniards’ arrival; that of the French authors Alain Gioda and Pierre Morlon on “Cultural strategies for the mitigation of droughts in the dry Andes”; Bernd Hausberger (an Austrian based in Berlin) comments on the war between Vicuñas and Vascongados (mid-17th century, in Potosí); the Englishman William Lofstrom considers the topic of the documented register of the first foreigners (1732–1848), an interesting contribution on religion and identity in the Villa Imperial; and Martínez (Bolivia) and Vicenta Cortés (Spain) provide a description of the documental funds in the General Archive of Indias in Seville, Spain. (2) The other article was published in *De Re Metallica* (a journal published by the Spanish Society for the Defense of the Geological and Mining Heritage, SEDPGYM) and is entitled, “Pollution problems and health during the colonial period,” dealing with the air, water, and soil pollution due to mining activity in Potosí from a historical point of view, by means of bibliography and data from archives.

From 6 to 9 July 2006, the “First International Congress of Mining and Metallurgy in the Context of the History of Mankind: Past, Present and Future,” took place in the city of Mequinenza, Spain, organized by SEDPGYM. Previously, on 5 July, a geological-mining-metallurgical journey was made by the Priorat to the Mining Museum of Bellmunt. The municipality of Bellmunt was the center of the exploitation of lead that is the most important in Cataluña. The museum is located in the industrial complex of the Eugenia Mine and its aim is to show how the mining was done. The visited mine stands out over the others because of its dimensions—around 14 kilometers of underground galleries and working depths as far as 620 meters. The industrial-mining-metallurgy complex was built

at the end of the 19th century and at the beginning of the 20th century, in order to exploit lead ores (mostly galena). The Eugenia Mine was operated until 1972. After three decades, its museum was opened, with the rehabilitation of some buildings, resulting in 700 meters of galleries adapted for guided visits. During the scientific working days, the program was divided into three sessions: a) The first gathering on 'Pre-Colonial Latin American Mining, Colonial and Republican' (on the 6th and 7th); b) The fourth symposium on 'Historical Mining and Metallurgy of the European Southwest' (on the 7th and 8th); and c) 'Present Mining and the Future of Mining Areas' (on the 6th and 8th). Dr-Ing. Josep Maria Matta-Perello, professor of the Department of Mining Engineering and Natural Reserves of the Polytechnical University of Cataluña in Manresa, kindly invited me to participate in the first session with the paper, "Colonial and Republican Mining in Potosí." The presentation showed the three main stages of the mining activity in Potosí, related to the effects that the industry had on the environment. The chronological space covered in my talk comprises the whole Spanish period of the viceroyalty, closely related to the exploitation of silver (from 1544 to 1825) and its continuation in the Republic, also with silver (1826–1884). The exploitation of tin—at a given time Bolivia was the leading producer in the world of this raw material—and, in a smaller scale, bismuth and wolfram (1885–1985) and finally, the exploitation and treatment of zinc-silver-lead (1986 up to the present time). It must be emphasized that Cerro Rico (Potosí area, Bolivia) is considered as one of the largest deposits in the world, as far as silver is concerned.

Among other interesting contributions at the Congress, pertaining to Latin America, the following can be mentioned: The Unesco-Icomos mission in Potosí (Joseph Matta-Perello of the Polytechnical University of Cataluña/Spain); The mining work in Alto Peru (Bolivia nowadays) during the 16th and 17th centuries (Enrique Orche, University of Vigo, Spain); The History of Mining and the metallurgical processes in Colombia (J.M. Molina and Y. Rodríguez, both members of the National University of Colombia, with L. Betancurth, University of Caldas, Colombia); About a plan of mitigation of the geodynamic risks in the Zaruma, Ecuador, sector (Mesa and M. Vila of the Polytechnical University of Cataluña, Spain); The international conflicts due to the exploitation of geological resources (R. Mata of the Polytechnical University of Cataluña, Spain); The historical evolution of the Venezuelan mining, from the pre-colonial up to the present time (Angel R.P. Paulo of the University of Oriente, Venezuela); Samples of actions on environmental matters and social responsibility in High Andean Mining (Peru) (K. Hueso, consultant); The mining heritage in Mexico (V. Terrazas, architect-landscape painter); The mining of nickel in Cuba: Past, present and future (Roberto Rodríguez, University of Girona, Spain); The metallurgy of gold and silver in ancient Peru (F. Lara); and Indicators of sustainability and geological-mining heritage (Roberto Villas-Boas, coordinator of the CYTED/Brazil). More than thirty contributions were presented in the three sessions by experts from Angola, Bolivia, Brazil, Colombia, Cuba, Spain, France, Italy, Morocco, Mexico, Peru, Portugal, and Venezuela.

A visit in the afternoon on 7 July involved two options: a) A journey along the lignite basin of Mequinenza, visiting the installations of the Ebro Carboniferous Mine S.A.; or b) a journey along the Ebro River in order to see the mining heritage associated with the river. A visit after the congress was held on 9 July to the archaeological zone of Flix and the Venebre, specifically to the pre-historic village of Puig Roig del Roget, a habitat of ancient miners and metallurgists of the 9th to the 7th centuries before Christ. The archaeologist Dr Margarida Genero I Monells captivated the audience with her explanations.

Carlos Serrano, Potosí

Brazil

During the year of 2006 the history of geological sciences kept its rhythm in Brazil. In the post-graduation program of the Institute of Geosciences of the State University of Campinas, two Ph.D. theses on geohistory were accomplished (by Ermelinda M. Pataca and Sandra H. Murriello) and approved. In addition, a number of works were presented in scientific meetings and were published, some of which are cited below:

- Varela, Alex G., "*Juro-lhe pela honra de bom vassalo e bom português*": análise das memórias científicas de José Bonifácio de Andrada e Silva (1780–1819), Annablume, São Paulo, 2006.
- Varela, Alex G., and Lopes, M^a Margaret, 'As Viagens Científicas Realizadas pelo Naturalista Martim Francisco Ribeiro de Andrada,' *Revista do Instituto Histórico e Geográfico Brasileiro*, 2006, *a167*, 9–36.

Figueirôa, Silvia F. de M., “‘Metais aos Pés do Trono’: Exploração Mineral e o Início da Investigação da Terra no Brasil,” *Revista USP*, 2006, 71, 10–19.

The 43rd Brazilian Geological Congress, held in Aracaju (Sergipe state) in September, included amongst its short-courses one specifically concerned with the History of the Geosciences in Brazil. Professor Silvia Figueirôa became Full Professor of the IG-UNICAMP, and was awarded the “Medalla Académica” of the *Sociedad Mexicana de Historia de las Ciencias* for her contributions to the history of sciences, particularly in Latin America.

Silvia Figueirôa, Campinas-SP

Canada

We welcome George Pemberton, our new INHIGEO member. George is Professor of Petroleum Geology at the University of Alberta, and a well-known expert on trace fossils.

S. George Pemberton

Most of my activities are directed towards the history of vertebrate and invertebrate ichnology (animal-sediment interactions). Presently I am working on the early contributions of Swedish geologists (especially Nathorst and Torell) in dispelling the fucoïd theory for the generation of trace fossils. Up until the landmark work of Alfred Nathorst many geologists felt that trace fossils were the fossil remains of algae. Nathorst, working with modern trace makers, was able to show that most of these structures were the product of animal activity.

Work is also continuing on the biography of Joseph F. James, the Cincinnati amateur who can be considered the first trace fossil taxonomist. I am also finishing a project on William Buckland, as the subject of some humorous poems by both his friends and students. The University of Alberta will soon be celebrating its 100-year anniversary and I am planning to write a History of Geology at the University of Alberta to coincide with this centenary. Geology at the University had its start with the hiring of John Allen in 1912. I have already produced a set of posters to honour the Emeritus Professors in the department and these will be used as background for this project.

Two papers have been published, with coauthors, in a volume edited by W. Miller, *Trace Fossils: Concepts, Problems, Prospects*; one on the antecedents of invertebrate ichnology in America, the other on Edward Hitchcock and Roland Bird, and their work on vertebrate ichnology.

Ernst Hamm

During the first seven months of 2006 I was on sabbatical, at Clare Hall, Cambridge University, where I divided my time between several projects, among them a study of the so-called ‘Temple of Serapis’ at Pozzuoli and its importance in the development of eighteenth and nineteenth century geology. The fame of this ruin and its puzzling columns, lined with a broad band of bore holes, rests largely on its depiction and analysis in *Principles of Geology* (and that it is now considered an outstanding example of Bradysseism, or gradual seismic movement). But Charles Lyell was by no means the first to see the ruin as a geological problem, and it continued to attract the attention of geologists, most notably that of Eduard Suess, long after Lyell. I presented a paper on this work, ‘Erudition and Geology: The “Temple of Serapis” Revisited,’ for the Cabinet of Natural History, Department of History and Philosophy of Science, at Cambridge. I also presented ‘Goethe Mines: A Hartz Journey in Winter,’ at Clare Hall.

In between working on Goethe and ‘Serapis’ I made several research trips to the Netherlands as part of a project entitled ‘Science and Dissent in the Dutch Enlightenment,’ a study of the ways in which Mennonites, a dissenting religious minority, were involved in the promotion of science in the eighteenth century. My review of Wolf von Engelhardt’s *Goethe im Gespräch mit der Erde: Landschaft, Gesteine, Mineralien und Erdgeschichte in seinem Leben und Werk* (Böhlaus, Weimar, 2003) appeared in *Earth Sciences History* and my review of Noah Heringman’s *Romantic Rocks, Aesthetic Geology* (Cornell, Ithaca, 2004) was published in *Isis*. After my sabbatical ended I returned to York University in Toronto, and presented two papers on my work on Mennonites and science, one in Cracow at the Second International Congress of the European Society for the History of Science, and another in Vancouver at the History of Science Society Annual Meeting.

David Spalding

I have been completing revision of Bill Sarjeant’s contribution on “The Earliest Discoveries” for the forthcoming new edition of *The Complete Dinosaur*; mainly taking into account Adrienne Mayor’s extensive recent work on First Nations discoveries, published since the first draft was written. I am also preparing part of the introduction to John Lavas’s projected centenary edition of Arthur Conan Doyle’s *The Lost World*, dealing with fictional precursors portraying scientists, scientific expeditions,

paleontology and fictional encounters with “extinct” animals, living and dead. A surprising amount of early fiction on these topics has been discovered (some of which is now available on the web), and fascinating details (new to me, if not to others) such as a direct link between Erasmus Darwin and Mary Shelley’s *Frankenstein*.

Work is also being done on development of a possible documentary/docudrama for television on the Canadian Dinosaur Rush of approximately 1909 to 1917, in which Barnum Brown of the American Museum of Natural History found himself in competition with the Sternberg family collecting for the National Museum of Canada. We are nearing the centenary of the first of these expeditions, in which collection was done from scows built in the town of Red Deer and floated down the Red Deer River. Staff members at the Royal Tyrrell Museum are meanwhile exploring the possibility of recreating one of the expeditions.

I have reported previously on the placement of the late William Sarjeant’s major book and journal collection of the history of the earth sciences in the University of Alberta library. (*Newsletter* 37:75). I am indebted to Peggy Sarjeant and Assistant Librarian Merrill Distad for an update. The collection is no longer in a special room in the Cameron Library, but has been split between the Peel Collection (housing “the truly rare, fragile, and otherwise expensive titles”), while the “more modern and mundane volumes” have been relocated to the book and record depository, known as BARD. A limited edition printed catalogue of the History Science Collection is planned. A new building will succeed BARD in about five years time, and “at that point, the Sarjeant History of Science collection might be reconstituted as a unified entity under one roof.” However, it is still possible to identify books in the collection, as a provenance note attached to each record designates: “William A. S. Sarjeant History of Science Collection.” The library’s web source on the collection may be found at: <http://www.collectionscanada.ca/collections-bin/colldisp/l=0/c=588>.

Two reviews have appeared in volume 25 of *Earth Sciences History* and a paper (which was presented at the 2003 INHIGEO conference in Dublin) on the 1893 Tyrrell expedition through the barrens of northern Canada is now in press, after a change of publisher for the *Geological Travellers* volume (from Pober Publishing to the Geological Society of London).

Gerard V. Middleton

I have continued my work on nineteenth-century stone buildings of Ontario, and have presented papers about this work at the North Central meeting of the Geological Society of America (GSA) and the Annual Meeting of the Geological Association of Canada, but the work is not yet ready for publication. I published an article on Andrew Cowper Lawson in the GSA’s “Rock Star” series.

Compiled by Gerard Middleton, Ancaster, Ontario

China

The 18th annual meeting of the Committee on History of Geology, Geological Society of China, was held at the China University of Geosciences, Beijing, on 11–12 November 2006. The main topic of the annual meeting was “The retrospect of regional geological surveying and the study of geosciences personages in China.” Thirty-six papers were presented and eighty-one delegates attended the meeting. The year 2006 is the 90th year of birth of Professor Wang Hongzhen, Senior Member of the Chinese Academy of Science (MCAS), formerly president of the History of Geology Section, Geological Society of China (HGGSC) and vice president of INHIGEO. Therefore the main topic included “Geoscience Personages,” as the first part of the meeting, in order to celebrate the 90th birthday of Professor Wang. The opening ceremony was chaired by Professor Yu Guang, vice president of HGGSC. Professor Zai Yusheng, MCAS, President of HGGSC, made the main speech, in which he gave a complete account of Professor Wang’s academic activities and his main achievements in various categories of geology. Professor Zai highly appreciated Wang’s noble character and high prestige in virtue and learning. Professor Yang Guangrong gave a talk with the title “Professor Wang Hongzhen’s way of research and academic thinking.” Professor Yu Guang’s talk included an overall retrospect of Professor Wang Hongzhen’s activities in the National University of Peking, while Mr. Shi Baoheng gave a review of the great contributions made by Professor Wang to the Committee of History of Geology, Geological Society of China.

Two publications were published in congratulation of Professor Wang’s 90th Birthday, and were distributed to the participants of the meeting. They are *Selected Poems, Couplets, and Papers of Wang Hongzhen*, compiled by Yang Guangrong, Geological Publishing House, Beijing, 2006, 1–105, and *Earth Science Frontiers*, Vol. 13, No. 6, 2006, 1–334.

Another main topic of this annual meeting was “the retrospect of the regional geological surveying in China.” With the deepening of the Reform and Open policy in China, especially since the beginning of the 21st century, the advanced social and economic development had put forward higher demands for further geological undertakings. To carry out more advanced regional geological surveying is fundamental for the prospecting of mineral and energy resources, protection of the environment, and reduction of geological hazards. All of these are to play decisive roles in the development of the nation and society. Consequently the historic research of the regional geological surveying will provide much to learn from, and will make a good topic of symposia at the annual meeting. Fourteen delegates gave talks at the symposium on regional geological surveying. Cheng Mengxiong, MCAS, reviewed the geological surveying conducted in the Northwest of China in the early 1940s. His talk was entitled “A Recall of the regional geological surveying in northwestern China in the 1940s.” Li Tingdong, MCAS, gave a report entitled “The current state of international geological map compilation and the present trend of its development,” in which he talked in detail about the trend of international cooperation in geological map compilation, and gave a comparison between China and foreign countries. Professor Li Dongxu gave a review on participation of the geological colleges and university departments in the regional geological surveying and the contributions made by them. Ms. Zhang Jiucheng and Mr. Xu Qingqi discussed the achievements of the Sino-Swedish Scientific Expedition in Northwest China during the 1920s and 1930s. They pointed out that the Expedition had made distinguished contributions to the geology of China and produced a profound influence from that time onwards. Mr. Zhang Yichen gave a report entitled “Recent geological surveying in Taiwan,” and mentioned the distinguished contributions to geological studies in Taiwan made by Professors Ruan Weizhou, Bi Qingchang, He Chunsun, and many other geologists.

The participants in the annual meeting are in complete consensus that the strengthening and advancement of regional geological surveying are of vital importance in meeting the need of development of modern China. They also agree that research on the history of geological surveying is of practical significance in this respect and should be promoted to fulfill the demand of the economic development of the society.

It should also be mentioned that on 14 October 2006 the Geological Society of Municipal Beijing celebrated its 70th anniversary of foundation. Mr. Wei Lianwei, President of the Society, made a congratulatory speech. In his speech he highly commended the contributions on basic geological research in the Beijing region, as made by all of the pioneer geologists in the past century since 1912. The speaker strengthened three major aims in the future work of the Society: 1) carry out strictly the scientific viewpoint in development; 2) keep creative and independent and enhance the morality in scientific researches; and 3) provide a new platform for further development of geosciences in the Beijing region.

ZHAI Yusheng (Beijing) and YOU Zhendong (Beijing)

Costa Rica

Gerardo J. Soto has served as Vice-President for Latin America since 2004. His duties have included a frequent communication with the regional members of INHIGEO and with the Spanish committee, in the person of member Leandro Sequeiros, as a bridge between the Spanish-speaking communities. Cooperation with the Board in its business has been active through 2006. Soto published two papers: one related to the history of meteoritical retrievals and anecdotal cases in Costa Rica since 1799 (Soto, 2004), and the other about the contribution of Japanese geoscientists in Costa Rica during the decades of 1960s and 1970s (Soto, 2006), which is the corollary of a speech presented in 2005.

No activities directly related to the history of geology in Costa Rica were performed during 2006. Some talks released during a couple of meetings were related to these topics, however. J.F. Cervantes delivered a speech on ‘Tunnels excavated by the Costa Rican Institute of Electricity: experience through 50 years,’ during the Ninth Costa Rican Seminar on Geotechnics, with a vivid account on the development and evolution of tunnel excavation techniques in Costa Rica (Cervantes, 2006). Also, a colloquium entitled “Conceptions and representations of nature and science” was held during the Third Meeting of Social Studies of Science, Techniques and Environment and the Second-2006 Mini-Congress of the Center for Geophysical Research of the University of Costa Rica (6–8 December). Seven talks were delivered: (1) Natural History in the National Museum of Costa Rica, by Ronny Viales (Costa Rica); (2) Geography and natural history in the exploration of the Mexican territory in the 19th century: Actors, institutions and research objectives, by Luz F. Azuela (Mexico);

(3) The representation of environment and the Central American climate in the works of John Lloyd Stephens and Dana Gardner Munro (1839–1918), by Ronald Díaz (Costa Rica); (4) Geographical and natural research by the Scientific Commission of Pachuca (1864), by María del Consuelo Cuevas (Mexico); (5) From the tropics to the world, Costa Rica in the scientific international networks at the end of the 19th century, by Gabriela Villalobos (Costa Rica); (6) From the “lazy” nature to the “productive” resources: An approximation to the representations of economic value in the 19th-century Costa Rica, the case of foreign explorers (1850–1905), by Anthony Goebel (Costa Rica); and (7) Plants represented in coins, bills and tickets in Costa Rica (1825–2006), by José Vargas (Costa Rica).

Four books related to the history of geology or related topics having a Costa Rican connection were released during late 2005–2006:

1. The book entitled *Market, promoters and work: The iron and steel industry in the Kingdom of Guatemala*, by the Costa Rican historian José Antonio Fernández, published in El Salvador. This work provides a wide account about this almost unknown industry in Guatemala and El Salvador during the 17th–19th centuries, paying much attention to the mining process.
2. Clotilde Obregón's *History of engineering in Costa Rica* also appeared in late 2005, sponsored by the Federation of Guilds of Engineers and Architects of Costa Rica. Among the many chapters, there are important allusions to hydrology and geological terranes, geotechnics related to power-production projects (hydroelectrical and geothermal, mainly), and related to the foundation of huge engineering works, and seismic engineering and seismic codes, in strong and narrow correlation to Seismology.
3. A book on *Karl Hoffman: naturalist, physician and national hero* by Costa Rican entomologist Luko Hilje. The book gives wide attention to the arrival of Hoffman as a referred scientist by von Humboldt, his geological and volcanological observations and written works (mainly on Barva and Irazú volcanoes), and all his role as physician of the Costa Rican military forces who defended from the American invasion in 1856–1857.
4. The book by Patricia Fernández and INHIGEO member Guillermo E. Alvarado on *Craftsmen and stones*, about pre-Columbian stone tools and sculpture in Costa Rica. This high-quality-printed book is well illustrated and pays special attention to the processing of lithic raw materials and the role of Amerindians as “pre-geological” prospectors.

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- Soto, Gerardo J., ‘Meteoritos y meteoros en Costa Rica (verdaderos, posibles y falsos),’ *Revista Geológica de América Central*, 2004, 31: 7–23.
- Soto, Gerardo J., ‘Contribución de geocientíficos japoneses en Costa Rica durante los decenios de 1960–70,’ *Diálogos Revista Electrónica de Historia*, 2006, 7(2), 118–144.

Gerardo J. Soto, San José

Czech Republic

[Please note the following abbreviations of names as used throughout the report: Alena Čejchanová (AC); Josef Haubelt (JH); Jan T. Kozák (JK)]

Papers:

– JK: Special attention was paid to the study of 19th-century efforts of European and American naturalists to establish principles of macroseismic data collection, evaluation, and expression in effective cartographic form using specialized macroseismic maps. Four papers were composed in this field (two of them in cooperation with Czech and Russian seismologists) and published in English in seismological journals. It was shown in these works that key analytical papers were written by R. Mallet, O. Schmidt, A. Petermann, H. Jeitteles, and later by H. Lawson *et al.* In these papers the

principal European earthquakes of the 1850s, and the San Francisco, California, 1906 earthquake, were analyzed and cartographically expressed in a modern way.

Books:

- JK: Two contributions of physical character were published in the monograph *Source Symmetry, Structural and Rotational Effects* (edited by R. Teisseyre, M. Takao, and E. Majewski; Springer Verlag, Berlin, 2006). The monograph is oriented to possible existence of rotational component(s) of seismic waves.
- JK: The book *Iconography of the 1755 Lisbon Earthquake* by J. Kozak, V. Moreira, and D. Oldroyd (edited in 2005) was translated into Portuguese and re-edited in Prague under the title *Iconografia do Terramoto de Lisboa de 1755*.
- JH: In *Wolfgang Amadeus Mozart in the Light of Freemasonry* (in Czech, Prague, 2006), the influence of Ignazius Born on “Masonic” creations of Mozart is analyzed.
- JH: The monograph entitled *Country of [so called] Moravian Gate – following the path of history* (in Czech, Hranice, 2006) describes the cultural scene of this part of Moravia and its changes in the course of last centuries.

Exhibits:

- JK: Gave the opening speech for the exhibit on the 1906 San Francisco Earthquake that was held in the Central Building of the Academy Office in Prague, where the exhibit was held in April–May 2006. The pictorial exhibit was composed of the image-units of the *Kozak Collection* (nisee.berkeley.edu/kozak).

Meetings:

- AC and JK: Took part in the annual 2006 INHIGEO meeting in Vilnius in July 2006. AC presented a paper there entitled “Hindsight for history of Quaternary mapping of the Czech Republic.”
 - AC presented three lectures in January, October, and December 2006 at local workshops, speaking on the assessment and use of the archive geological maps digitized recently by specialists of the Geological Survey in Prague.
 - JH presented his lecture “Trebra, Goethe, Born and Establishment of the Society for Mining Sciences” in the International Symposium entitled “Ignaz Born and the 1st International Mining Society,” Banská Štiavnica, Slovakia, September 2006.
 - JH presented a speech on “Meeting of mining historians in Banská Štiavnica, Slovakia,” in the regional XLV meeting “Mining Příbram,” Příbram, October 2006.
 - JH spoke on “Allenda and the Society for Mining Sciences” at a specialized workshop held at the National Technical Museum, Prague, in November 2006.
 - JH gave a speech on the relation of “Slovak and Saxonian Mining Societies at the turn of the 18th century” at the workshop held at the National Technical Museum in Prague, in December 2006.
- * All four above-mentioned presentations by JH were given in the Czech language and as such they are to appear in the pertinent Symposia Proceedings.

Geological Map Digitizing:

- AC: The state project granted in the framework of the research program of the Ministry of Environment of the Czech Republic (No. ČGS 6353) was completed. Also completed was the final report on digital evaluation of old mining maps and local mine planes from the Archive fond of the Kutná Hora and Prague map-archives. It was published on a CD, together with the series of digitized maps.
- AC: Digitations of the maps of the Austrian Fond of the Viennese Geological Institute were realized in a series of geological maps at a scale of 1:28,000 (so called “Franz 2nd military mapping”) from the deposits of GBA Vienna. The digitized series is available in the Geological Survey Library in Prague.
- AC: Has been cooperating with the Czech Cartographical Society and with the Historical Institute of the Academy of Sciences, in the field of geological mapping history through organizing conferences, seminars, meetings, and consultations.

Jan T. Kozák, Prague

France

In June 2006, the French Committee on the History of Geology (COFRHIGEO) celebrated its 30th birthday during a meeting held in Paris, in our National School of Mines. Just before this meeting, during a short visit to the Collège de France, Jacques Touret presented the terrestrial globe on which had been drawn for Léonce Élie de Beaumont (1798–1874) the great circles of his famous “réseau pentagonal” (cf. *La lettre du Collège de France*, no. 16 (février 2006), p. 31–35).

The annual volume of *Travaux* is currently being prepared. It will include:

- Laurent, G., 'Paléontologie et évolution: la Société géologique de France, espace de liberté.'
- Giusti, C., 'La Science et le Paysage, ou la dernière "leçon" d'Albert de Lapparent (1839–1908).'
- Lagny, Ph., 'Amédée Burat (1809–1883): un grand professeur de géologie appliquée, à l'époque de l'essor industriel de la France.'
- Touret, J., 'Dans l'ombre de ses maîtres: Alexandre-Eugène Béguyer de Chancourtois (1820–1886).'
- Durand-Delga, M., 'Trois essais de tectonique globale avant la lettre: Élie de Beaumont, Eduard Suess et Alfred Wegener.'
- Rat, P., 'Regards sur deux siècles de stratigraphie.'
- Lemoine, M., 'Une science en crise au milieu du XXe siècle, la géodynamique: des géosynclinaux aux océans disparus.'
- Touret, J., 'De la pétrographie à la pétrologie.'
- Roth, E., and Létolle, R., 'Jacques Noetzelin (1898–1972) et la "géologie nucléaire": un pionnier méconnu.'

Some of our members were also active in publishing books. First, the present president of INHIGEO, Philippe Taquet, published the first volume of a well-documented biography entitled *Georges Cuvier: naissance d'un génie* (Odile Jacob, Paris). Second, our COFRHIGEO president, Gabriel Gohau, contributed to *Lamarck, philosophe de la nature*, which is a collection of essays by Pietro Corsi, Jean Gayon, Gabriel Gohau, and Stéphane Tirard (Presses Universitaires de France, Paris).

Jean Gaudant, Paris

Germany

Meetings

The German working group on the "History of Earth Sciences" held a meeting on 29 September 2006 at the Technical University at Braunschweig within the joint annual meeting of the German Society for the History of Science, and the German Society for the History of Medicine, Science and Technology. Within the general topic of the meeting, *Cultures of Sciences—Sciences in Culture*, the German group presented a session on *Stratigraphy as construction of national identity*. Papers were given by Marianne Klemun (Vienna), Norbert Pohl (Freiberg), and Bernhard Fritscher (Munich), with a comment from Staffan Mueller-Wille (Exeter). It is intended to publish the papers this year in the series "Algorismus" of the Munich Institute for the History of Science. INHIGEO members Bernhard Fritscher and Cornelia Lüdecke, together with meteorologist Peter Winkler and geophysicist Jürgen Matzka (both from Munich), and in cooperation with the Geophysical Institute of the Ural Branch of the Russian Academy of Sciences, organized a workshop on the *History of geoscientific research in the Urals*, which was held in Ekaterinburg, on 24–29 January 2006.

INHIGEO member Cornelia Lüdecke organized several further workshops and meetings, such as: (1) a workshop for the "International Polar Heritage Committee" at the "Landesstelle fuer Denkmalpflege im Alten Hof" in Munich, held at the "Schneefernerhaus" on top of the Zugspitze, 3–5 April 2006; (2) the "6th Conference of the History of Meteorology Specialist Group of the German Meteorological Society" on "Das Wetter festhalten - 225. Jubiläum des Meßnetzes der Societas Meteorologica Palatina (1781–1792)" at the Landesmuseum für Technik und Arbeit at Mannheim, 1–2 July 2006; (3) the 2nd Workshop of the Action Group "History of Institutionalization of Antarctic Research" within the Scientific Committee on Polar Research (SCAR) on "Multidimensional exploration of Antarctica around the 1950s" at the Ministry of Foreign Affairs of Chile, Santiago (Chile), 21–22 September 2006; and, (4) together with the "Commission for Glaciology" of the Bavarian Academy of Sciences on "Gottfried Merzbacher (1843–1926) as scientist and mountaineer," at the "Internationales Begegnungszentrum" in Munich, 18 October 2006.

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Further Activities

It might be noted that one of the most helpful institutions for the history of earth sciences, the “Geologen-Archiv” (geologists’ archive) at the University of Freiburg, operated for several years by

Ilse and Eugen Seibold, had its 50th anniversary in 2006. Now available is volume 17 of the *Nachrichtenblatt zur Geschichte der Geowissenschaften*, compiled by Oskar Burghardt, containing a lot of valuable information on what happens in the history of earth sciences in Germany. The volume can be ordered from O. Burghardt, Taubenstr. 47, D-47800 Krefeld-Bochum, e-mail: obu.burghardt@t-online.de. Several lecture courses on the history of earth sciences were given by INHIGEO members Cornelia Lüdecke, and Bernhard Fritscher at the Universities of Hamburg and Munich, respectively.

The help of the German members of INHIGEO in the compilation of this report is much appreciated.

Bernhard Fritscher, Munich, and Martina Kölbl-Ebert, Eichstätt

Ireland

Gordon Herries Davies completed his history of the Geological Society of London, which celebrates its bicentenary in 2007. The book, entitled *Whatever is Under the Earth: The Geological Society of London 1807 to 2007*, was published by the Geological Society of London in March 2007.

Patrick Wyse Jackson's book *The Chronologers' Quest: episodes in the search for the age of the Earth* (Cambridge University Press) appeared in August 2006. During the year he has published a number of short biographical pieces, and has contributed two papers on women in geology to a volume to be published by the Geological Society of London in 2007. A paper on the collections of George Knox (1765–1827), now in Trinity College, Dublin, was published in *The Mineralogical Record*, 37 (6), 2006, 543–551. This paper was first presented at the Dresden INHIGEO meeting about a decade ago. Patrick's edited book *Geological Travellers – the proceedings of the 2003 INHIGEO symposium held in Dublin in 2003* should be published in late-2007.

Paul Mohr is writing the Eritrea-Ethiopia-Somalia chapter for Professor Manuel Pinto's book *A History of the Geology of Africa*, notwithstanding nostalgia for a lost youth.

Patrick Wyse Jackson, Dublin

Italy (2005–2006)

In the Spring of 2005, Ezio Vaccari took part in two symposia near Verona: a) in April he presented a paper on the geological studies by Gregorio Piccoli (1680–1755) at the workshop devoted to the history of natural history in the Veronese Prealps (in Erbezzo, Lessinia), while b) in May he contributed to the symposium on the scientist Gaetano Pellegrini (1824–1833) organized by the Center for the History of Valpolicella, with a paper on "Gaetano Pellegrini and the scientific culture of his time: introductory notes" (published in Italian with the title "Gaetano Pellegrini nella cultura scientifica del suo tempo: note introduttive, in Gaetano Pellegrini geologo, agronomo e paleontologo nell'Ottocento veronese," edited by A. Brugnoli, Verona, Centro di Documentazione per la Storia della Valpolicella, 2006, 13–22). In June, Claudia Principe gave a lecture at the Institut de physique du Globe in Paris, within the seminars of volcanology, on the topic "Vesuvius 1631." In September, both Nicoletta Morello and Ezio Vaccari were invited to the International Meeting "Dark Nature—Rapid Natural Changes and Human Responses," organized at the University of Insubria in Como in collaboration with IMONT, Lombardy Region, APAT – Geological Survey of Italy, PAGES and the Como Municipality. This Congress represented the conclusive event of the ICSU-funded Project "Dark Nature—Rapid Natural Change and Human Responses," awarded to a consortium of organizations headed by IUGS and including IGU, IUGG, INQUA and IGBP. Nicoletta Morello presented a paper on "The 1669 Mt. Etna eruption: scientific and social reactions," while Ezio Vaccari gave an invited lecture on "Natural catastrophic events, historical records and the development of scientific knowledge." Ezio Vaccari was also included in the Scientific International Committee of the 8th Erbe Symposium on "Cultural Heritage in Geosciences, Mining and Metallurgy. Libraries - Archives - Collections" (Schwaz, Austria; October 2005). On that occasion he also presented a paper with the title "From Tyrol to Venice: mining and geology in the papers of Giovanni Arduino (1714–1795)" (in press in the Austrian journal on Alpine geology *Geo.Alp*). In November, Ezio Vaccari was invited to the International Workshop "The First Big Science. European Geological Maps (19th century)," organized by Pietro Corsi and held at the Cité des Sciences et de l'Industrie in Paris, where he presented the following paper: "An Italian-Austrian network: geological surveying and mapping in northern Italy at the middle of the 19th century."

In the autumn of 2005, Stefano Marabini and Gian Battista Vai organized the scientific activity for the Centennial Celebrations of Giuseppe Scarabelli's (1820–1905) death. Scarabelli was,

together with Angelo Sismonda, the leading geologist and geological map-maker of the middle 19th century in Italy. Since 2002 three photostat reprints of Scarabelli's most outstanding works were published with comments and presentations by Marina Baruzzi, Giorgio Bolognesi, Cristiano Guerra, Stefano Marabini, Franco Merlini, and Gian Battista Vai: (1) Scarabelli Gommi Flaminj G., *Stazione preistorica sul Monte Castellaccio*, 1887, 95 pp., 23 pl. (3 col.), Associazione Culturale Scarabeo, Imola, Giornalisti Associati G.S. Editore, 2002; (2) Massalongo, A., Scarabelli Gommi Flaminj G., *Studi sulla Flora Fossile e Geologia Stratigrafica del Senigalliese*, 1859, 506 pp., 46 pl. (1 col.), Associazione Culturale Scarabeo, Imola, Giornalisti Associati G.S. Editore, 2004 (with a paper by G.B. Vai, "Da Brocchi (1814) a Massalongo & Scarabelli (1859) monumenti della pubblicistica geologica italiana nel mondo"); (3) Scarabelli Gommi Flaminj G., *Studi geologici sul territorio della Repubblica di S. Marino fatti nel MDCCCXLVIII*, 1851, 26 pp. (color map and section published 1848), Associazione Culturale Scarabeo, Imola, Giornalisti Associati G.S. Editore, 2005 (with papers by S. Marabini, "Scarabelli e San Marino: uno stretto rapporto" and G.B. Vai, "Una delle prime carte geologiche italiane"). Copies of these volumes are available from the publisher (giorgio.bolognesi@libero.it). The celebrations culminated with an international congress held in Imola on 28-29 October 2005 (the proceedings are published in Baruzzi M. (ed.), *Una vita da scienziato. Carte e libri di Giuseppe Scarabelli nella Biblioteca Comunale di Imola*, Imola, Bim, 2006, 488 pp., which includes papers by G.B. Vai, "A dieci anni dalla pubblicazione della bibliografia critico-scientifica di Scarabelli" (210-214) and S. Marabini, "Un Gabinetto e una Biblioteca" (322-324).

During 2005, Ezio Vaccari completed his study on the history of the 18th-century geological research in the Euganean Hills near Padua ("I Colli Euganei nella storia delle scienze della Terra: episodi settecenteschi," in *I Colli Euganei*, edited by F. Selmin, Verona, Cierre, 2005, 284-286), as well as his papers on Dolomieu ("Dolomieu et les volcans d'Italie," in *Dolomieu et la géologie de son temps* edited by J. Gaudant, Paris, École des Mines, 2005, 87-94), on Goethe ("Tra Nettunismo e Vulcanismo. Gli studi geologici di Goethe e il 'Viaggio in Italia'," in *Arte, scienza e natura in Goethe*, edited by G.F. Frigo, R. Simili, F. Vercellone, and D. von Engelhardt, Torino, Trauben, 2005, 417-446) and on Carlo Amoretti ("I viaggi mineralogici di Carlo Amoretti in territorio lombardo tra Settecento ed Ottocento," in *Pratiche e linguaggi. Contributi a una storia della cultura tecnica e scientifica*, edited by ISEM-CNR, Pisa, ETS, 2005, 251-259).

At the beginning of 2005, under the guidance of Ezio Vaccari, Andrea Candela started a three-year Ph.D. research project on the history of geological sciences in the Lombardian Prealps between the 18th and 19th centuries, with particular attention on the studies on volcanic phenomena. Early in 2006, Francesco Luzzini and Francesco Gerali also started their three-year Ph.D. research projects under the guidance of Ezio Vaccari, respectively on the geological works of Antonio Vallisneri and the figure of the 19th century geologist Giovanni Capellini.

The year 2006 was a devastating one for the Italian community of historians of geological sciences, due to the sudden death of Nicoletta Morello, on April 16. A book in her memory, edited by Ezio Vaccari, which will include the proceedings of a symposium on "Geology and Deluge," as well as some of Nicoletta's unpublished writings, is planned by the end of 2007. In Spring 2006, Ezio Vaccari organized some conferences on the history of mountains at the University of Insubria (Varese); Silvia Metzeltin (University of Insubria) gave a lecture on travellers and alpinists on the glaciers of San Lorenzo in Patagonia; Claudia Principe (CNR, Pisa) presented a paper on geologists on Mt. Somma and Vesuvius during the second half of the 19th century; Paola Giacomoni (University of Trento) spoke on the Romantic re-discovery of the Alps by 19th-century scholars. In April, Ezio Vaccari was also invited to the workshop on the upgrading of Alpine territory and cultural heritage, organized by the University of Insubria in Como (with a paper in Italian on "Scientific-historical knowledge for the upgrading of the mountain areas: an interdisciplinary approach." In June, Ezio Vaccari presented two invited papers: at the symposium on Antonio Vallisneri (1661-1730), organized at the University of Milan, on the topic "Vallisneri and the mountain's structure" and at the meeting on the idea of Atlantis organized at the University of Insubria (Varese) on the topic "Atlantis and the 'revolutions' of the Earth in 18th and 19th century geology." In October, Gian Battista Vai and Ezio Vaccari were invited to give a paper in the session T63 "From the Scientific Revolution to the Enlightenment: emergence of modern geology and evolutionary thought from the 16th-18th century" at the Geological Society of America Annual Meeting in Philadelphia. Vai presented a paper on "The Scientific Revolution and Nicholas Steno's twofold conversion," while Vaccari spoke on "The 'question of fossils' and the history of mountains in 18th-century Italy." Later, in November, Ezio

Vaccari took part to the International Meeting "Scientific exploration in the Mediterranean Region" (organized in Florence and Siena by the Museum of Natural History of the University of Florence, with the Academy of Fisiocritici of Siena and the California Academy of Sciences) with a paper on "Volcanic travels and the development of volcanology between the 18th and 19th centuries." He was also a member of the Scientific Committee of that meeting. The highlight of 2006 was the publication of the volume *The Origins of Geology in Italy*, edited by Gian Battista Vai and Glen E. Caldwell (Special Paper 411, The Geological Society of America, 2006) which includes the following papers (among which several contributions by INHIGEO Italian members): Annibale Mottana on "Italian gemology during the Renaissance: a step toward modern mineralogy"; Nicoletta Morello on "Agricola and the birth of the mineralogical sciences in the sixteenth century Italy, and on "Steno, the fossils, the rocks, and the calendar of the Earth"; David Branagan on "Geology and the artists of the fifteenth and sixteenth centuries, mainly Florentine"; Gian Battista Vai and William Cavazza on "Ulisse Aldrovandi and the origin of geology and science"; Toshihiro Yamada on "Kircher and Steno on the geocosm, with a reassessment of the role of Gassendi's works"; Gian Battista Vai on "Isostasy in Luigi Ferdinando Marsili's manuscripts"; Carlotta Franceschelli and Stefano Marabini on "Luigi Ferdinando Marsili (1658–1730): a pioneer in geomorphological and archaeological surveying"; Giancarlo Scalera on "Mattia Damiani (1705–1776), poet and scientist in eighteenth century Tuscany"; Ezio Vaccari on "The 'classification' of mountains in eighteenth century Italy and the lithostratigraphical theory of Giovanni Arduino (1714–1795)"; Hugh S. Torrens on "The geological work of Gregory Watt, his travels with William Maclure in Italy (1801–1802), and Watt's "proto-geological" map of Italy (1804)"; Renato Funicello and Claudio Caputo on "Giovanni Battista Brocchi's Rome: a pioneering study in urban geology"; and Bruno D'Argenio on "Leopoldo Pilla (1805–1848): a young combatant who lived for geology and died for his country."

At the end of 2006, Ezio Vaccari completed the research project "Biographies and travels—Scientists in the mountains between the 16th and 19th centuries," funded by IMONT (the Italian National Institute on Mountains) within the main project "Archive of Italian mountains" and produced a biographical-bibliographical database of about 100 scientists (mainly geologists) who worked in the Alps and the Apennines. This project was undertaken in the years 2005–'06 also with the collaboration of the Ph.D. student Andrea Candela. Meanwhile, Ezio Vaccari completed his edition of the first volume of the *Viaggi alle Due Sicilie e in alcune parti dell'Appennino (Travels to southern Italy and some parts of the Apennines, 1792–97)* by Lazzaro Spallanzani (Modena, Mucchi, 2006, 472 pp.).

Claudia Principe continued her studies on the recovery and the interpretation of historical sources on Italian volcanoes, particularly on Vesuvius. She published, with other authors, a *Reply to a comment of R. Lanza and E. Zanella on "Chronology of Vesuvius' activity from A.D. 79 to 1631 based on archaeomagnetism of lavas and historical sources"* (in *Bulletin of Volcanology*, 2006, 66, 397–398) and submitted to EOS a paper with Emanuela Guidoboni and Enzo Boschi with the title "New evidence of Vesuvius activity in 1571: a longterm precursor of the great 1631 eruption?"

Ezio Vaccari, Varese

Japan

The Japanese Association for History of Geological Sciences (JAHIGEO) held three meetings in 2006: the first meeting at Hokutopia, Tokyo, on 17 June; the second meeting at Kochi University, on 17 September; and the third and annual meeting at Hokutopia, on 23 December.

The main presentations were as follows: the first meeting had talks by Matsutaro Shibata on "Some problems on the Ginkgo" and by Kanenori Suwa on "Record of the activity of the Nagoya University African Geological Research Project, 1926–2005." Shibata searched for the original correct word of Ginkgo, described by Kaempfer, which had been spelled in several ways (namely Ginkgo, Ginkyo, or Ginkjo), but he could not find any definite answer. Geological surveys were conducted by Nagoya University in thirteen countries of eastern Africa from 1962 to 2005. The surveys were made on the geology of the rift valley, the petrology of mantle-derived rocks, the geology of pre-Cambrian formations, and environmental geology. The results of these studies are presented in *JAHIGEO Newsletter* number 8, 2006.

For the second meeting, at Kochi University, a lecture was presented by Takashi Suzuki on "A brief history of the Geological Department, Kochi University," and Shin'ichi Yoshikura discussed "Geological research and education in Kochi Prefecture."

For the third meeting, at Hokutopia, the following two lectures were given: Takao Nakajin on "Publication of books in relation to foundation of universities," and Yokichi Takayanagi on "Progress of research on foraminifera."

In addition to those lectures, four seminars on the history of geosciences were held by younger members of the Association at Aogaku-kaikan, Tokyo, on 18 March, 10 June, 14 October, and 9 December. The presentations in March were by Satoshi Kazama, "On the process of acceptance of plate-tectonics"; in June by Yutaro Sakakibara on "History of research on calcite and aragonite" and by Kenji Hamazaki on "Is topaz a jewel of the empire?"; in October by Hideo Iwasaki on "Research history on crystal growth since the study by G. Sepezia (1842–1912)"; and in December by Fumihiko Tochinal, on "Technician's ethics in relation to history of earth sciences."

Yasumoto Suzuki, Michiko Yajima, and Toshihiro Yamada attended the INHIGEO meeting at Vilnius, Lithuania, in July 2006. The possibility of hosting a future meeting of INHIGEO in Japan was proposed and thus the INHIGEO members in Japan discussed it on 23 December 2006. More discussions are promised concerning the potential for holding an INHIGEO meeting in Japan.

In 2006, the Japanese Association for History of Geological Sciences issued its Bulletin numbers 26 and 27 (in Japanese) and JAHIGEO newsletter number 8 (in English).

It is very sad news that the active members of JAHIGEO, Drs. Kazuo Okamoto, Isao Imai, and Shinobu Hada passed away on 1 January, 25 March and 1 June respectively.

Yasumoto SUZUKI, Ichikawa, and Hakuyu OKADA, Fukuoka

Lithuania

The Lithuanian members of INHIGEO, Professor Algimantas Grigelis, Dr Gailė Žalūdienė, Professor Algirdas Gaigalas (elected in 2006), and the LOC have organized (1) INHIGEO's 31st International Conference *The History of Quaternary Geology and Geomorphology*, held on 28–29 July 2006 in Vilnius, and (2) a Field excursion on Quaternary and geomorphologic phenomena, held on 30 July–4 August in Lithuania, Latvia, and Estonia. The host institutions were the Lithuanian Academy of Sciences and the Institute of Geology and Geography (Vilnius), the University of Latvia (Riga), Tartu University (Tartu), and the Estonian Academy of Sciences (Tallinn). The Conference was attended by over sixty participants from eighteen countries, representing Europe (Austria, the Czech Republic, France, Germany, Poland, Portugal, Russia, Serbia), the United States, Japan, Australia, and New Zealand. Extended *Abstracts of Papers*, and a *Fieldtrip Guide* were published and given to the participants. Thirty-two author presentations were given in three sessions focused on "Geomorphology," "Theory of Glaciation," and "Regional Aspects." The circular information on the Conference was regularly announced in the journal of the Lithuanian Geological Society, *Geological Horizons*, in *Science News* of the Lithuanian Academy of Sciences, and on the IUGS website: <http://www.iugs.org/iugs/calendar/cal06.htm>. The Conference was supported by the Lithuanian State Science and Studies Foundation. Reports on the Conference are published in the present *INHIGEO Newsletter* (Mike Johnston), an upcoming issue of the IUGS Journal *Episodes* (Ken Bork and Algimantas Grigelis), and *Geological Horizons* No. 4, 2006 (A. Grigelis, K. Bork, Bernhard Fritscher, Vidojko Jovic, Anto Raukas, Philippe Taquet).

Professor Grigelis, Dr Žalūdienė and Professor Gaigalas presented reports on the history of geological sciences at the annual 22nd Baltic Conference on the History of Science, organized by the Baltic Association of the History and Philosophy of Science in Vilnius, 5–7 October 2006. Two meetings of the Lithuanian Ignotas Domeika Society, led by Professor Grigelis, the President of the Society, were held in the Lithuanian Academy of Sciences, Vilnius, on 5 April and 6 December 2006. The activity of the Society is regularly announced on the internet site of the Lithuanian National Commission for UNESCO (www.unesco.lt).

Academician Vytautas Gudelis, famous Lithuanian geologist and geographer, in 2006 published a valuable monograph entitled *Heritage of Marine Toponyms Used by Lithuanian Coast Fishermen*, containing 400 rarely used terms of the Lithuanian seamen and fishermen [Lithuanian = *Lietuvos pajūrio žvejų marinistikos įvardiai*; edited by A. Grigelis].
Miscellaneous matters

Professor Grigelis, the present Chairman of the Section on Geosciences of the Lithuanian Academy of Sciences, provided information in the Academy *Science News* on the national significance of 'The International Year of Planet Earth' declared by the United Nations to be held in 2007–2009.

Professor Grigelis is Editor and Publisher of *BALTICA: International Journal on Earth Sciences of the circum-Baltic States*. Two numbers of Volume 19 were published in English in 2006: No. 1, June, 49 pages, and No. 2, December, 51 pages.

Professor Gaigalas, President of the Lithuanian Nature Society, organized a 75th jubilee Conference of the Society, held on 22 November. He published twenty-seven biographies on Lithuanian scientists in the Universal Lithuanian Encyclopaedia, vol. IX, X, addendum to I-X vols, *Mokslo ir enciklopedijų leidybos institutas*, Vilnius, 2006.

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Algimantas Grigelis, Gailė Žalūdienė, Algirdas Gaigalas, Lithuania

New Zealand

The 2006 year has been a relatively quiet one for researchers into the history of geology, although there has been a continuation of many of the activities reported on for the previous year. Following on from her biography of her father, palaeontologist and conservationist Sir Charles Fleming (1916–1987), Mary McEwen has, with some assistance from the Geological Society of New Zealand, published *Cape Expedition Diary—Auckland Islands 1942–43*. This gives an account of Fleming's time as a coast watcher during the Second World War. He was stationed on the Auckland Islands, located in the Sub-Antarctic Ocean, some 350 km south of the New Zealand's South Island. As well as having ample time to observe the rocks of this volcanic island, Fleming studied the island's flora and fauna and kept a detailed diary of his activities. The two PhD theses referred to in previous reports are nearing completion, namely Sascha Nolden's (University of Auckland) thesis on Hochstetter and, at Otago University, Tony Hocken is writing up his account of Sir James Hector's (1834–1907) life, up to the time he was appointed in 1865 as the inaugural director of the New Zealand Geological Survey. Graham Bishop's biography of the self-taught geologist Alexander McKay (1841–1917) is being edited at Otago University Press, and Mike Johnston's account of the life and times of geologist Edward Heydelbach Davis (1845–1871) is with Nikau Press. Simon Nathan has written several articles on various aspects of the history of geology in New Zealand for the *New Zealand Encyclopedia Online—Earth, Sea & Sky Te Ara*, of which he is scientific editor. Similarly, Mike Johnston and Graeme Stevens have prepared three short accounts of history of geology in New Zealand for inclusion in a forthcoming monograph of the Geological Society of New Zealand.

The year 2007 will mark the 150th Anniversary of the departure of the Austrian frigate *Novara* on the global expedition which brought Ferdinand von Hochstetter (1829–1884) to this country. The voyage also, indirectly, launched Sir Julius von Haast's (1822–1887) career as a geologist. *Novara* celebrations are planned in Europe and will include the publication of an annotated translation of Hochstetter's fifth diary by Leonore Hoke, James Bade, and others. However, in New Zealand it may be more appropriate if the importance of the *Novara* Expedition, and in particular Hochstetter's contribution to science in this country, was acknowledged in 2009, which would be the 150th Anniversary of when he did most of his research here.

The Historical Studies Group of the Geological Society of New Zealand remains active. After reducing to only one Newsletter in 2005, due to its parent body publishing an account celebrating its first 50 years, 2006 saw the *Historical Studies Group Newsletter*, under the continuing editorship of Tony Hocken, return to being issued in March and September. Amongst the approximately 80 members of the group, those actively undertaking research are Alan Mason (on Charles Heaphy and Richard Taylor), Doug Coombs, Bruce Waterhouse, and Jack Grant-Mackie (various aspects of the history of Permo-Triassic geology in New Zealand), Keith Lewis (marine geology), Bob Brathwaite and David Skinner (mining), and Simon Nathan (mining of coal on the South Island's West Coast).

Two members of the group, Simon Nathan and Mike Johnston, attended the annual meeting of the International Commission on the History of Geological Sciences (INHIGEO) held in Vilnius, Lithuania, in 2006.

Mike Johnston, Nelson, NZ

Poland

In 2006 the Polish group of INHIGEO members was increased by the election of three new historians of geoscience. They have already produced significant output in this branch of science. Professor Stefan W. Alexandrowicz is currently studying the history of Quaternary research. One part of his work relates to the pre-World-War-II finding of very well-preserved remains of big Pleistocene mammals in Starunia (Eastern Carpathian foreland). This important outcrop was recently re-investigated by a Polish-Ukrainian group using modern methods. Professor Radoslaw Tarkowski is engaged in the study of Polish-French geological relations in the 18th and 19th centuries, whilst Dr Andrzej J. Wojcik's topic is the history of geology of ore deposits and mining in the first half of the 19th century in the south-western Polish territories, when occupied by Russian and Prussian oppressors. (See Wojcik's article, in this newsletter, on Hempel's map of 1856.)

On the negative side, our group was significantly impoverished by the death of Professor Antoni S. Kleczkowski, eminent historian of geosciences and mining, and a Fellow of the Polish Academy of Sciences. His enormous historical output was summarized in the monograph "Studies on the history of Stanislaw Staszic Mining and Metallurgical Academy in Cracow." Kleczkowski's investigations were dealing mainly with scientific geological and mining relations in Polish-Russian and Polish-German territories. He took part in numerous INHIGEO meetings. During his last one, held in Freiberg/Saxony in 1999, he guided the excursion to A.G. Werner's historical birth house in Osiecznica, Lower Silesia.

The years 2005–2006 were announced in Poland as Stanislaw Staszic's Year to celebrate the 250th anniversary of his birth (1755) and 180th year since the death (1826) of this "father of Polish geology." He was the author of the monumental monograph "On geognosy of the Carpathians and other mountains and lowlands of Poland," published in 1815 with a pioneer geological map of Central Europe. In the years 1816–1824, Staszic was the director of national mining and metallurgy. His natural ideas were analysed by Zbigniew Wojcik in the paper "Evolution of geological ideas of Stanislaw Staszic," published in the periodical *Zeszyty Staszicowskie* (Staszic's Fascicles), 2006, edited in his birth-town of Pila (Pomerania). Wojcik has shown that the starting point of Staszic's ideas was G.L. Buffon's monumental work *Les époques de la nature* (1778), translated by him into Polish and published in three editions (1786, 1803, and 1816). However, Staszic was not a slave to the ideas of this French naturalist. After his travels across vast areas of Central Europe, the Alps, and Apennines, he based the proposed stratigraphy mainly on lithologic features, taking also into account the available organic fossil data. In this respect Staszic was close to A.G. Werner's ideas. Nevertheless, he did not negate the occurrence of fossil volcanism and, even in 1803, tried to find similar phenomena in the northern Carpathians. Staszic's outstanding scientific, social, economic and educational merits were characterized by numerous authors, first of all by Stanislaw Czarniecki and Andrzej J. Wojcik. The latter has described Staszic's project of mining law of 1818 and published several papers on the miner and geologist Jan Marian Hempel, author of mining and geological maps of the Silesian coal basin (1856) and of the Kingdom of Poland, as well as on mining cartography of Fryderyk Krumpel (1792–1855). Some of these papers can be found on the internet. Some of Staszic's achievements were also analyzed by Radoslaw Tarkowski and his French co-workers P. Daszkiewicz and T. Hoquet. They have published, in French, Staszic's preface to Buffon's monograph "Les époques de la nature" and described the origin and significance of this monumental book.

P. Daszkiewicz and R. Tarkowski have also published several important historical documents, such as: "Unknown manuscripts describing the mineral raw materials of the Kingdom of Poland from the Polish Library in Paris"; "The correspondence of Ignacy Horodecki and Alexander Brongniart from the manuscript collection of the Main National Library of the Natural History Museum in Paris"; "Les auditeurs polonais des cours de minéralogie de René Just Haüy au Muséum National d'Histoire Naturelle, Paris"; and "New data on the investigations of William Buckland (1784–1856) in Poland." Daszkiewicz and Tarkowski, in cooperation with W. Kuc, have also published "A lecture from the 19th century on the salt mine Wieliczka in the Historical-Literary Society in Paris." This series of publications contributes significantly to our knowledge of the history of Polish-French scientific

contacts, both in the period of independent Polish-Lithuanian Commonwealth (up to 1795) and in the 19th century, when our country was partitioned among the neighboring powers.

Andrzej Grodzicki has continued his studies on the history of Wrocław University, formerly German and, since 1945, Polish. Janusz Skoczylas focused his interdisciplinary investigations on petro-archeology, resulting in the publication of the book, prepared in cooperation with K. Kopczyński, entitled *The Stone in Religion, Culture and Art*.

Polish historians of geosciences were active during the INHIGEO Conference in Vilnius in 2006, devoted to the history of Quaternary geology and geomorphology. Marek Graniczny delivered a lecture, prepared in cooperation with Halina Urban and Lithuanian geologist Jonas Satkunas, on the oldest geological maps of Poland and Lithuania. He also took part as a Polish-Lithuanian team discussed pioneers of modern geomorphology in these countries. The paper was presented by Algirdas Gaigalas. Similarly interesting was the lecture of Witold Zuchiewicz on the history of neotectonic studies in Poland and their important role in Quaternary geology. Zbigniew Wojcik and Wojciech Narebski prepared a poster on Quaternary research in the north-eastern part of Central Europe at the turn of the 19th century, presenting previously unknown data on the studies in this area. The work of such Polish geoscientists as C. Giedroyc, J. Siemiradzki, J. Lewinski, and J. Samsonowicz was noted. Very interesting and valuable from a historical viewpoint was Stanislaw Czarniecki's poster illuminating "The origin of INHIGEO at the first international meeting of historians of geological sciences, Yerevan, 6–12 June 1967," prepared by one of the very few (if not the only one) living witnesses of this event. Czarniecki is a charter member of INHIGEO. This poster presented rich documentary and photographic materials from the author's unique Laboratory of History of Geology of Poland, created by him in Cracow. Currently S. Czarniecki is delivering historical documents to the Austrian geologists in Vienna on the pioneer geological activity in the Balkans of eminent Polish geologist Gejza Bukowski. Worth particular emphasizing is the fact that at the end of the Conference in Vilnius, the INHIGEO Business Meeting was unanimous in accepting the proposal of the Polish group, supported by the Board, to elect Stanislaw Czarniecki as an Honorary Senior Member of our Commission.

As far as local conferences are concerned, two of them should be particularly mentioned. The Mineralogical Society of Poland and the Academy of Mining and Metallurgy in Cracow have organized a symposium in honor of long-time INHIGEO member Andrzej Bolewski, on the 100th anniversary of his birth. The materials of this symposium were edited in a book entitled *Professor Andrzej Bolewski (1906–2002): Scientist, academic teacher, organizer of science, activist*. A dozen lectures were devoted to various aspects of the achievements of this outstanding mineralogist, economic geologist, and founder of the Cracovian school of applied mineralogy. However, there was no proper emphasis on Bolewski's significant and rich output in the branch of history of geological sciences. In October 2006 an interesting "In Memoriam" conference was organized in Cracow to honor the eminent Polish geologists and sedimentologists, professors of the Jagellonian University, Marian Książkiewicz (1906–1981) and Stanislaw Dzulynski (1924–2001). It was held in the historical rooms of "Kollataj College," former seat of the Geological Department of this University (Figure 1). Numerous friends and co-workers gathered, including some foreign colleagues, such as G. Kelling, A. Kenyon-Smith, J.D. Stanley and D. Kempler. In a very friendly atmosphere the commentators delivered interesting lectures referring not only to the outstanding scientific achievements of Książkiewicz and Dzulynski, but also commemorating and emphasizing their exceptional deeply human personalities. These lectures are published in a special volume entitled *In Memoriam*.

Also worth mentioning is a book by Zdzisław J. Ryn devoted to Ignacy Domeyko, outstanding Polish geoscientist who in the years 1838–1889 was staying in Chile and contributing significantly to the development of science and education in that country. The first volume of this series is entitled *Ignacy Domeyko: Calendarium of his life* (2006, 858 pp.). A subsequent volume of this very detailed monograph, devoted to bibliography, is currently in print. This continuation of Domeyko's detailed biography by Z.J. Ryn will be translated into Spanish.

Zbigniew Wojcik, Warsaw, and Wojciech Narebski, Cracow

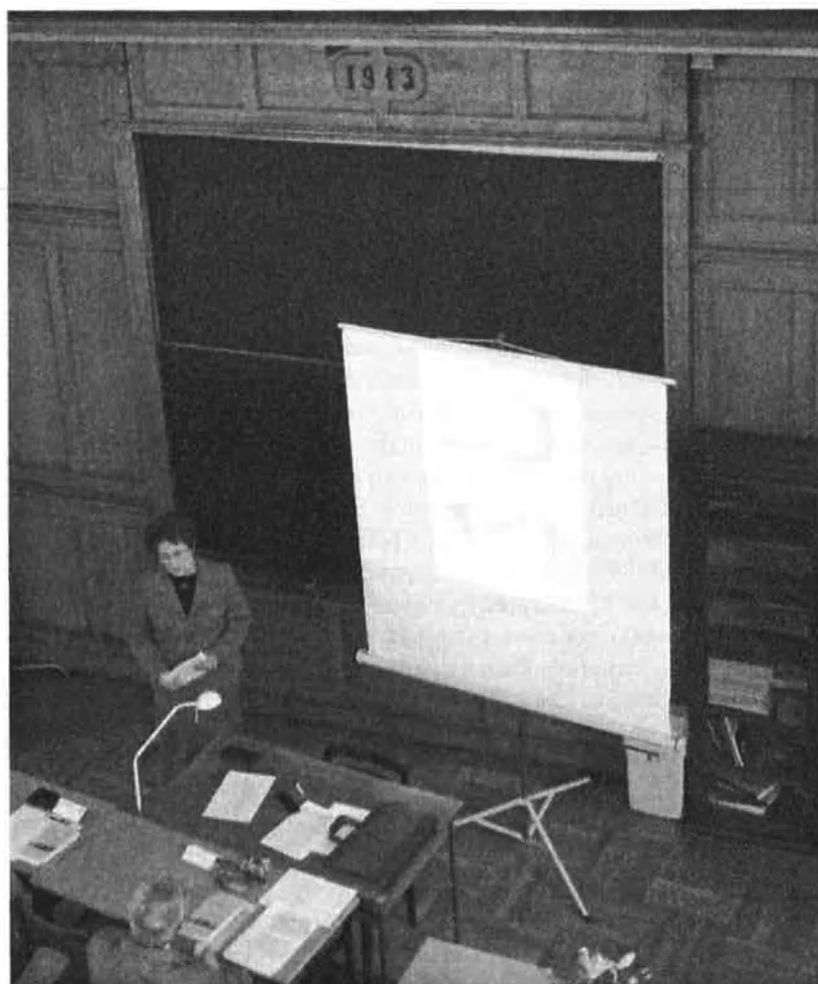


Figure1: Session at the Jagellonian University honoring Professors Ksiaskiewicz (1906–1981) and Dzulynski (1924–2001)

Romania

The affiliation of the Romanian geological community to INHIGEO, through the election of Professor Nicolae Anastasiu, Member of the Romanian Academy, as a member of INHIGEO, occurred in 2006. That event was followed by the establishment of the Romanian working group on the “History of Earth Sciences” (RGHG). The group’s aim is to study the History of Geology, and its members are well-known in academic, university, and research environments within Romania.

Scientific Meetings and Geological events

During 2006, most geological events/meetings had been organized at the Romanian Academy, University of Bucharest, Babeş Bolyai University (Cluj-Napoca), Alexandru Ioan Cuza University (Iasi), Geological Institute of Romania, Geological Society of Romania, or the Economic-Geology Society of Romania.

At the 140th Anniversary Session of the Romanian Academy, held at the Academy Aula in April 2006, the members of the Department of Geonomic Sciences emphasized Ludovic Mrazec’s active contribution as a president of the Romanian Academy (AR) (1932–1935), director of the Geological Institute of Romania (GIR) (1906–1930) and founder of the University of Bucharest’s Mineralogy Department (1894).

The contributions at the GEO 2006 Scientific Session, organized by the Faculty of Geology and Geophysics (in partnership with the Geological Society of Romania and the Romanian Society of Geophysics, 26–27 May 2006) were entitled “Geology and Geophysics between tradition and changes.” The sessions were grouped in four sections: I) Mineralogy-Petrology-Metalogeny-Geochemistry; II) Geology-Stratigraphy-Sedimentology-Petroleum Geology; III) Engineering Geology-Hydrogeology; and IV) Geophysics. A round-table debate on “Geology and geophysics in

Romania: European challenges—priorities and development strategies” was also organized and was well attended.

The GIR-100 (i.e., “The 100th Anniversary Symposium of the Geological Institute of Romania”), held in Bucharest on 19–20 June 2006, was considered a grand meeting on many topics: GIR history; mineralogy; paleontology; petrology; ore deposits; vulcanology; sedimentology; and geophysics. On this occasion, participants learned details of (a) The Romanian Geological Bibliography (comprising all geological papers from 1907 to 2004; authored by Lucian Stanciu, D. Dordea and Anca Dobrescu) and (b) The Map of Mineral Resources—Ores and Industrial minerals, scale 1:500 000 (by M. Borcos, Gh. Udubasa, M. Sandulescu, M. Lupu, and B. Gabudeanu).

The Economic Geology Society of Romania, in partnership with Mineralogical Society of Romania, organized *The 5th National Symposium of Economic Geology* and *The 7th National Symposium of Mineralogy* (22–25 September 2006; Arieseni, Alba). The meeting focused on mineral ore deposits and related environmental issues, the contributions being grouped in four sections: Economic Geology; Mineralogy and Petrology; Environmental geology; and Rehabilitation of mined areas. The sessions were convened by Professor Gh. C. Popescu and Professor Gh. Udubasa.

Jubilees

Dr Stefan Marincea, of the Geological Institute of Romania, gave a talk on “The Geological Institute of Romania (GIR).” (*An abbreviated version of the presentation is given in this newsletter, in the “Notes” section.)

The President of the Geological Society of Romania (GSR), Professor Nicolae Anastasiu, gave a talk on “The Geological Society of Romania: 75 years of activity, past, present and future.” He noted that Professor L. Mrazec had proposed, in March 1930, that the Geological Society be founded, at the request of Romanian geologists. The GSR thus began as a non-governmental institution, with its own laws and projects. It was open to civil society and to anyone who had something to say about “the Earth’s Crust, its formation and evolution.”

The GSR of today was revitalized after 1990 due to two active presidents: Academician Dan Radulescu (1990–1997) and Academician Mircea Sandulescu (1997–2000). There was a spectacular increase of membership (over 500 members grouped into several branches) throughout the country: at Bucharest, Cluj, Iasi, Deva, Caransebes, Baia Mare, Ploiesti, Petrosani, and Alba Iulia). The Society’s 75-year tradition provided the necessary strength to revive and to develop in the same spirit as its founder, L. Mrazec (1934) had hoped. At the founding, Mrazec had said, “the free spirit of scientific thinking and harmony has always dominated the Geological Society. . . . This spirit cannot develop but in a free educational process, in that kind of atmosphere warranting the liberty to search, to think, to speak scientifically, allowing the free initiative of the researcher. These are the essential conditions to discover the truth, which is the supreme aim of thinking and research.”

Birthdays

Professor Dan Grigorescu (65): Stratigrapher, Vertebrate paleontologist, former Head of the Paleontology and Geology Department; honored on his 65th anniversary, at the Faculty of Geology and Geophysics (University of Bucharest). On this occasion the volume *Mesozoic and Cenozoic Vertebrates and Paleoenvironment—Tributes to the career of Professor Dan Grigorescu* (editor is Dr Zoltan Csiki; publisher is Ed. Ars Docendi, Bucuresti, 214 pp., 17 original papers, Laudatio, DG-CV and references list) was presented.

Academician Radu Dimitrescu (80): professor of Mineralogy and Ore Deposits, scientist and researcher on the Apuseni and South Carpathians Mountains; on his 80th anniversary, at the Romanian Academy. His achievements were emphasized by Marius Sala (vice-president of AR), Mircea Sandulescu (president of the Geonomic Sciences section), Acad. Dan Radulescu, Professor Ioan Petreus, Professor Ioan Marza, and Professor Ctin Grasu.

Participations at International Scientific Conferences

The 17th International Association of Sedimentologists (IAS) took place between 27 August and 1 September 2006, at Fukuoka (Kyushu island), Japan. Professor Hakuyu Okada was elected Honorary president. The sessions were opened by the conference chairman, Professor Ryo Matsumoto, and IAS president, Dr Judith McKenzie, in the presence of the city mayor, Mr. Hirotari Yamasaki. Romanian researchers presented contributions on: the Paleogene sedimentary sequences and associated facies models in the Eastern Carpathians (N. Anastasiu, M. Popa, B. Varban, R. Roban; University of Bucharest) and the Getic Depression (R. Roban; University of Bucharest); new developments concerning the stratigraphy of Miocene deposits in the Transylvanian Basin (S. Filipescu; University

of Cluj-Napoca); modern techniques applied to studies of the Black Sea Basin (Gh. Oaie; GEOECOMAR); comparative volcanologic studies (Al. Fulop; University of Baia Mare); and a re-evaluation of the economic potential of some quartz-arenites in Romania (N. Anastasiu).

At the XVII Congress of Carpathian-Balkan Geological Association, held at Belgrade, 3–6 September 2006, the Romanian contingent was represented by Professor Mihai Branzila (geologist, Iasi), Professor Ioan Bucur (paleontologist, Cluj), Professor Corina Ionescu (mineralogist, Cluj), Dr Dan Jipa (sedimentologist, Bucharest), Dr Melinte Mihaela (paleontologist, Bucharest), Dr Gavril Sabau (petrologist), and Ass't. Professor Relu-Dumitru Roban (sedimentologist, Bucharest).

Obituaries

- Acad. Liviu Ionesi (1925–2006): Professor of Paleontology and Stratigraphy at Al. I. Cuza University, Iasi, head of Geology and Paleontology Dept., vice-president of the Branch-Iasi Romanian Academy.
- Professor Gratian Cioflica (1927–2005): Professor of Ore deposits, University of Bucharest, Dean of Faculty of Geology and Geography (1980), head of Mineralogy Department (1985–1989).
- Professor Simon Pauliuc (1928–2006): University of Bucharest, Geology Department, structural geology, geotectonics.

Nicolae Anastasiu, Bucharest

Russia

Research works

Historians of geology of the Vernadsky State Geological Museum in Moscow have finished the compilation of the book *Corresponding Members of the Russian Academy of Sciences (since 1724): Geology & Mining* (authored by Yu. Ya. Soloviev, Z.A. Bessudnova, and G.P. Khomizuri, with an Introduction by I.G. Malakhova, and Yu. Ya. Soloviev as editor).

Work on the next (and last: Volume 3), on Foreign members of the Academy, is in progress.

George Khomizuri (with L.I. Gurskaya as co-author) has published an article on the Volborths. When Alex Volborth came from the US to Moscow last summer the photo-gallery of his works was opened in the Geological Museum.

Nikolai Yushkin is working on the "History of Mineralogy." His current work includes studies on the history of mineralogical museums and expeditions in the Komi Republic.

Meetings

Russian INHIGEO members participated in the Commission's meeting on the History of Quaternary Geology and Geomorphology (Vilnius, Lithuania) with papers on the history of geomorphology (I. Malakhova), regional studies (E. Milanovsky) and P. Kropotkin's ideas on the Ice Age (T. Ivanova and E. Milanovsky).

I. Malakhova presented a paper on the first steps and progress in Geosciences in the Russian Academy for the annual meeting of the Geological Society of America in Philadelphia (October 2006).

Z. Bessudnova and I. Malakhova took part in the 6th Symposium on Geosciences held by the Geological Survey in Vienna, Austria (December 2006) with papers on scientific relations of Eduard Suess with Russian geologists.

There was the mineralogical meeting on the memory of J.-G. Lehmann (the discoverer of the first Russian mineral crocoite) in Syktyvkar (Komi Republic).

Honors and Membership

On his 70th birthday, Nikolai Yushkin was awarded with the "Triumph Prize" (the first non-government award in Russia since 1992) and decorated with the Order "Great Services for the Motherland, Third Class."

Irena Malakhova has renewed her INHIGEO membership and joined the Geological Society of America's History of Geology Division.

Publications

The monograph of Zoya Bessudnova, *Geological Research in Moscow University's Natural History Museum (1759–1930)*, is issued now in the series "Essays on the History of Geological Knowledge," Volume 32, with Yu. Ya. Solovyev as the editor.

A number of books on the history of geology were recently published in Russia: (1) a discussion of the evolution of ideas in stratigraphy (I. Starodubtseva); (2) an English version of the history of the Geological Committee (*From Geolcom to VSEGEI*, a collective work); and (3) biographies of Alexander Vinogradov, Grigori Gorbunov, Alexander Zavaritzky, Konstantin Markov,

and Alfred Bazhenov. Also published is a paper on Alexander Yanshin and Alexander Peive, explorers of the Poles and the World Ocean, and a paper on the history of ideas in tectonics (A. Ryabukhin).

Anniversaries

The Commission on the History of Mineralogy of the Russian Mineralogical Society held the VI International Mineralogical Seminar on "Theory, philosophy and practice in mineralogy" honoring the 70th anniversary of Nikolai Yushkin and 35 years of the Mineralogical Department (Institute for Geology, Komi Research Center, the Urals Branch of the Russian Academy of Sciences). All of the papers have been published.

A special meeting in Saint-Petersburg congratulated the Academy corresponding member Lev Krasny on his 95th anniversary. The meeting's hero presented a paper on the history of International Geological Congresses, "From India, 1964 to Italy, 2004."

A unique and noteworthy anniversary was celebrated in Syktyvkar (Northern Urals). Georgy Chernov (the first discoverer of coals in the Vorkuta region, and of oil and gas deposits in the north of the European Russia, etc.) was 100 years old.

There were meetings in the All-Russian Geological Research Institute in Saint-Petersburg. Celebrated dates included several important anniversaries: the 100th birthday of Ivan Krasnov (1905–2005); the 150th of Feodosy Chernyshev (1856–1914); and the 80th of Alexey Scheglov (1926–1998). With thanks to all Russian members of the INHIGEO for personal reports.

Irena Malakhova, Moscow

Serbia

Due to the organization of the XVIII Congress of the Carpathian-Balkanian Geological Association in Belgrade, 3–6 September 2006, all other geo-historical activities were reduced in Serbia last year. History of geology was the first priority at the Congress, but there were also other activities included.

The book titled *Mining of the Rudnik Mines through the Centuries*, by Z. Nedeljkovic, was published in 2006, after a little delay. In about 200 pages the author describes the mining and geological investigations of lead, zinc, and silver mines in that location, from prehistoric to modern times. The importance of mining exploitation on that mountain is denoted with its name, since "Rudnik" in Serbian means "Mine."

The Serbian Geological Society celebrated its 115th anniversary with an appropriate meeting.

In the *Episodes* journal (September 2006), as a feature in the "Classic Papers" series, A. Grubic published a review of Milutin Milankovic's astronomical theory of climatic changes. The inserts from the English translations of Milankovic's "Canon" were used in order to explain his theory in a simple and understandable way.

The special issue of the *Liceum* magazine was published (Kragujevac, number 10) with texts dealing with the history of science. In the field of geology, the works of Antonije Stojkovic (by A. Grubic), Jovan Zujovic (by V. Jovic), and Milutin Milankovic (by A. Petrovic) were described. Particularly interesting was that those portrayals described the wider situation of science and culture in Serbia at the late nineteenth and early twentieth centuries. Favorable historical circumstances allowed for creative work on the part of the noted authors.

Aleksandar Grubic, Belgrade

Spain

During the year 2006, the Spanish group of INHIGEO has developed many activities related to the History of Geology. The Commission of History of Spanish Geology (supported by the Spanish Society of Geology) has published numbers 27 and 28 of our *Bulletin* about the History of Geology in Spain. You can see the *Bulletins* on the web www.aepect.org by looking into the page designated "AEPECT" (Spanish Association for Earth Sciences Teaching). Other activities can be found in the contents of www.sesbe.org (Spanish Society of Evolutive Biology). An interesting book has been published about the Lisbon Earthquake (1755) in the *Cuadernos Dieciochistas* (Salamanca University). One of our INHIGEO members, Dr Carmina Virgili, has been accepted (2006) as a member in the Royal Academy of Sciences and Arts in Barcelona (Catalunya). She presented a lecture, published for the Academy. In the first part of the paper a recent study of the History of Stratigraphical Nomenclature, as it relates to Permian and Triassic strata, is provided. It concerns the nineteenth and twentieth centuries and considers the proposals of the recent International Geological Congress (Florence, 2004). Also, Dr Salvador Reguant has been elected a member of the Royal Academy of Sciences and Arts of Barcelona. He presented a lecture about the evolution of knowledge

of the oldest geological times (see below). Finally, the Spanish INHIGEO delegation suffered the death of its oldest colleague: Luis Adaro Ruiz-Falcó (Gijón, 1914–Gijón, 2006). His obituary is published in this newsletter.

Books published

- Facsimile Edition (1831): *Minas de Carbón de piedra de Asturias*, Instituto Geológico y Minero de España (IGME), 2006, Presentación de José Pedro Calvo Sorando, Director-General del IGME.
- Mateu, G. (coordinator), *La obra científica de Guillermo Colom Casasnovas (1900–1993)*, Volumen I. Instituto Español de Oceanografía-Ministerio de Educación y Ciencia, 2006, 459 pp.
- Villa, Elisa; Martínez García, Enrique; Truyols, Jaime; Schulze, Meter, *Gustav Schulze en los Picos de Europa (1906–1908)*, Cajastur-Universidad de Oviedo, 2006, 293 pp.
- Publications in Papers and Journals (selection)*
- Alcalá, L., 'Los Museos y la nueva proyección social de la Paleontología,' *Boletín de Real Sociedad Española de Historia Natural (Sección de Geología)*, 2005, 100 (1–4), 289–306.
- Amaré Tafalla, M. P., Orche, E., Puche Riart, O., 'El terremoto de Lisboa de 1775: su influencia en la extracción ganadera a Portugal desde la antigua provincia de Tuy (Galicia),' *Cuadernos Dieciochistas*, 2006, 7, 117–152.
- Ayarzagüena, M., and Porras, M. I., 'Francisco de las Barras de Aragón (1869–1955),' *Gazseha (Gaceta de la Sociedad Española de Historia de la Arqueología)*, 2006, 1 (febrero), 5–11.
- Gómez Alba, J., 'El mamut y la colección petrológica de grandes bloques del Parque de la Ciudadela (Barcelona, España),' *Treballs del Museu de Geologia de Barcelona*, 2001, 10, 5–76.
- González Fabre, M., Ayarzagüena, M., and Puche Riart, O., 'Sobre una carta de Casiano de Prado enviada a Fernández de Castro en mayo de 1865 desde París, donde se desataca la importancia de los estudios prehistóricos,' *Archaia*, 2003–2005, 3-4-5, 127–134.
- González Fabre, M., and Puche Riart, O., 'Sobre una carta de Antonio Machado a Mariano de la Paz Graells, donde se dan noticias de Casiano de Prado,' 2003–2005, *Archaia*, 3-4-5, 158–164.
- Martín Escorza, C., 'Iconografía histórica de los terremotos hasta el de Lisboa en 1755,' *Cuadernos Dieciochistas*, Salamanca, 2006, 6, 225–247.
- Puche Riart, O.; Orche García, E.; Mazadiego Martínez, L.F.; Mata Perelló, J.M., 'D. Luis Adaro Ruiz Falcó (Gijón, 1914–Gijón, 2006),' *De re metallica*, 6 (diciembre 2006), 46–49.
- Rábano, I., 'Casiano de Prado y Manuel Fernández de Castro: relación epistolary entre 1859 y 1866,' *Boletín Geológico y Minero*, IGME, Madrid, 2006, 117 (3), 423–440.
- Reguant, S., 'Evolució del coneixement dels Temps Geològics més antics. Discurso inaugural,' *Memorias de la Real Academia de Ciencias y Artes de Barcelona*, 2006, Tercera época, no. 1, 004, vol. LXII, no. 8, 47 pp.
- Sequeiros, L., 'Los inicios de la biogeografía: José de Acosta (1540–1600) y Athanasius Kircher (1601–1680),' *eVOLUCIÓN* www.sesbe.org, no. 1, 57–64.
- Virgili, Carmina, 'Lyell and the Spanish Geology,' *Geologica Acta*, Barcelona, 2007, 5 (1), 65–72.

Leandro Sequeiros, Granada

United Kingdom

The History of Geology Group (HOGG) held an Open Meeting in April. Professor Leonard Wilson gave a keynote address on nineteenth-century arguments about the Age of the Earth. The meeting also saw the launch of The Geological Society's Oral History Project, introduced by Nic Bilham of their staff, which will record the memories of Fellows who joined the Society before and around the time of the Second World War. A joint meeting between the Oxford University Museum of Natural History, HOGG, and the Palaeontological Association, organised by Professor Jim Kennedy, on William Buckland (who died 150 years ago) was held at the Museum in August. Speakers came from around Britain and abroad to share their findings: topics ranged from museums to *Megalosaurus*, and stratigraphy to palaeo-theology.

In Scotland, the Lothians and Borders Regionally Important Geological Sites Group ([http://www.edinburghgeolsoc.org/r\[underscore\]download.html](http://www.edinburghgeolsoc.org/r[underscore]download.html)) has published a local guide map/leaflet for the newly-opened Hutton Trail in south-east Scotland. The trail itself is linked to the new James Hutton website (<http://www.james-hutton.org.uk.html>), with more information on the trail. This has been set up by a local consortium, the Borders Foundation for Rural Sustainability, with the families who farm the land once owned by Hutton. Another development of interest is the recent erection in St. Andrews, by geoHeritage Fife, of plaques to mark the residences or workplaces of

Matthew Heddle, mineralogist, and Charles Lapworth, palaeontologist and stratigrapher. These are in addition to those already erected for Robert Chambers, David Brewster, James D. Forbes, and George Martine (see: <http://www.st-andrews.ac.uk/schools/geogeosci/html/geolplaques.html>).

Selected publications

- Ford, Trevor, D., 'Geology of the Lead Mines around the Stanton Syncline,' *Mining History*, 2006 [for Winter 2004], 15 (6), 1–26.
- Ford, Trevor D., 'The Geological Setting of the Lead Mines around Cromford and Wirksworth, Derbyshire,' *Mining History*, 2006 [for Dec. 2005], 16 (2), 1–42.
- Ford, Trevor D., 'A History of the Geology Department [University of Leicester],' *Petros, Journal of the Sylvester Bradley Geological Society*, 2006, 42, 28–39.
- Giormani, Virgilio and Torrens, H., *Il Conte Alvise Zenobio (1757–1817): Un Patrizio Veneto tra Agio e Avventura*, Memorie 116, Venezia. Istituto Veneto di Scienze, Lettere ed Arti, 2006.
- Howarth, Richard J., 'Understanding the Nature of Meteorites: The Experimental Work of Gabriel-Auguste Daubrée,' in: McCall, G. Joe H., Bowden, Alan J., and Howarth, Richard J. (eds), *The History of Meteoritics and Key Meteorite Collections: Fireballs, Falls and Finds*. Geological Society Special Publication 256, The Geological Society, London, 2006, 101–122.
- Torrens, Hugh, 'Notes on "The Amateur" in the Development of British Geology,' *Proceedings of the Geologists' Association*, 2006, 117, 1–8.
- Torrens, Hugh, 'The Geological Work of Gregory Watt, his Travels with William Maclure in Italy (1801–1802), and Watt's "Proto-geological" Map of Italy (1804),' in: Vai, Gian Battista and Caldwell, W. Glen E. (eds), *The Origins of Geology in Italy*, Geological Society of America Special Paper 411, Boulder, Colorado, 2006, 179–197.

Richard J. Howarth, London

United States of America

Activities of the Geological Society of America, History of Geology Division

The HoG Division celebrated its 30th anniversary at the GSA Annual Meeting held in Philadelphia in October 2006. It was also the 25th anniversary of the founding of the History of the Earth Sciences Society (HESS). This dual anniversary was recognized formally in the Division's general session.

A pre-meeting field trip, organized by Gary Rosenberg and Sally Newcomb, featured 'behind-the-scenes' visits to the American Philosophical Society (founded 1743), The Library Company (1731), and the Philadelphia Academy of Natural Sciences (1812). At each of these institutions, participants viewed examples of the rich collections available to scholars for research in the history of geology and palaeontology. A post-meeting field trip to the Civil War battlefield at Gettysburg was organized by Roger Cuffey and Jon Inners.

The meeting program featured two historical sessions. The general session, organized and chaired by Sally Newcomb and Maria Luisa Crawford, included (along with a number of papers on diverse topics) clusters of presentations on two thematic issues: seven papers on the Wissahickon Formation, an enigmatic metamorphic rock upon which much of Philadelphia is built; and four papers on topics relating to geology's relevance in military affairs. The all-day topical session organized by Division Chair Gary Rosenberg, was titled 'From the Scientific Revolution to the Enlightenment: Emergence of Modern Geology and Evolutionary Thought from the 16th to the 18th Century.' This was a notably international session, with participation by authors from seven countries. Among the 25 presentations on the program, half a dozen focused on Steno, and five were related to Thoreau. Details for these sessions can be accessed at

http://gsa.confex.com/2006AM/finalprogram/session_18283.htm

http://gsa.confex.com/gsa/2006AM/finalprogram/session_18097.htm

http://gsa.confex.com/gsa/2006AM/finalprogram/session_18401.htm

Among the papers in the general session was 'Core Drilling at Bikini and Eniwetok Atolls, 1947–1952,' by Alistair Sponsel, PhD candidate in the Program in History of Science at Princeton University. This paper won the HoG Division Student Award for 2006, including a prize of \$500.

The Division's Mary C. Rabbitt History of Geology Award was presented to Sandra Herbert, of the University of Maryland, Baltimore County. Professor Herbert is widely known for her scholarly studies of Darwin's geological interests and work. Her book *Charles Darwin, Geologist* (Cornell University Press, 2005) has received special praise. The award citation by Michele L. Aldrich, and Sandra Herbert's response, can be viewed at

<http://www.geosociety.org/aboutus/awards/06speeches/rabbitt.htm>.

The first recipient of the Division's new service award is Robert N. Ginsburg of the University of Miami. Ken Bork presented Professor Ginsburg's citation for the Gerald M. and Sue T. Friedman Distinguished Service Award, in recognition of Bob Ginsburg's many contributions in promoting interest in the history of geology. His varied efforts include establishment of the highly successful 'Rock Stars' series of short biographies of geologists appearing in *GSA Today* over the past dozen years. He also had a key role in founding the successful HoG Division receptions at GSA annual meetings, to foster involvement of young geologists in the history of their science. Ken Bork's citation and Bob Ginsburg's response can be viewed at <http://gsahist.org/HoGaward/awardee2006.htm>.

HoG Division officers elected for 2007 are: Julie Newell, Chair; Stephen Rowland, First Vice-Chair; Yildirim Dilek, Second Vice-Chair. Continuing in their Division roles are William Brice as Secretary-Treasurer and Newsletter Editor, and Hugh Rance as Web Master. The Division continues to publish its quarterly Newsletter, which is posted regularly on the Division page of the GSA site: <http://gsahist.org/>

Activities of the Petroleum History Institute

PHI held its annual symposium (with GSA's HoG Division as a co-sponsor) in April, 2006, in Wichita, Kansas. Papers from this meeting were published in the first 2006 issue of *Oil-Industry History*, which is edited by William R. Brice. More information about PHI and Oil-Industry History is accessible at: <http://petroleumhistory.org/>

Communications from Members

- *Victor R. Baker* continued in his capacity as Book Review Editor for *Earth Sciences History*. His work on the Spokane Flood controversy is the subject of a contribution to the upcoming Geological Society of London volume on *History of Quaternary Geology and Geomorphology*. The paper was presented as 'The Spokane Flood Controversy: Philosophical Roots, 1920s/1930s Debates, and Implications for Contemporary Geomorphology' at the 2006 INHIGEO Conference on 'History of Geomorphology and Quaternary Geology' held in Vilnius, Lithuania. Related biographical pieces on J Harlen Bretz (1882–1981) are in press for the *New Dictionary of Scientific Biography* and for the 'Rock Stars' series of *GSA Today*. Baker also presented the paper 'Charles S. Peirce and "The Light of Nature"' at the 2006 Geological Society of America symposium 'From the Scientific Revolution to the Enlightenment' held in Philadelphia, Pennsylvania. An article on this topic is in preparation, and more work on Peirce is in progress.

- *Kennard B. Bork* enjoyed a productive year as Secretary-General of INHIGEO. Along with editing *Newsletter No. 38* (produced in April 2006, concerning Commission activities in 2005), he served as facilitator of the biennial (alternate-year) elections, wrote reports and budget requests, and corresponded throughout the year with members worldwide, on a number of issues. It was a pleasure to work with Algimantas Grigelis (Lithuania) and a variety of authors from the Baltic States in editing articles for the Guidebook produced for the 2006 INHIGEO meetings in Lithuania, Latvia, and Estonia. Bork and Grigelis wrote an illustrated article describing the Baltic meeting and field trips. The paper is to appear in an upcoming issue of *Episodes* (journal of IUGS). Ken's short overview of the INHIGEO meeting was included in the Geological Society of America's History of Geology Division *Newsletter* Volume 30, no. 3 (September 2006). His essay on 'Why Study the History of Science?' is scheduled to appear in a future issue of *The Compass* (the journal of Sigma Gamma Epsilon, an American honorary society for geoscience students). Ken continues on the editorial board of the Rock Star Committee of the Geological Society of America (GSA). He was pleased to serve as Citationist for Robert N. Ginsburg (University of Miami, Florida), celebrated carbonate sedimentologist and historian of geology. Dr Ginsburg was honored as the first winner of the Gerald M. and Susan T. Friedman Distinguished Service Award of GSA's History of Geology Division. The award was presented at the national GSA meeting in Philadelphia (October 2006). Beginning in 2006, and continuing to the present, Ken is working on the concept of Natural Theology, as articulated by the Swiss naturalist and pastor Elie Bertrand (1713–1797). The research will be discussed at the 2007 INHIGEO meeting in Eichstätt, Germany.

- *Albert V. Carozzi* – [* See the interview elsewhere in this *Newsletter*]

- *Robert H. Dott, Jr.*, published the article 'Two Remarkable Women Geologists of the 1920s: Emily Hahn (1905–1997) and Katharine Fowler (1902–1997),' *Earth Sciences History*, 2006, 25, 197–214. He also served as the general editor for the book by main author James M. Parks, assisted by F. D. Holland, Jr.: *Bushels of Fossils: The Influential Life of Lowell Robert Laudon (1905–93): teacher, geologist, paleontologist and mentor*, Department of Geology and Geophysics, University of

Wisconsin, Madison, Wisconsin 53706 (USA), 2006. Continuing his practice of the past decade, Dott also wrote several historical articles for his department's annual newsletter, *The Outcrop*.

- *Gregory A. Good*: Greg worked in 2006 mainly on the project 'Magnetic World: Consensus, Separation, and Re-connection in Disciplinary Transformations of Geomagnetism in the 20th Century,' funded by the U.S. National Science Foundation (0432202). He plans to submit a book manuscript to an academic press in 2007. He published: 'A Shift of View: Meteorology in John Herschel's terrestrial physics,' in: J.R. Fleming, V. Jankovic, and D.R. Coen (eds), *Intimate Universality: Local and Global Themes in the History of Weather and Climate*, Science History Publications, New York, 2006, 35–67. Greg continued acting as an Associate Editor of the *New Dictionary of Scientific Biography*, for Geology and Solid-Earth Geophysics. He also wrote the article on Stanley Keith Runcorn. Most of the articles have been edited and the 10-volume work is expected to be printed in 2007 and 2008. During 2006 he presented a talk titled 'Magnetic Lives: Researchers in Interdisciplinary Spaces' in the Historical Seminar on Contemporary Science and Technology at the National Air and Space Museum, Smithsonian Institution, a colloquium on 'Magnetic Travelers' at the University of Minnesota, and another on 'Whatever happened to Terrestrial Magnetism' at the National Oceanic and Atmospheric Administration (NOAA) lunch series in Washington, DC. Greg participated in a 'floating' workshop on the history of oceanography aboard the *SSV Corwith Cramer*, a tall ship administered by the Sea Education Association, out of Woods Hole, MA, USA. He also chaired a session celebrating the 50th anniversary of the International Geophysical Year at the December 2006 meeting of the American Geophysical Union. He is working with Ed Cliver to organize three sessions on this topic for the General Assembly of the International Union of Geodesy and Geophysics (IUGG) to be held in Italy in 2007.

- *Léo F. Laporte* continued his activities as an affiliate of Stanford's Jasper Ridge Biological Preserve (the annual report is accessible at <http://jrpb.stanford.edu/annualreport.php>). This included teaching a course in fall 2006 on climate in geological history.

- *Kerry V. Magruder* published the paper he presented at the 2005 Prague Symposium: 'Global Visions and the Establishment of Theories of the Earth,' *Centaurus*, 2006, 48, 234–257. In May he provided a tribute from a student's perspective to the scholarship of Kenneth L. Taylor, at a symposium in honor of his retirement. Kerry began a term of service as Program Officer for the History of the Earth Sciences Society.

- *Ursula B. Marvin* was the author of the keynote chapter ('Meteorites in History: an Overview from the Renaissance to the 20th Century') in the Geological Society of London's volume on *The History of Meteoritics and Key Meteorite Collections: Fireballs, Falls and Finds* (Special Publication 256, 2006, G. J. H. McCall, A. J. Bowden and R. J. Howarth, eds). She was also co-author, with McCall, Bowden, and J. A. Wood, of the volume's Epilogue.

- *Clifford M. Nelson* continued to prepare the fourth volume (1939–1979) of the history of the U.S. Geological Survey. Cliff's article about 'The Fifth International Geological Congress, Washington, 1891' appeared in *Episodes*, 29, 2006, 279–286. He also completed book reviews for *The Western Historical Quarterly* and *Endeavour*, and two 'postscripts' (Clarence King, John Powell) for Scribner's *New Dictionary of Scientific Biography*. These four contributions will be published in 2007.

- *Sarah (Sally) Newcomb* collaborated with Gary Rosenberg in organizing activities in the history of geology for the annual meeting of the Geological Society of America held at Philadelphia in October, 2006. This included a historical field trip to see important local libraries, societies and museums connected with the sciences. Sally organized (with Maria Luisa Crawford) a session in honor of the GSA History of Geology Division's 30th anniversary. Notwithstanding challenging experiences on the personal health front (hip replacement), Sally has continued her scholarly work, and also completed reviews of a couple of hefty books.

- *Julie R. Newell* was kept busy with a variety of administrative and service duties. She served as First Vice-Chair of the GSA History of Geology Division, and was elected to serve as Chair in 2007 (she has organized a topical session for the annual meeting program, on 'Exemplars and Exceptions: Using Individual and Group Biography to Understand Critical Issues in the History of Geology'). She continues as a member of the History of Science Society's Committee on Education, and in that capacity organized and participated in the Committee's workshop session on history of science content in the non-history of science course at the 2006 meeting. She is currently collecting materials for the third edition of the History of Science Society's *Syllabus Sampler*. She continues work for HSS as Secretary-Treasurer, Forum for the History of Science in America (1994 through 2006), and Assistant Editor, *History of Science in America News and Views* (1995 through 2006); and for HESS as an

Associate Editor of *Earth Sciences History*.

- *Kenneth L. Taylor* took retirement in June of 2006, after 39 years of service on the University of Oklahoma faculty. Colleagues and former students organized a fine send-off, featuring a symposium (jointly honoring Ken and his longtime friend David Levy, an American intellectual and cultural historian retiring at the same time). This included, for Ken's part of the symposium, presentations by Martin Rudwick, who traveled from Cambridge for the occasion, and Kerry Magruder. Refusing actually to disappear anytime soon, Ken is frequently at work on campus, although often he is off traveling somewhere. He has been preparing a collection of his papers to appear in late 2007 in Ashgate's Variorum Collected Studies Series, under the title *The Earth Sciences in the Enlightenment: Studies on the Early Development of Geology*. Other 2006 activities included editorial consulting for the *New Dictionary of Scientific Biography* (with responsibility for 'updates' on some articles in the original *DSB*, especially geological figures), several book reviews, and completion of his paper from the 2005 Prague meeting, 'Marivetz, Goussier, and Planet Earth: A Late Enlightenment Geo-Physical Project' (*Centaurus*, 2006, 48, 258–283).

- *Davis Young* gave a talk in May on 'Norman L. Bowen: Microcosm of the Geophysical Laboratory' at the centennial celebration of the Geophysical Laboratory. He wrote a review of David Oldroyd's *Earth Cycles* that has been submitted to *Episodes*. His latest book, *John Calvin and the Natural World*, University Press of America, is due for publication in early 2007. He continues to work on the historical development of the *Quantitative Classification of Igneous Rocks*, by W. Cross, J. P. Iddings, L. V. Pirsson, and H. S. Washington (1903).

Kenneth L. Taylor, Norman, Oklahoma

Uzbekistan

In the Institute of Geology and Geophysics, Academy of Sciences of Uzbekistan, L.N. Lordkipanidze authored the book *Seventy Years of Flagman of Academic Geological Science*, devoted to the jubilee of the Institute, organized in 1937. The book contains information about 269 research geologists, including 218 biographical sketches, with photos of academicians, professors, and Ph.D.s, who have worked at the institute in different years. Also, a booklet concerning the Institute, with a history of organization of the eleven existing laboratories has been prepared.

At the National University of Uzbekistan the 70th birthday of Academician T.N. Dalimov was celebrated. He is a famous scientist in the field of petrology of granitoids and volcanic rocks. At Tashkent State Technical University the 70-year anniversary of Academician Kh.A. Akbarov was celebrated. He is a specialist in the field of ore deposits. And at the State Committee of Geology and Mineral Resources of Uzbekistan the Director of the Institute of Mineral Resources, B.A. Isakhodjaev, celebrated his 70th anniversary. He is a specialist in the field of geological survey of ore and non-ore deposits. The Institute of Hydrogeology and Engineering Geology celebrated 45 years of organization, since its founding in 1960. Special Volume N2 of the Uzbekistan journal *Geology and mineral resources*, with history of development of the main scientific fields represented within the institute was devoted to this event.

Publications

- Abdullaev, Sh. H., *et al.* 'Ways of improvement of geophysical research in hydrogeology and engineering geology in Uzbekistan,' *Geology and mineral resources*, 2006, N2, 23–26.
- Aripov, C.A., and Abdullaev, B.D., 'Stages in investigation of pollution of ground waters in the institute HydroEnGeo,' *Geology and mineral resources*, 2006, N2, 74–77.
- Aripov, T.F., *et al.*, 'Sabridin Samarovich Khusamitdinov (60 years anniversary),' *Geology and mineral resources*, 2006, N4, 43.
- Akhmedov, N.A., *et al.*, 'Abdukhamid Abdumadjitovich Abdumadjidov (70 years anniversary),' *Geology and mineral resources*, 2006, N4, 42.
- Akhmedov, N.A., *et al.*, 'Dilara Sunnatullaevna Mukimova (70 years anniversary),' *Geology and mineral resources*, 2006, N4, 41.
- Akhmedov, N.A., *et al.*, 'Dalimov Turabek Nugmanovich (70 years anniversary),' *Geology and mineral resources*, 2006, N3, 52–53.
- Ganiev, I.N., and Ishbaev, X.D., 'Academician Turabek Nugmanovich Dalimov (biographic sketch),' Tashkent, 2006, 20 pp.
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Lora Lordkipanidze, Tashkent

Venezuela

Between 2005 and 2007, many activities relevant to the history of geological sciences took place in Venezuela. Some of these activities are in relationship to geologic-risk investigations and decisions; others involve academics and institutional steps to consolidate research themes. In all cases, the participation of INHIGEO members highlights the need to look with an historical point of view into every theme, case, or area. Sometimes the effort is more technical than theoretical or is clearly focused in the history of geosciences, but the point always focuses on the present. Many of the discussions and works presented were pointed in this direction.

Symposia

The "Seminario Internacional 'Involucrando a la Comunidad en los Programas de Reducción de Riesgos'" ("International Seminar on 'Involving the Community in Risk-Reduction Programs'") was held in Punto Fijo, Venezuela, at the Universidad de Falcón, Centro de Investigación de Riesgos, 18–20 October 2005. Rogelio Altez presented a paper on 'Vivir en el post-desastre: aprendizajes diferenciales de una tragedia aun vigente. El caso Vargas, Venezuela.'

The "IV Coloquio sobre Microzonificación Sísmica" ("IV Colloquial Meeting on Seismic Microzoning") was conducted by the Fundación Venezolana de Investigaciones Sismológicas, FUNVISIS (Venezuelan Seismological Researches Foundation) in Barquisimeto, Venezuela, 13–16 November 2005. Rogelio Altez and Jaime Laffaille gave a paper on 'La microzonificación histórica como complemento fundamental de la evaluación de la amenaza sísmica,' The paper was published in the *Proceedings of IV Colloquial Meeting on Seismic Microzoning*, Serie Técnica de la Fundación Venezolana de Investigaciones Sismológicas, Caracas, No. 1, 2005, 2–5. Also published in those *Proceedings* were (a) 'Escenarios sísmicos para la prevención de desastres en Caracas' by Yamazaki, Audemard, Hernández, Orihuela, Safina, Schmitz, Altez, and Tanaka (274–279), and (b) 'Historial de siniestros geotécnicos y su relación con la geología urbana en Barquisimeto y Cabudare y la prevención de futuras situaciones de riesgo' by Luz María Rodríguez, José Antonio Rodríguez, André Singer, and Víctor Rocabado (230–234).

At the "International Disaster Reduction Conference (IDRC)" in Davos, Switzerland, 27 August–1 September 2006, Rogelio Altez discussed 'Deccases under discussion; investigation about the number of deaths in the Vargas disaster of 1999, Venezuela.'

Altez was a Coordinator of the 'Research and Knowledge Session' and José Antonio Rodríguez was a Relater in the same session at the "Taller Nacional de Fortalecimiento de la Gestión del Riesgo en Venezuela, Proyecto PREDECAN de la Comunidad Andina de Naciones" ("National Workshop on Strengthening Risk Management"), held in Caracas during July and September 2006. And at the "VII Congreso Internacional y XVIII Nacional de Estudiantes de Ingeniería Civil" ("VII International Congress and XVIII National of Engineering Students") held at the Universidad del Quindío, Armenia, Colombia, 12–17 March 2007, Rogelio Altez presented papers on 'La Vulnerabilidad Intangible: Decisiones y riesgos en un contexto vulnerable. El caso del estado Vargas, Venezuela' and 'Modelos en Colapso: Perspectiva histórica sobre la crisis del viaducto 1 en la Autopista Caracas-La Guaira.'

Book published

Altez, Rogelio, *El Desastre de 1812 en Venezuela, sismos, vulnerabilidades y una patria no tan boba*, Universidad Católica Andrés Bello, Fundación Empresas Polar, Caracas, 2006, 522 pp.

Papers Published.

Altez, Rogelio, 'Los sismos del 26 de marzo de 1812 en Venezuela: nuevos aportes y evidencias sobre estos eventos,' *Boletín Técnico del IMME*, Julio 2005, 43, No. 2, Facultad de Ingeniería, Universidad Central de Venezuela, Caracas, 11–34.

Altez, Rogelio, and Jaime Laffaille, 'La Microzonificación Sismo-Histórica como Complemento Fundamental de la Evaluación de la Amenaza Sísmica. *Revista de la Facultad de Ingeniería, Universidad Central de Venezuela,*' in press.

Project in progress

José Antonio Rodríguez and Rogelio Altez are producing the *Catálogo Sismológico Venezolano del Siglo XX, Documentado e Ilustrado (Venezuelan Seismological Catalogue of the XX Century, Documented and Illustrated)*, sponsored by Fundación Venezolana de Investigaciones Sismológicas (Venezuelan Seismological Research Foundation). The work covers October 2005 through July 2007.

Events in progress

The "VI Simposio Venezolano en Historia de las Geociencias" ("VI Venezuelan Symposium in History of Geosciences), will occur during the IX Venezuelan Geological Congress, to be held in October 2007.

It should be noted that the IX Venezuelan Geological Congress will be held in Caracas, 21–25 October 2007, in association with commemoration of the 70th anniversary of the Geology, Mining and Geophysics School of the Central University. There will be one special session on the past, present and future of geosciences in Venezuela. INHIGEO member Franco Urbani is president of the Organizing Committee.

The students' society of the Geology, Mining and Geophysics School of the Central University will publish later in the year the third edition of a Geological Calendar, an outstanding production in photos and texts, related to geologic sites or laboratories within the country. Further information is available at ixcvg2007@gmail.com ;

Awards

Congratulations are due to our INHIGEO colleague Anibal R. Martínez, who was elected (2006) as President of the National Academy of Engineering and the Habitat of Venezuela.

The book *Atlas Geológico de la Cordillera de la Costa*, by INHIGEO members Franco Urbani and José Antonio Rodríguez (Universidad Central de Venezuela-FUNVISIS, Caracas, 2004), won the II Premio Nacional del Libro 2004 (National Book Award 2004) in the category "Libro Universitario" (University Book). The award was sponsored by the Centro Nacional del Libro (May 2006).

Rogelio Altez, Estado Vargas

HONORARY SENIOR MEMBERS

April 2007

Addresses are provided in the 'INHIGEO Members' listing, along with an asterisk (*) before the last name and the designation 'HonSrMbr.'

Professor Albert Carozzi, USA
Professor Gordon Craig, United Kingdom
Dr Stanislaw S. Czarniecki, Poland

Alan Mason, New Zealand
Professor Alexander Ospovat, USA
Professor Cecil Schneer, USA

Professor Robert H. Dott, Jr, USA
Professor Endre Dudich, Hungary
Professor Michel Durand-Delga, France
Professor Wolf von Engelhardt, Germany
Professor Gordon Herries Davies, Ireland
Professor Wolfhart Langer, Germany
Professor Eugenij Milanovsky, Russia

Professor Kanemori Suwa, Japan
Professor Emile den Tex, The Netherlands
Professor Rudolf Trümpy, Switzerland
Professor Hong-Zhen Wang, China
Professor Dan Yaalon, Israel
Professor Kenzo Yagi, Japan

INHIGEO MEMBERS

Dr Daniel G. Rubiolo
 Secretaria de Minería de la Nación
 Avenida Julio à Roca #651, 10 Piso
 Buenos Aires
 ARGENTINA
Tel: 54 1 349 3166 **Fax:** 54 1 349 3160
Email: darubiolo@yahoo.com

Ms Carol Bacon
 Mineral Resources Tasmania
 PO Box 56
 Rosny Park
 Tasmania 7018
 AUSTRALIA
Tel: 61 3 6233 8326 **Fax:** 61 3 6233 8338
Email: cbacon@mrt.tas.gov.au

Dr David Branagan
 9 Chiltern Road
 Willoughby
 New South Wales 2068
 AUSTRALIA
Tel: 61 2 9958 7127 **Fax:** 61 2 9692 0184
Email: dbranaga@mail.usyd.edu.au

Dr Barry Cooper
 20 Royal Avenue
 Burnside
 South Australia 5066
 AUSTRALIA
Tel: 61 2 8332 1846 **Fax:** 61 8 8226 0323
Email: cooper.barry@saugov.sa.gov.au

Dr Thomas Darragh
 Division of Natural History
 Museum of Victoria
 P.O. Box 666E
 Melbourne, Victoria 3001
 AUSTRALIA
Tel: 61 3 9270 5040 **Fax:** 61 3 9270 5043
Email: tdarragh@museum.vic.gov.au

Professor Bernard Joyce
 School of Earth Sciences
 University of Melbourne
 Melbourne VIC 3010
 AUSTRALIA
Tel: 61 03 9347 2958 **Fax:**
Email: ebj@unimelb.edu.au

Professor Homer Le Grand
 Faculty of Arts
 Monash University
 Clayton
 Victoria 3118
 AUSTRALIA
Tel: 61 3 9905 2797/2100 **Fax:** 61 3 9905 5110
Email: homer.legrand@arts.monash.edu.au

Dr Wolf Mayer
 Department of Earth and Marine Sciences
 Australian National University (Canberra)
 AUSTRALIA
Tel: 61 0 2 6258 2949 (Home) **Fax:** 61 0 2 6125
 5544
Email: wolf.mayer@bigpond.com.au

Dr Doug McCann
 Department of Earth Sciences, Deakin University
 Melbourne Campus, 221 Burwood Highway
 Burwood VIC 3125
 AUSTRALIA
Tel: 61 3 9251 7191 **Fax:**
Email: douglas@deakin.edu.au

Mr Greg McNally
 29A Grosvenor Street
 Wahroonga, NSW 2076
 AUSTRALIA
Tel: 61 2 9928 2192 **Fax:** 61 2 9928 2272
Email: gmcnally@skm.com.au

Professor David Oldroyd
 28 Cassandra Avenue
 St Ives
 Sydney NSW 2075
 AUSTRALIA
Tel: 61 2 9449 5559 **Fax:** 61 2 9402 7635
Email: doldroyd@optushome.com.au

Dr Susan Turner
 Queensland Museum
 69 Kilkivan Avenue
 Kenmore
 Queensland 4069
 AUSTRALIA
Tel: 61 7 3406 8348 **Fax:** 61 7 3406 8355
Email: sue.turner@qm.qld.gov.au

Professor Charles Rowland (Rowl) Twidale
 School of Earth and Environmental Sciences
 University of Adelaide
 Adelaide, South Australia 5005
 AUSTRALIA
Tel: 618 8303 5392 **Fax:** 618 8303 4347
Email: rowl.twidale@adelaide.edu.au

Dr Tillfried Cernajsek
 Geologische Bundesanstalt F.A. Bibliothek und
 Verlag
 Geodatenzentrale u. Wiss. Archiv
 Postfach 127 Rasumofskygasse 23
 A-1031, Wien
 AUSTRIA
Tel: 43 1 7125 67465 **Fax:** 43 1 7125 6747490
Email: tcernajsek@cc.geolba.ac.at

Dr Bernhard Hubmann
 Institut für Geologie und Paläontologie
 Karl-Franzens-Universität Graz
 A-8010 Graz,
 Heinrichstraße 26
 AUSTRIA
Tel: 43 316 380 5586 **Fax:** 43 316 380 9871
Email: bernhard.hubmann@uni-graz.at

Dr Lieselotte Jontes
 Universitätsbibliothek der Montanuniversität
 Leoben
 University Leoben
 Franz-Josefstrasse 18,
 A-8700 Leoben
 AUSTRIA
Tel: 43 3842 402 7800 **Fax:** 43 3842 46380
Email: jontes@unileoben.ac.at

Dr Marianne Klemun
 Department of History
 University of Vienna
 1010 Wien, Dr. Karl Lueger-Ring 1
 AUSTRIA
Tel: 43 1 4277 40832 **Fax:** 43 1 4277 9408
Email: marianne.klemun@univie.ac.at

Dr Albert Schedl
 Geologische Bundesanstalt
 Rasumofskygasse 23
 Postfach 127
 A-1031 Wien
 AUSTRIA
Tel: 43 1 7125 67428 **Fax:** 43 1 7125 67456
Email: aschedl@cc.geolba.ac.at

Dr Claudia Schweizer
 Am Modenapark 13/11
 A-1030, Vienna
 AUSTRIA
Tel: 0043 1 7133 3883 **Fax:**
Email: c.schweizer@gmx.at

Dr Johannes Seidl
 Archives of the University of Vienna
 Postgasse 9
 A-1010 Wien
 AUSTRIA
Tel: 0043 1 4277 172/17 **Fax:** 0043 1 4277 9172
Email: johannes.seidl@univie.ac.at

Dr Yadviga Anoshko
 Institute of Geochemistry & Geophysics
 National Academy of Sciences, Belarus
 Kuprevich str. 7
 220141, Minsk
 BELARUS
Tel: 375 017 263 8758 **Fax:** 375 017 263 6398
Email: igig@igig.org.by

Professor Valeri A. Ermolenko
 Geographical Department
 Belarussian State University
 4 Nezavisimosti Avenue
 220050 Minsk
 BELARUS
Tel: 375 17 260 5312 **Fax:** 375 17 226 5940
Email: irkim@tut.by

Professor Eric Groessens
 Rue Louis Marcelis 98
 B-1970 Wezembeek-Oppem
 BELGIUM
Tel: 02/78.87.614 **Fax:** 02/64.77.359
Email: eric.groessens@sciencesnaturelles.be

Dr Hiroshi HIRAI
 Impasse Nihard 5
 4000 Liege
 BELGIUM
Tel: 32 4 222 0123 **Fax:** 32 4 222 0123
Email: jzt07164@nifty.ne.jp

Dr-Ing. Carlos Serrano
 Casilla 115
 Calle Millares 21
 Potosí
 BOLIVIA
Tel: 591 62 22498 **Fax:**
Email: carlos_sarah12@yahoo.es

Associate Professor José Carlos Barreto de Santana
 Department of Exact Sciences
 State University of Feira de Santana
 Bahia State
 BRAZIL
Tel: 55 75 622 0307 **Fax:** 55 75 224 8085
Email: zecarlos@uefs.br

Associate Professor Silvia F. de M. Figueirôa
 Instituto de Geociências
 Universidade de Campinas C.P. 6152
 13083-970 Campinas
 São Paulo
 BRAZIL
Tel: 55 19 3521-4553 **Fax:** 55 19 289 1582
Email: figueiroa@ige.unicamp.br

Dr Pedro Wagner Gonçalves
 Dept. of Geosciencias Applied to Education
 Institute of Geosciences
 State University of Campinas
 P.O. Box 6152 13081-970 Campinas Sao Paulo
 BRAZIL
Tel: 55 19 3788 7352 **Fax:** 55 19 3289 1562
Email: pedrog@ige.unicamp.br

Associate Professor Maria Margaret Lopes
 Instituto de Geosciências
 UNICAMP
 Caixa Postal 6152 13081-970 Campinas
 São Paulo
 BRAZIL
Tel: 55 19 3289 1097 **Fax:** 55 19 3289 1562
Email: mmlopes@ige.unicamp.br

Dr Luis Alberto Buatois
 Department of Geological Sciences
 University of Saskatchewan
 114 Science Place
 Saskatoon SK S7N 5E2
 CANADA
Tel: 54 381 425 3053 **Fax:**
Email: luis.buatois@usask.ca

Dr Ernst Hamm
 Science & Technology Studies Program, School of
 Analytic Studies
 TEL Bldg Room 2005, York University
 Toronto,
 Ontario M3J 1P3
 CANADA
Tel: 416 736 2100 ext 20223 **Fax:** 416 736 5188
Email: ehamm@yorku.ca

Dr Maria Gabriela Mangano
 Department of Geological Sciences
 University of Saskatchewan
 114 Science Place
 Saskatoon SK S7N 5E2
 CANADA
Tel: **Fax:**
Email: gabriela.mangano@usask.ca

Dr Gerard Middleton
 90 St. Margaret's Road
 Ancaster
 Ontario L9G 2K9
 CANADA
Tel: 905 525 9140 **Fax:**
Email: middleto@mcmaster.ca

Professor S. George Pemberton
 Department of Earth & Atmospheric Sciences
 University of Alberta
 Edmonton T6G 2E3 Alberta
 CANADA
Tel: 780 492 2044 **Fax:**
Email: George.Pemberton@ualberta.ca

Mr David Spalding
 1105 Ogden Road
 RR No. 1 Pender Island
 British Columbia V0N 2M1
 CANADA
Tel: 1 250 629 2047 **Fax:** 1 250 629 2047
Email: david@davidspalding.com

Dr Jian-Zhao YIN [CHINA Member]
 17-7511 No. 4 Road
 Richmond, BC V6Y 4K4
 CANADA
Tel: 1 604 244-1630 **Fax:**
Email: jimyin7@yahoo.ca

Dr Chuanmao JI
 Senior Consulting Centre
 Ministry of Land & Resources
 64 Funei Street,
 Beijing, 100812
 CHINA
Tel: 010 6831 5161 **Fax:**
Email: jcmwzx2005@yahoo.com.cn

Professor Hongzhen *WANG, HonSrMbr
 China University of Geosciences
 Xueyuan Road 29
 Beijing 100083
 CHINA
Tel: 86 10 6231 3652 **Fax:** 86 10 6231 0897
Email: wwhongzhen@163.com

Professor Jing-yi YANG
 Institute for the History of Natural Science
 Academica Sinica
 137 Chao Nei Avenue
 Beijing 10010
 CHINA
Tel: 86 10 6288 3390 **Fax:**
Email: j_l_yang@163.com

Professor Guangrong YANG
 Research Section on History of Geology
 China University of Geosciences (Beijing)
 29 Xueyuan Road
 Beijing 100083
 CHINA
Tel: **Fax:** 86 10 8232 6368
Email: none

Professor Zhendong YOU
 School of Earth Sciences & Mineral Resources
 China University of Geosciences
 Bldg. 28-162, Chengfu Road 20
 Haidian district, Beijing 100083
 CHINA
Tel: 86 010 82322553 **Fax:** 86 010 82326368
Email: zhendongyou@tom.com

Professor Yusheng ZHAI
 China University of Geosciences (Beijing)
 29 Xueyuan Road
 Beijing 100083
 CHINA
Tel: 86 10 8232 2650 **Fax:** 86 10 9232 2005
Email: yszhai@cugb.edu.cn

Associate Professor Jiuchen ZHANG
 Institute for the History of Natural Science
 Academia Sinica
 137 Chao Nei Avenue
 Beijing 100010
 CHINA
Tel: 86 10 8402 7627 **Fax:** 86 10 8402 7627
Email: zhangjiuchen9@sina.com

Professor Armando Espinosa-Baquero
 Universidad del Quindío
 Facultad de Ingeniería
 Armenia
 COLOMBIA
Tel: 6745 2708 **Fax:** 6746 2563
Email: armandoespinosa@uniquindio.edu.co

Sr Guillermo E. Alvarado
 Oficina de Sismología y Vulcanología
 Instituto Costarricense de Electricidad
 P.O. Box 10032-1000
 San José
 COSTA RICA
Tel: 506 220 6394 **Fax:** 506 220 8212
Email: galvaradoi@ice-go.cr

Sr Gerardo J. Soto
 Apartado 360-2350
 San Francisco de Dos Ríos
 San José
 COSTA RICA
Tel: 506-219-4051 **Fax:**
Email: katomirodriguez@yahoo.com

Dr Alena Cejchanova
 Czech Geological Survey
 Klarov 3
 118 21 Prague
 CZECH REPUBLIC
Tel: 257 089 431 **Fax:** 257 531 376
Email: cejcha@cgu.cz

Dr Josef Haubelt
 Svojsovická 10/2834
 Sporilov II
 CZ-14100 Praha 4
 CZECH REPUBLIC
Tel: 420 2 7276 2531 **Fax:**
Email: haubelt@pohoda.com

Dr Jan Kozák
 Geophysical Institute
 Czech Academy of Science
 Bocni 11/1401
 14131 Prague 4
 CZECH REPUBLIC
Tel: 420 2 6710 3018 **Fax:** 420 2 7276 1549
Email: kozak@ig.cas.cz

Professor Rudolf Musil
 Department of Geology and Palaeontology
 Masaryk-University
 Kotlarska Street 2
 611 37 Brno
 CZECH REPUBLIC
Tel: 420 5 4112 9255 **Fax:** 420 5 4121 1214
Email: rudolf@sci.muni.cz

Professor Antonin Prichystal
 Department of Geology and Palaeontology
 Masaryk University
 Kotlarska 2
 CZ-611 37 Brno
 CZECH REPUBLIC
Tel: 420 5 4112 9247 **Fax:** 420 5 4121 1214
Email: prichy@sci.muni.cz

Dr Jan Urban
 Masarykova 580
 28401 Kutna Hora
 CZECH REPUBLIC
Tel: **Fax:**
Email: none

Dr Milos Zárbynický
 Za Chalupami 144
 150 00 Prague 5
 CZECH REPUBLIC
Tel: 420 2 5791 1514 **Fax:** 420 2 5791 0031
Email: hornik@centrum.cz

Professor Jens Morten Hansen
 Geological Survey of Denmark
 Oster Voldgade 10
 DK-1350
 Copenhagen
 DENMARK
Tel: 45 3544 6340 **Fax:** 45 3544 6201
Email: jmh@geus.dk

Professor Dimitri Kaljo
 Institute of Geology
 Tallinn University of Technology
 7 Estonia Blvd.
 10143 Tallinn
 ESTONIA
Tel: 372 645 4653 **Fax:** 372 631 2074
Email: kaljo@gi.ee

Mr Tonu Pani
 Institute of Geology
 University of Tartu
 Vanemuise 46
 Tartu 51014
 ESTONIA
Tel: 372 7 375 839 **Fax:**
Email: tpani@ut.ee

Professor Michel *Durand-Delga, HonSrMbr
8 Rue Charles-Lefebvre
F77210 Avon
FRANCE
Tel: 33 1 6422 5559 **Fax:** 33 1 6422 5559
Email: none

Dr Jean Gaudant
Sciences de la Terre
Université Paris 7
2 Place Jussieu
Paris, Cedex 05
FRANCE
Tel: 33 1 4424 1133 **Fax:** 33 1 4427 8148
Email: Jean.gaudant@orange.fr

Dr Gaston Godard
UFR de Sciences de Terre
Université de Paris 7
2 Place Jussieu
75251 Paris Cedex 05
FRANCE
Tel: 33 1 4427 5191 **Fax:**
Email: gg@ccr.jussieu.fr

Dr Gabriel Gohau
2 av. Bernard Palissy
92 210 Saint Cloud
FRANCE
Tel: 33 1 4602 0097 **Fax:** 33 1 4046 0295
Email: ga.gohau@wanadoo.fr

M. Philippe Grandchamp
5 rue du Coteau
92370
Chaville
FRANCE
Tel: 33 1 4709 6465 **Fax:**
Email: phgrandchamp@aol.com

Professor Goulven Laurent
5 rue Jean-Paul Sartre
29200 Brest
FRANCE
Tel: 33 2 9805 4367 **Fax:** 33 2 9805 4367
Email: goulvenn@wanadoo.fr

Dr Pascal Richet
Physique des Minéraux et des Magmas
Institut de Physique du Globe de Paris
4, place Jussieu
75252 Paris cedex 05
FRANCE
Tel: 33 1 44 27 38 10 **Fax:**
Email: richet@ipgp.jussieu.fr

Professor Philippe Taquet
Laboratoire de Paléontologie
8 rue Buffon
Paris
75005
FRANCE
Tel: 33 1 4079 3039 **Fax:** 33 1 4079 3580
Email: taquet@cimrsl.mnhn.fr

Professor Dr Jacques [NETHERLANDS Member]
Touret
Musée de Mineralogie
Ecole des Mines
75006
Paris
FRANCE
Tel: 31 20 444 7270 **Fax:** 31 20 646 2457
Email: jtouret@ensmp.fr

Dr Lydie Touret
Musée de Mineralogie
E.N.S.M.P.
60 bvd St Michel
75006 Paris
FRANCE
Tel: 33 1 4051 9143 **Fax:** 33 1 4634 2596
Email: touret@musce.ensmp.fr

Professor Rudolf Daber
Humboldt-Universität
Naturkundemuseum
Invalidenstrasse 43
10115 Berlin
GERMANY
Tel: 49 30 2093 8576 **Fax:** 49 30 2093 8561
Email: DrRudolfDaber@web.de

Professor Wolf *von Engelhardt, HonSrMbr
Institut für Mineralogie, Petrologie und Geochemie
Universität Tübingen
Wilhelmstrasse 56
D-72074
GERMANY
Tel: **Fax:**
Email:

Dr Bernhard Fritscher
Sentilostrasse 2a
D-81477 München
GERMANY
Tel: 49 89 723 4081 **Fax:** 49 89 2180 3162
Email: b.fritscher@lrz.uni-muenchen.de

Professor Rodney Grapes [NZ Member]
Department of Earth Sciences
Sun Yat-sen (Zhongshan) University
Guangzhou (Canton) 510275
CHINA
Tel: 49 761 203 6394/6407
Fax: 49 761 203 6394/6407
Email: grapes@mail.sysu.edu.cn

Professor Martin Guntau
Am Fasanenholz 14
D-18147
Rostock
GERMANY
Tel: 49 381 201 8810 **Fax:** 49 381 493 4604
Email: martin.guntau@web.de

Dr Gottfried Hofbauer
Geowissenschaftliche Dokumentation
Anzengruberweg 2
D 91056
Erlangen
GERMANY
Tel: 49 9135 729 415 **Fax:** 49 135 729 917
Email: geoldoku@gdgh.de

Dr Martina Koelbl-Ebert
Jura-Museum
Burgstrasse 19
D-85072 Eichstätt
GERMANY
Tel: 49 (0) 8421 2956 **Fax:** 49 (0) 8421 89609 and
Fax: 0049/(0)8421/89609"
Email: koelbl-ebert@jura-museum.de

Dr Peter Krueger
Bahnhofstrasse 27
D-13127
Berlin
GERMANY
Tel: Fax:
Email: kruegergeo@aol.com

Professor Wolfhart *Langer, HonSrMbr
Institut für Paläontologie, Rhein
Friedrich-Wilhelm-Universität, Nussallee 8
D-53115
Bonn
GERMANY
Tel: Fax:
Email:

Dr Cornelia Lüdecke
Valleystrasse 40
D-81371 München
GERMANY
Tel: 49 89 725 6725 **Fax:** 49 89 725 6725
Email: c.luedecke@lrz.uni-muenchen.de

Prof. Dr N.A. Rupke [NETHERLANDS Member]
Institut fuer Wissenschaftsgeschichte
Goettingen University
Papendiek 16
D-37073 Goettingen
GERMANY
Tel: 49 551 39 9467 **Fax:** 49 551 39 9748
Email: nrupke@gwdg.de

Dr Wilfried Schröder
Geophysical Institute
Hechelstrasse 8
D-28777
Bremen-Roenebeck
GERMANY
Tel: Fax:
Email:

Professor Klaus Thalheim
Staatliche Naturhistorische Sammlungen Dresden
Museum fuer Mineralogie und Geologie
Koenigsbruecker Landstrasse 159
D-01109 Dresden
GERMANY
Tel: 49 0 351 8926 410 **Fax:** 49 0 351 8926 404
Email: klaus.thalheim@snsd.smwk.sachsen.de

Dr Irma Dobos
Margit krt 44
H-1027
Budapest
HUNGARY
Tel: 36 1 202 2741 **Fax:**
Email: hidrolog@mail.inext.hu

Dr Endre *Dudich, HonSrMbr
Karolyi M.u. 14/B iv.5
H 1053 Budapest
HUNGARY
Tel: 36 1 251 0109 **Fax:** 36 1 251 0703
Email: dudich@axelero.hu

Dr József Hála
Hungarian Geological Survey
Népstadion ut 14
Pf. 106
H 1442 Budapest XIV
HUNGARY
Tel: Fax:
Email: papp@mafi.hu

Dr Miklos Kazmer
Department of Palaeontology
Eotvos University
P.O. Box 120
H-1518 Budapest
HUNGARY
Tel: 36 1 381 0555 **Fax:** 36 1 381 2104
Email: mkazmer@hotmail.com

Dr Gabor Papp
Department of Mineralogy and Petrology
Hungarian Natural History Museum
Pf. 137
H-1431 Budapest
HUNGARY
Tel: 36 1 333 0655/2209 **Fax:** 36 1 210 1096
Email: pappmin@ludens.elte.hu

Dr Terez Póka
 Laboratory for Geochemical Research
 Hungarian Academy of Science
 Budaörsi ut 45
 H-1112 Budapest
 HUNGARY
Tel: 361 319 3119/1153 **Fax:** 361 319 3137
Email: poka@sparc.core.hu

Dr Peter Rozsa
 Department of Geology and Mineralogy
 University of Debrecen
 H-4010
 Debrecen Pf 4
 HUNGARY
Tel: 36 52 447 474 (ext. 2311) **Fax:**
Email: rozsap@tigris.klte.hu

Professor Istvan Viczian
 Branyiszko u. 7. I.5
 H-1026
 Budapest
 HUNGARY
Tel: 36 1 275 3263 **Fax:** 36 1 251 0703
Email: viczian@mafi.hu

Professor Kottapalli S. Murty
 101 Sneh Chaya Apts
 28 Hindustan Colony Amaravti Road
 Nagpur 440-010
 INDIA
Tel: 91 712 557 984 **Fax:** 91 712 547 141
Email: murtysk1931@yahoo.co.in

Professor Gordon *Herries Davies, HonSrMbr
 Ballinacough House
 Ballinacough, Nenagh
 County Tipperary
 IRELAND
Tel: Fax:
Email:

Dr Patrick N. Wyse Jackson
 Geological Museum
 Department of Geology
 Trinity College
 Dublin 2
 IRELAND
Tel: 353-1-896-1477 **Fax:** 353 1 671 1199
Email: wysjcknp@tcd.ie

Professor Paul Mohr
 Tanagharran
 Corrandulla
 County Galway
 IRELAND
Tel: 353 91 789 819 **Fax:**
Email: pmohr@indigo.ie

Dr Dov Ginzburg
 Geological Survey of Israel
 30 Malchei Yisrael St.
 95 501 Jerusalem
 ISRAEL
Tel: 972 2 14 251 **Fax:** 972 2 538 0668
Email: none

Professor Dan *Yaalon, HonSrMbr
 Inst. of Earth Sciences
 The Hebrew University
 Jerusalem 91 904
 ISRAEL
Tel: 972 2 570 4411 **Fax:** 972 2 566 2581
Email: yaalon@vms.huji.ac.il

Dr Stefano Marabini
 Via S. Martino 1
 48018 Faenza (RA)
 ITALY
Tel: 39 054 628 067 **Fax:** 39 054 628 067
Email: stemarabini@libero.it

Ms Imma Menditti
 Via Torre 75
 80030 Scisciano
 Napoli
 ITALY
Tel: 39 338 278 3060 **Fax:**
Email: immamenditti@libero.it

Professor Giuliano Piccoli
 Riviera San Benedetto 27
 I-35139
 Padova
 ITALY
Tel: 39 49 872 2055 **Fax:**
Email: giulianopiccoli@hotmail.com

Dr Claudia Principe
 Istituto di Geoscienza e Georisorse
 Area della Ricerca, CNR di Pisa San Cataldo
 Via Giuseppe Moruzzi 1
 56124 Pisa
 ITALY
Tel: 39 050 315 2335/6 **Fax:** 39 050 315 2360
Email: c.principe@igg.cnr.it

Professor Ezio Vaccari
 Dipartimento di Informatica e Comunicazione
 Universita dell'Insubria
 Via Mazzini 5
 21100 Varese
 ITALY
Tel: 39 332 218 940 (W) 39 332 994 628 (H)
Fax: 39 332 218 919
Email: ezio.vaccari@uninsubria.it

Professor Gian Battista Vai
 Dip Scienze della Terre e Geologico-Ambientali
 Università di Bologna, Via Zamboni 67
 I-40126
 Bologna
 ITALY
Tel: 39 051 20 4552 **Fax:** 39 052 20 94522
Email: vai@geomin.unibo.it

Professor Toshio KUTSUKAKE
 Laboratory of Geological Sciences
 College of General Education
 Aichi University
 Toyohashi 441
 JAPAN
Tel: 81 532 47 4111 **Fax:**
Email: kutukake@vega.aichi-u.ac.jp

Professor Hakuyu OKADA
 4-8-36-601 Yoshizuka
 Hakata-ku
 Fukuoka 812-0041
 JAPAN
Tel: 81 92 623 8161 **Fax:**
Email: hokada@bb.mbn.or.jp

Professor Masae OMORI
 3-32-5 Sakujii-di
 Nerima-ku
 177-0045
 Tokyo
 JAPAN
Tel: 81 93 3996 2341 **Fax:** 81 93 3996 2341
Email: user555nob@aol.com

Professor Kanenori * SUWA, HonSrMbr
 1-1020 Umemori-zaka
 Meito-ku
 Nagoya 465-0065
 JAPAN
Tel: 81 52 701 0457 **Fax:** 81 52 701 0457
Email: ysuwa297@sf.starcats.ne.jp

Professor Yasumoto SUZUKI
 4-4-15
 Sugano
 Ichikawa 272-0824
 JAPAN
Tel: 81 947 325 0982 **Fax:** 81 947 325 0982
Email: yasu-suzuki@vega.ocn.ne.jp

Professor Kenzo *YAGI, HonSrMbr
 2-5-10 Moiwashita
 Minami-ku
 Sapporo 005-0040
 JAPAN
Tel: 81 11 581 1473 **Fax:** 81 11 581 1473
Email: none

Dr Michiko YAJIMA
 #901
 6-2-10, Hongo, Bunkyo-ku
 Tokyo 113-0033
 JAPAN
Tel: 81 3 3812 7039 **Fax:** 81 3 3812 7039
Email: PXI02070@nifty.com

Dr Toshihiro YAMADA
 2-22-2-305, Utase
 Mihama-ku
 Chiba
 261-0013
 JAPAN
Tel: 81 43 279 7094 **Fax:** 81 43 279 7094
Email: tosmak-yamada@muf.biglobe.ne.jp

Professor Toshifumi YATSUMIMI
 1-22-68, Omiya,
 Suginami-ku
 Tokyo, 168-0061
 JAPAN
Tel: 81 3 5377 2027 **Fax:** 81 3 5377 2027
Email: uptijg@coral.plala.or.jp

Dr Ervin Luksevics
 Department of Geology
 University of Latvia
 Rainis Blvd 19
 Riga LV-1586
 LATVIA
Tel: 371 733 1766 **Fax:** 371 733 2704
Email: Ervins.Luksevics@lu.lv

Professor Algirdas Gaigalas
 Department of Geology and Mineralogy
 Vilnius University
 M. K. Ciurlionio Street
 LT-03101 Vilnius
 LITHUANIA
Tel: 370 239 8273 **Fax:** 370 239 8272
Email: Algirdas.Gaigalas@gf.vu.lt

Professor Algimantas Grigelis
 13 Sevcenkos Street
 2699
 Vilnius
 LITHUANIA
Tel: Tel 370 5 210 47 15 **Fax:** 370 521 36 408
Email: grigelis@geo.lt

Dr Gailė Zaludienė
 Institute of Geology & Geography
 T. Sevcenkos g.13
 03223 Vilnius
 LITHUANIA
Tel: 370 5 210 47 10 **Fax:** 370 5 210 46 95
Email: zaludiene@geo.lt

Dr George Zammit-Maempel
148 Triq San Frangisk
Hal Balzan BZN 07
MALTA
Tel: 356 442 204 **Fax:**
Email: nibmike@onvol.net

Dr Gabriele I. C. Schneider
Geological Survey of Namibia
PO Box 2168
Windhoek
NAMIBIA
Tel: 264 61 208 5205 **Fax:** 264 61 249 144
Email: gabi@mme.gov.na

Professor Emile *den Tex, HonSrMbr
Rhijnvreugd 9
2382 BG
Zoeterwoude
NETHERLANDS
Tel: Fax:
Email:

Professor Emeritus Frederik R. van Veen
Langebrug 8 v
2311 TL
Leiden
NETHERLANDS
Tel: 31 71 5134263 **Fax:**
Email: f.r.vanveen@kpnplanet.nl

Dr Michael Johnston
395 Trafalgar Street
Nelson
NEW ZEALAND
Tel: 64 3 546 7575 **Fax:** 64 3 546 7574
Email: mike.johnston@xtra.co.nz

Mr Alan *Mason, HonSrMbr
75-A Argyle St.
Heme Bay
Auckland 1002
NEW ZEALAND
Tel: 64 9 378 6981 **Fax:**
Email: apmason@xtra.co.nz

Dr Simon Nathan
2a Moir Street
Mt. Victoria
Wellington 6011
NEW ZEALAND
Tel: 64 4 384 5444 **Fax:**
Email: s.nathan@xtra.co.nz

Professor J. B. Waterhouse
25 Avon Street
Oamaru
NEW ZEALAND
Tel: Fax:
Email: perma@xnet.co.nz

Professor Geir Hestmark
University of Oslo
Department of Biology
Blindern Postboks 1066
N-0315 Oslo
NORWAY
Tel: 47 2 45 5050 **Fax:** 47 2 285 4664
Email: geir.hestmark@bio.uio.no

Professor Stefan W. Alexndrowicz
ul. Lobzowska 29/2
31-139 Krakow
POLAND
Tel: 48 12 423 44 11 (Cell) **Fax:**
Email: sz.alex@neostrada.pl

Dr Stanislaw S. * Czarniecki, HonSrMbr
Zespól Pracowni ZNG PAN
ul. Senacka 3
Kracow
POLAND
Tel: Fax:
Email: micku@poczta.onet.pl

Professor Andrzej Grodzicki
50-374 Wroclaw, ul.
Norwida 15/6
POLAND
Tel: 48 (0)71 328 33 36 **Fax:** 48 (0)71 37 59 371
Email: agrodz@ing.uni.wroc.pl

Professor Wojciech Narebski
Muzeum Ziemi PAN
ul Zelechowskiego 4/30
30-124 Krakow
POLAND
Tel: Fax:
Email: narebski@geos.ing.uj.edu.pl

Professor Janusz Skoczylas
Inst. of Geology, Uniwerytet im. Adama
Mickiewicza
ul. Maków Polnych 16
61-606 Poznan
POLAND
Tel: 48 61 829 6019 **Fax:** 48 61 829 6001
Email: skocz@amu.edu.pl

Professor Radoslaw Tarkowski
Department of Geology
Pedagogical University (Cracow)
ul. Grota-Roweckiego 49/6
30-348 Krakow
POLAND
Tel: 48 012 632 67 17 (Home) **Fax:**
Email: tarkowski@min-pan.krakow.pl

Dr Andrzej J. Wojcik
 Institute of History of Sciences
 Polish Academy of Sciences
 ul. Dzialkowa 37
 43-600 Jaworzno
 POLAND
Tel: 48 32 616 21 64 (Same as Fax) **Fax:** 48 32
 616 21 64
Email: awoja@jawnet.pl

Professor Zibigniew Wojcik
 Chlodna 15/1022
 00391 Warszawa
 POLAND
Tel: Fax:
Email: none

Professor Luis Aires-Barros
 Laboratory of Mineralogy and Petrology
 Instituto Superior Tecnico
 Av. Rovisco Pais
 1049-001 Lisbon
 PORTUGAL
Tel: 351 218 400 806 **Fax:** 351 218 400 806
Email: airesbarros@popsrv.ist.utl.pt

Dr Filomena Amador
 Departamento de Ciências Exactas e Tecnológicas
 Universidade Alberta
 Rua da Escola Politécnica No. 147
 1250 Lisboa
 PORTUGAL
Tel: 351 214108531 **Fax:** 351 213150183
Email: famad@univ-ab.pt

Professor Dr João Luís Cardoso
 Universidade Aberta
 Palacio de Ceia
 R. Escola Politecnica n. 147
 1200-1000 Lisboa
 PORTUGAL
Tel: Fax:
Email: arqueolo@univ-ab.pt

Dr Ana Carneiro
 SACSA, Faculdade de Ciências e Tecnologia
 Universidade Nova de Lisboa
 2825-114 Monte de Caparica
 PORTUGAL
Tel: 351 21 2948 533 **Fax:** 351 21 2948 551
Email: amoc@netcabo.pt

Professor Antonio Augusto Soares de Andrade
 Dept Geosciencias
 Universidade de Aveiro
 3810-Aveiro
 PORTUGAL
Tel: 351 34 370 747 **Fax:** 351 34 370 605
Email: asandrade@geo.ua.pt

Professor Martim Portugal e Vasconcelos Ferreira
 Departamento de Ciências da Terra
 Apartado 3014
 Universidade de Coimbra
 3049 Coimbra
 PORTUGAL
Tel: Fax: 351 239 825 144
Email: none

Professor Manuel C. S. Pinto
 Department of Geosciences
 University of Aveiro
 3810 Aveiro
 PORTUGAL
Tel: 351 2 34 370 744 **Fax:** 351 2 34 370 605
Email: mspinto@csjp.ua.pt

Professor Miguel C. F. Telles Antunes
 Departamento de Ciências de Terra
 Centro de Estudos Geologitas
 Universidade Nova de Lisboa
 P-2825 Monte de Caparica
 PORTUGAL
Tel: 351 21 2948537 **Fax:** 351 21 2948556
Email: ip241333@ip.pt

Professor Nicolae Anastasiu
 Department of Mineralogy
 Bucharest University
 1, Bd. N. Balcescu
 Bucharest 70111
 ROMANIA
Tel: 0040 21 314 35 08 / 282
Fax: 0040 21 310 79 47
Email: anastasiu@b.astral.ro

Dr Zoya Bessudnova
 Vernadsky State Geological Museum
 Nakhimovsky prospekt 50, ap. 90
 Moscow 117292
 RUSSIA
Tel: 7 095 203 5117 **Fax:** 7 095 203 5117
Email: zoya@sgm.ru

Dr Tatiana Ivanova
 Earth Science Museum, Lomonosov Moscow State
 University
 Leninsky Gory 119992
 Moscow
 RUSSIA
Tel: 7 095 939 2227 **Fax:** 7 095 939 1594
Email: tkivan@mes.msu.ru

Dr Georgy Khomizuri
 Vernadsky State Geological Museum
 Mokhovaya Street 11, Bd. 2
 103009
 Moscow
 RUSSIA
Tel: Fax:
Email: george@sgm.ru

Dr Andrei V. Lapo
All-Russian Geological Research Institute
(VSEGEI)
Sredny pr. 74
199106
St Petersburg
RUSSIA
Tel: 812 328 91 65 **Fax:** 812 321 30 23
Email: andrei_lapo@vsegei.ru

Dr Irena G. Malakhova
Vernadsky State Geological Museum
Russian Academy of Sciences
11 Mokhovaya str.
125009 Moscow
RUSSIA
Tel: 7 495 203 5117 **Fax:**
Email: malakhova@sgm.ru

Professor Efgenij *Milanovsky, HonSrMbr
Department of Geology
Moscow State University
119899
Moscow
RUSSIA
Tel: Fax:
Email: milan@geol.msu.ru

Professor Anatoly G. Ryabukhin
Faculty of Geology
Moscow State University
119899 Moscow
RUSSIA
Tel: 7 095 939 2081 **Fax:** 7 95 954 5103
Email: ryabuhin@geol.msu.ru

Dr Yu. Ya. Soloviev
Vernadsky State Geological Museum
Mokhovaya 11
Building 2
103009 Moscow
RUSSIA
Tel: 7 095 203 4796 **Fax:** 7 95 203 4736
Email: histgeo@sgm.ru

Professor Nikolai Pavlovich Yushkin
Russian Academy of Science
54 Pervomaiskaya St.
107610 Syktyvkar
Komi Republic
RUSSIA
Tel: 7 095 82 1242 0037 **Fax:** 7 95 82 1242 5346
Email: yushkin@geo.komisc.ru

Professor Aleksandar Grubic
Rudarsko-Geoloski Fakultet
Djusina 7
11000 Belgrade
SERBIA
Tel: 381 11 402 707 **Fax:** 381 11 631 137
Email: aleksandar_grubic@yahoo.com

Professor Vidojko Jovic
Rudarsko-Geoloski Fakultet
Djusina 7
11000 Belgrade
SERBIA
Tel: 381 11 3226 032 **Fax:** 381 11 182 363
Email: jvidojko@eunet.yu

Dr Johan C. Looock
University of the Orange Free State
Bloemfontein
SOUTH AFRICA
Tel: 27 51 401 2374 **Fax:** 27 51 447 8501
Email: loockjc.sci@mail.uovs.ac.za

Sr Candido Manuel Garcia Cruz
Urbanizacion Llombet 15
38296 La Laguna
Tenerife
Canary Islands
SPAIN
Tel: Fax:
Email:
candidomanuel.garciacruz@gobiernodecanarias.org

Dr Carlos Martin Escorza
National Museum of Natural History
José Gutiérrez Abascal, 2
28006 Madrid
SPAIN
Tel: 34 914 11328 ext 1167 **Fax:**
Email: escorza@mncn.csic.es

Dr Rodolfo Gozalo
Departamento de Geologia
Universitat de Valencia
c/o Dr Moliner 50
E-46100 Burjassot
SPAIN
Tel: 34 96 3864 398 **Fax:** 34 96 3864 372
Email: rodolfo.gozalo@uv.es

Dr Jorge Ordaz
Universidad de Oviedo
Jesus Arias de Velasco s/n
33005
Oviedo
SPAIN
Tel: 34 98 5103 164 **Fax:** 34 98 5103 161
Email: jordaz@geol.uniovi.es

Dr Emilio Pedrinaci
Mirador, 8
41120 Gelves
Sevilla
SPAIN
Tel: 34 95 560 0651 **Fax:** 34 95 560 0651
Email: pedrinaci@telefonica.net

Dr Francisco Pelayo
CSIC-Universidad de Valencia
Facultad de Medicina
Avenida Vicente Blasco Ibanez 15
46010 Valencia
SPAIN
Tel: 96 386 4164 **Fax:** 96 386 4091
Email: francisco.pelayo@uv.es

Professor Dr Octavio Puche Riart
San Telesforo 8
28017 Madrid
SPAIN
Tel: 34 91 3366 951 **Fax:** 34 91 3366 977
Email: Octavio.puche@upm.es

Dr Isabel Rabano
Instituto Geologico y Minero de Espana
Rios Rosas 23
E-28003 Madrid
SPAIN
Tel: 34 913 495819 **Fax:** 34 913 495830
Email: I.rabano@igme.es

Professor Leandro Sequeiros
Apartado de Correos (PO Box) 2002
E-18080
Granada
SPAIN
Tel: 34 58 185 252 **Fax:** 34 58 151 440
Email: lsequeiros@probesi.org

Professor Carmina Virgili
Provenca 229
Barcelona, E-08008
SPAIN
Tel: 34 93 215 1411 **Fax:** 34 93 487 2463
Email: cvirgili@uoc.edu

Dr Christer Nordlund
Department of Historical Studies
History of Science and Ideas
University of Umea
S-90187 Umea
SWEDEN
Tel: 46 90 786 9733 **Fax:** 46 90 143 374
Email: christer.nordlund@histstud.umu.se

Dr Bjorn Sundquist
Falkvagen 2
SE-75756 Uppsala
SWEDEN
Tel: 46 18 421 282 **Fax:** 46 18 421 282
Email: bjorn_sundquist@bredband.net

Professor Henri Masson
Institut de Géologie
BFSH2 Université de Lausanne
CH-1015 Lausanne
SWITZERLAND
Tel: **Fax:** 41 21 692 4305
Email: henri.masson@unil.ch

Dr Nazario Pavoni
Sonnenbergstrasse 11
CH-8134
Adliswil
SWITZERLAND
Tel: 41 1 710 6689 **Fax:** 41 1 710 6689
Email: napavoni@bluewin.ch

Professor Rudolf *Trümpy, HonSrMbr
Allmendboden 19
CH-8700
Kusnacht
SWITZERLAND
Tel: **Fax:**
Email:

Dr Marc Weidmann
Sentier du Molard 3
CH-1085
Jongny
SWITZERLAND
Tel: 41 21 922 9675 **Fax:** 41 21 922 9675
Email: weidmann-dutoit@bluewin.ch

Professor A. M. C. Sengör
I.T.Ü. Maden Fakültesi
Jeoloji Mühendisliği Bölümü
Ayazaga 80 626 Istanbul
TURKEY
Tel: 90 216 332 0856 **Fax:** 90 242 285 6210
Email: sengor@itu.edu.tr

34469

Professor Gordon Y. *Craig, HonSrMbr
Grant Institute of Geology
University of Edinburgh
West Mains Road
Edinburgh EH9 3JW
UK
Tel: 44 131 663 8275 **Fax:** 44 131 663 8275
Email: gcraig@kevock.demon.co.uk

Dr Trevor D. Ford
21 Elizabeth Drive
Oadby
Leicester LE2 4RD
UK
Tel: 44 116 271 5265 **Fax:**
Email: none

Dr John Fuller
2 Oak Tree Close
Rodmell Road
Tunbridge Wells
Kent TN2 5SS
UK
Tel: **Fax:** 44 1989 253 4644
Email: none

Dr Andrew Grout
 Special Collections
 Edinburgh University Library
 George Square
 Edinburgh EH8 9LJ
 UK
Tel: 44 131 651 1720 **Fax:**
Email: andrew.grout@ed.ac.uk

Professor Richard Howarth
 49 Selwyn Avenue
 Richmond
 Surrey
 TW9 2HB
 UK
Tel: 44 20 8332 7835 **Fax:** 44 20 8332 7835
Email: r.howarth@ucl.ac.uk

Professor Simon Knell
 Department of Museum Studies
 University of Leicester
 105 Princess Street
 Leicester LE1 7LG
 UK
Tel: 44 116 252 3963 **Fax:** 44 116 252 3960
Email: sjk8@leicester.ac.uk

Dr Cherry Lewis
 Public Relations Office
 Senate House, Tyndall Ave
 University of Bristol
 Bristol BS2 1TH
 UK
Tel: 44 117 928 8086 **Fax:**
Email: cherry.lewis@bristol.ac.uk

Professor Martin J. S. Rudwick
 Department of History and Philosophy of Science
 University of Cambridge
 Free School Lane
 Cambridge CB2 3RH
 UK
Tel: 44 1353 665 043 **Fax:**
Email: mjsr100@cam.ac.uk

Professor James Secord
 Department of History and Philosophy of Science
 The University of Cambridge
 Free School Lane
 Cambridge CB2 3RH
 UK
Tel: 44 1223 334 544 **Fax:** 44 1223 334 554
Email: jas1010@cam.ac.uk

Dr Michael Taylor
 Department of Geology and Zoology
 National Museums of Scotland
 Chambers Street
 Edinburgh EH1 1JF
 UK
Tel: 44 131 220 4819 **Fax:** 44 131 247 4113
Email: m.taylor@nms.ac.uk

Professor Hugh S. Torrens
 Lower Mill Cottage
 Furnace Lane
 Madeley, Crewe
 CW3 9EU
 UK
Tel: 44 1782 750 689 **Fax:** 44 1782 751 357
Email: gga10@Keele.ac.uk

Professor Victor Richard Baker
 Department of Hydrology and Water Resources
 The University of Arizona
 Tucson
 Arizona 85721 0011
 USA
Tel: Fax:
Email: baker@hwr.arizona.edu

Professor Kennard B. Bork
 Department of Geosciences
 Denison University
 Granville, OH 43023
 USA
Tel: 1 740 587 6486 **Fax:** 1 740 587 6417
Email: bork@denison.edu

Professor Albert V. *Carozzi, HonSrMbr
 7530 Lead Mine Road
 #304 Raleigh
 North Carolina 27615-4897
 USA
Tel: 1 919 845 3451 **Fax:**
Email: acarozzi@nc.rr.com

Professor Robert H. *Dott Jr, HonSrMbr
 Department of Geology and Geophysics
 Weeks Hall University of Wisconsin
 1215 West Dayton St.
 Madison, WI 53706
 USA
Tel: 1 608 262 8960 **Fax:** 1 608 262 0693
Email: rdott@geology.wisc.edu

Dr Gregory Alan Good
 Department of History
 University of West Virginia
 Morgantown
 West Virginia 26506-6303
 USA
Tel: Fax:
Email: ggood@wvu.edu

Léo F. Laporte
 430 Nimitz Avenue
 Redwood City
 CA 94061 4226
 USA
Tel: 1 650 364 3386 **Fax:**
Email: laporte@ucsc.edu

Dr Kerry Magruder
 History of Science Collections, University
 Libraries, University of OK
 401 W. Brooks Street, Room 521
 Norman, OK 73019
 USA
Tel: 1 405 325 2741 **Fax:** 1 405 325 7618
Email: kmagruder@ou.edu

Dr Ursula B. Marvin
 Harvard-Smithsonian Center for Astrophysics
 60 Garden Street
 Cambridge, MA 02138
 USA
Tel: 1 617 495 7270 **Fax:** 1 617 495 7001
Email: umarvin@cfa.harvard.edu

Dr Clifford M. Nelson
 US Geological Survey
 950 National Center
 Reston VA 20192-0001
 USA
Tel: 1 703 648 6080 **Fax:** 1 703 648 6373
Email: cnelson@usgs.gov

Professor Sally Newcomb
 13120 Two Farm Drive
 Silver Spring, MD 20904
 USA
Tel: 301 622 0177 **Fax:** 301-622-0177
Email: senewcomb@earthlink.net

Dr Julie Newell
 Social & International Studies Program, Southern
 Polytechnic
 1100 South Marietta Parkway
 Marietta, GA 30060
 USA
Tel: 1 770 528 7442 **Fax:** 1770 528 4949
Email: jnewell@spsu.edu

Professor Alexander *Ospovat, HonSrMbr
 2131 Arrowhead Drive
 Stillwater
 OK 74074
 USA
Tel: Fax:
Email: amospovat@suddenlink.net

Professor Cecil J. *Schneer, HonSrMbr
 River Road
 Newfields, NH 03856-0181
 USA
Tel: 1 603 772 4597 **Fax:** 1 603 862 2649
Email: cschneer@comcast.net

Professor Kenneth L. Taylor
 Department of the History of Science
 University of Oklahoma
 Norman
 OK 73019-0315
 USA
Tel: 1 405 325 5416 **Fax:** 1 405 325 2363
Email: ktaylor@ou.edu

Professor Davis Young
 11991 North Labyrinth Drive
 Tuscon, AZ 85737
 USA
Tel: 1 520 219 2326 **Fax:**
Email: dotndave@comcast.net

Dr Lora N. Lordkipanidze
 The Kh. M. Abdullaev Institute of Geology and
 Geophysics
 Academy of Sciences of Uzbekistan
 H. Khodzibaeva str., 700041
 Tashkent
 UZBEKISTAN
Tel: 998 71 1626381 **Fax:** 998 71 1626516
Email: nurtaev@ingeo.uz

Professor Rogelio Altez
 Urb. La Lanada
 Residencias De Mar, Torre 4, Apartamento 1-B
 Caraballeda
 Estado Vargas
 VENEZUELA
Tel: 58 212 3129 934 **Fax:** 58 212 6052 466
Email: ryaltez@cantv.net

Dr Anibal R. Martínez
 Quinta Marani
 Calle Nunez Ponte
 Lomas del Mirador
 Caracas 1060
 VENEZUELA
Tel: 58 212 9923148 **Fax:**
Email: anibalrmartinez@cantv.net

Ing. José Antonio Rodríguez-Arteaga
 Venezuelan Foundation for Seismological Research
 Urbanizacion El Llantino
 Prolongacion Calle Mara, Apartado Postal 76880
 Caracas 1070-A
 VENEZUELA
Tel: 58 212 257 5153/7672 ext 228 **Fax:** 58 212
 257 9977
Email: jrodriguez@funvisis.org.ve

Dr Franco A. Urbani
 Universidad Central de Venezuela
 Apartado 47028
 Caracas 10411A
 VENEZUELA
Tel: 58 212 272 0724 **Fax:** 58 212 272 0724
Email: urbani@cantv.net



Mindaugas' statue in front of the Museum of Applied Art, where symposium and business meeting of INHIGEO were held. Mindaugas united Lithuania in the middle 13th century.

Sketch by Yasumoto Suzuki, Vilnius, Lithuania, 29 July 2006

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